



# ***E.Coli O157 and Petting Farms***

***Cumbria, 18 June 2010***

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# ***E.coli* O157 Outbreak at Visitor Farm in West Lancashire, May 2009**



- **9 cases (3 primary and 6 secondary), 3 with HUS**
- **Outbreak due to contamination of public areas with *E.coli* O157**
- ***E.coli* O157 isolated from goats, sheep, cattle, horse, donkey, llama**
- ***E.coli* O157 isolated from nappy change area in ladies toilet, floor in gents toilet, loose sheep wool, chocolate from floor of outside eating area, shoe shelves in ball pool**
- **Farm closed to improve hand washing facilities and upgrade the public areas**

# **Verocytotoxigenic *E.coli* O157 in animals on public amenity premises in England and Wales, 1997 to 2007\***

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- 31 open farms investigated because of possible links to human cases**
- VTEC O157 confirmed in 1 or more species in 61% (19/31)**
- VTEC O157 isolated from 17.8% (305/1715) of all samples**
- Mean proportion of positive samples by species: cattle (29%) sheep (24.4%) donkeys (14.6%) pigs (14.3%) horses (12.3%) and goats (9.9%)**

\*Pritchard et al Vet Rec 2009

# Surveillance of petting farm outbreaks of *E.coli* O157

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**•HPA Incident reporting system April 2007 – October 2009:**

**-North West: 1 outbreak**

**-England & Wales: 6 outbreaks**

**•National enhanced surveillance since 1 January 2009 - 86/441 (20%) of sporadic cases reported farm contact**

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# HPA Re-opening criteria



Farms should not reopen until:

- **The LA or HSE has conducted a full inspection of the premises as per HSE guidance:**
  - the availability and location of suitable hand washing facilities;**
  - supervision of children washing their hands after any animal contact;**
  - preventing the access of animals to picnic and play areas;**
- **There has been thorough cleaning of animal quarters and contaminated areas paying particular attention to any areas where there have been positive microbiological results, and to the implications of any positive animal results.**
- **Where other local risk factors have been identified for example on-site food production, play areas, activities such as play ball pits, the OCT is assured that adequate measures to minimise risk have been instituted.**
- **Consideration should be given to awaiting the final results of epidemiological, microbiological and veterinary investigations where:**
  - Five or more people have been affected, suggesting that there has been significant breakdown in existing hygiene measures or exposure beyond the scope of those hygiene measures;**
  - There is likely to be a particularly high level of public concern and/or media interest, such as when there has been an associated death or two or more people have been admitted to intensive care units;**
  - An outbreak investigation indicates that previously unrecognized factors might have played a role in the transmission of infection.**

## Implications for Practice..



- **Good surveillance & control systems exist – but reinforce communication & documentation**
- **Expectation of higher hygiene standards on open farms –lower threshold for EHDs to take enforcement action either on routine inspection or after a possibly farm linked case**
- **Early closure for 2 cases linked to a farm**
- **? Revised HSE guidance**
- **Re-opening criteria**
- **? *E.coli* O157 notifiable disease**



# *The Griffin Report*

Review of the major outbreak of  
*E. coli* O157 in Surrey, 2009

Dr Ken Lamden    Cumbria & Lancashire HPU

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## Petting farm visitors 'need more E. coli protection'

By Nick Triggle  
Health reporter, BBC News

**More must be done to protect people visiting children's farms, experts say.**

The warning was made by the inquiry investigating the UK's biggest ever farm outbreak of E. coli.

More than 90 people got the potentially fatal O157 strain of the bug at Surrey's Godstone Farm last year.

The investigation concluded public safety had been "neglected" as



Godstone Farm attracts up to 2,000 visitors a day at the height of summer

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- ▶ Farm parents launch legal action 11 June 10 | Health
- ▶ Animals test positive for E. coli 21 September 09 | England
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# Godstone Farm *E.coli* O157 Outbreak Timeline

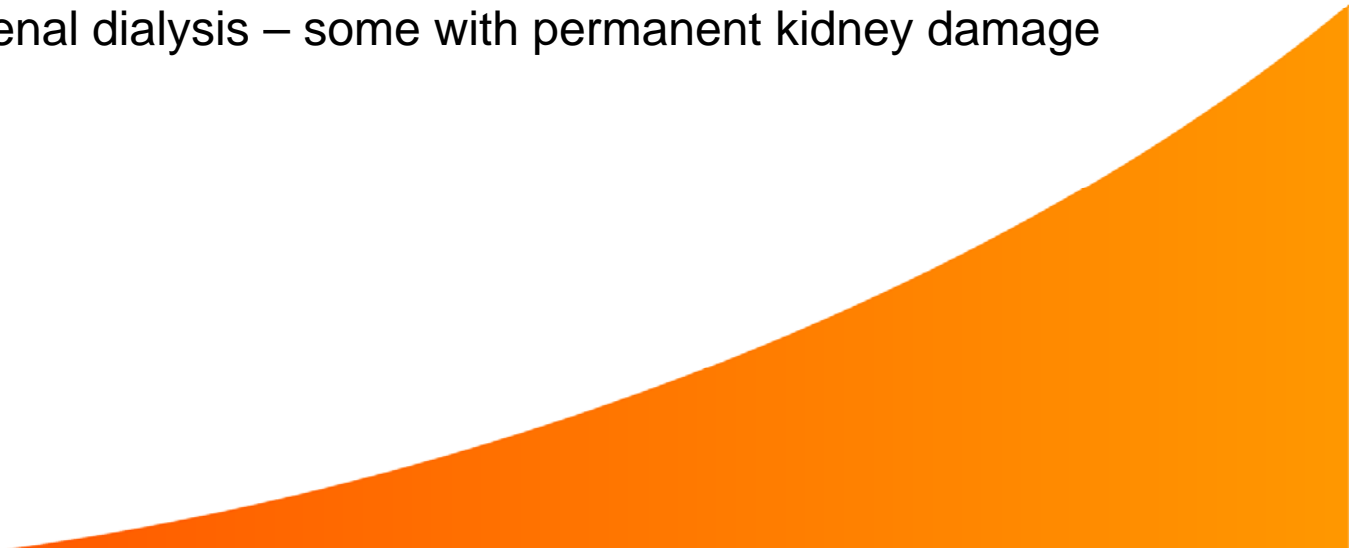


Date	Event
Tue 21 Aug	Case 1 reported to HPU & EHD. Case visited farm 8 Aug
26 Aug	Case 2 reported to HPU. Case visited farm 15 Aug
27 Aug	Case 3 reported to HPU. Case visited farm 21 Aug
Fri 28 Aug	EHD 'phone farm & advise extra signage & to arrange visit ASAP after bank holiday weekend
Tue 1 Sept	Case 4 reported. EHD suggest ?outbreak
Thurs 3 Sept	Farm visit by HPU & EHD. Total of 8 cases
Fri 4 Sept	HPU email farm re control measures: extra signage, close sandpits, prevent waste spilling onto paths, consider voluntary closure. Farm closes 2 petting barns & prevents direct contact with animals
Mon 7 Sept	-VLA visit farm
	-OCT teleconf "no further measures needed, doesn't appear to be ongoing risk". OCT 2 arranged for 18 Sept
Fri 11 Sept	Total of 5 further cases admitted to paediatric ward. Paediatrician rings HPU for 2 <sup>nd</sup> time to express frustration that farm is still open
Sat 12 Sept	EHD visit farm & agree voluntary closure. 36 cases with 12 in hosp

# Godstone Farm *E.coli* O157 Outbreak Surrey, August / September 2009



- 93 cases
- 76 under 10 years of age
- 78 symptomatic
- 27 admitted to hospital
- 17 (all children) developed haemolytic uraemic syndrome
- 8 required renal dialysis – some with permanent kidney damage





The majority of the 20 families who wished to be interviewed were regular visitors to Godstone and said that their children enjoyed visits to the Farm. When asked if there had been anything different about their visit, some noted that the Farm was exceptionally busy. There had been a queue to get in and/or they had to wait to use the handwashing facilities.

All the parents said they were aware of the need to wash their children's hands. A number said they were very careful and had used hand gels. Several commented that the taps were difficult to use, particularly for the younger children, and at most of the sinks there was only cold water. Many of the families commented that there was little supervision by farm staff and considered that there should have been more staff supervision at handwashing and animal contact areas. Most families had noticed signs about handwashing at the Farm but some felt there should have been more

The majority of parents had heard about *E. coli* but only three were aware of the association with animals and thought this was specifically a problem during pregnancy. None was aware of the association of *E. coli* O157 infection with animal faeces or animal contact in children, or the serious nature of this infection. Communication and advice received by the parents did not appear to be consistent



Several of the parents made repeated visits to their General Practitioner's surgery or out-of-hours service before the potentially serious nature of bloody diarrhoea was recognised and stool samples were taken. Some decided to present to their local Accident & Emergency Departments and their children were then admitted as their clinical condition deteriorated rapidly.

Many of the families said their experiences had been so traumatic they would not visit an Open Farm with their children again. However, many recognised the value of an animal contact experience for children in general and thought that much more information should be made available so that parents could make an informed decision on animal contact

Many of the families could not understand why the Farm had not closed earlier and did not realise that the HPA did not have the regulatory authority to implement closure. They felt this situation required changing.



**We conclude** that there needs to be greater awareness among GPs of the importance of symptoms of bloody diarrhoea and stomach cramps in young children and of the need to refer patients to hospital as soon as possible when the risk of *E. coli* O157 infection is high or its consequences are likely to be severe

**We recommend** that the HPA considers ways to increase awareness among GPs of the importance and seriousness of acute bloody diarrhoea in previously healthy children. We recommend that GPs refer children with acute, painful, bloody diarrhoea urgently to hospital both to ensure appropriate clinical management and to reduce the risk of spread within the household

# Godstone Farm *E.coli* O157 Outbreak Surrey, August / September 2009



- Source of outbreak was main petting barn
- High proportion of animal faecal samples positive for *E.coli* O157
- Environment was contaminated with *E.coli* O157, so even without direct animal contact there was a risk of infection from railings and soiled footwear



## 3 September 2009 EHD & HPU Farm visit:



There were some concerns about insufficient signage on handwashing, the absence of handwashing facilities adjacent to the exit, the use of hand gels by visitors in preference to soap and water, spilling of waste from animal pens on to paths, and possible contamination of the sandpits. It was agreed to:

- Request the VLA to visit the Farm the following week and take samples from the animal enclosures
- Arrange an outbreak control meeting next week
- Seek advice on whether other more urgent action was required

At the request of Tandridge EHD, a joint inspection visit of Godstone Farm by the HSE (in an advisory role) and Tandridge EHD took place on the morning of Monday 21 September (v). This found that:

- The health and safety risk assessment provided by the Farm 'did not meet suitable and sufficient criteria'
- There was no documentation of staff training about *E. coli* O157
- Signage mostly relied on words rather than visual illustrations
- Handwashing facilities were not very convenient for the tea room and top barn.



Even with prompt action this would have been a big outbreak. Nevertheless, there was a lack of public health leadership and a missed opportunity to exercise decisive public health action and thereby restrict the size of the outbreak





There was delay in recognising the outbreak due to the fact that no one person in the HPU appears to have had a clear picture of how many cases of *E. coli* O157 with links to Godstone Farm had been reported. The Outbreak Control Team (OCT) was convened exceptionally late in the course of the outbreak. Had the OCT been convened earlier, there would have been a more timely assessment of the public health risks and almost certainly more effective control of the outbreak.

There was unacceptable delay in initiating strict control measures at Godstone Farm. Had a decision been made on the August Bank Holiday weekend (or even after it, on Tuesday 1 September) to stop all contact with ruminant animals, a substantial number of cases of *E. coli* O157 could have been prevented

There was also unacceptable delay in carrying out the systematic epidemiological investigation of the outbreak, particularly in commencing the case-control study.



In Chapter 7, **we conclude** that the convening of the outbreak control team (OCT) was exceptionally late in the course of the Godstone Farm outbreak. This delay is unacceptable, even taking into account the deficiencies in the flow of information that delayed initial recognition of the outbreak

**We further conclude** that, had the OCT been convened earlier, there would have been a more timely assessment of the public health risks and, almost certainly, more effective control of the outbreak

**We conclude** that the failure to convene the OCT on 1 September, when both the HPU and EHD were aware of a cluster of four linked cases, represents a failure of public health leadership, and that that the main responsibility for this failure lies with the HPU. **We also conclude** that the decision by the OCT that there was no ongoing risk was premature. The decision not to reconvene until 18 September shows a failure to appreciate the seriousness of the situation.



The assessment of risk carried out by Godstone Farm was inadequate as it principally relied on the actions of the public, primarily through handwashing, to control the risks.

The risk assessment process used by the LA did not facilitate the identification of hazards on the Farm and, despite a regular programme of inspections, the regulatory visits carried out by the LA were ineffective in preventing an outbreak occurring



Prompt identification and control of outbreaks require implementation of existing HPA procedure and guidelines and clarity regarding the respective roles of the HPU and EHD. The HPU should provide public health leadership and the EHD should have both the competence and confidence to issue prohibition notices if a farm is suspected as the source of an outbreak of zoonotic disease.

Animal contact, especially with ruminants, should be prioritised as the activity to be closed at the earliest suspicion of a farm-related *E. coli* O157 outbreak (page 14)



## Outbreak 1 – North West Region (Table 1.5)

This outbreak comprised three primary cases, all children under two years of age, and six secondary cases. All were infected with *E. coli* O157 PT 21/28, and three cases developed HUS; all subsequently recovered. The OCT visited the farm and found visible faecal contamination of the outdoor grassed play and picnic areas and reports of goats escaping regularly to eat visitors' food.

Several cross-infection and animal husbandry issues were identified, including indoor pens that were deep-littered with straw and completely emptied only once per year, a high density of faeces in outdoor paddocks and pens, and rabbit hutch areas that could not be easily cleaned. The farm closed voluntarily while improvements to the farm environment were made and extra handwashing facilities were installed.

The OCT made a general recommendation that animals on Open Farms should be kept in pens and not permitted to roam in public areas.



The OCT report relating to the outbreak in the North West Region 2009 (Chapter 1) focused its recommendation on the prevention of faecal contamination in public areas, as a pre-requisite for controlling the risk from *E. coli* O157 on Open Farms

They pointed out that if the public environment is contaminated, there will be a greater reliance on secondary control measures such as handwashing

**We concur** strongly with this view, as the Godstone Farm outbreak demonstrates clearly that reliance on handwashing alone is insufficient to prevent transmission of infection when there is close contact between children and ruminant animals



## Summary of Top Six Recommendations:

- **Farm operators should ensure that the layout and design of public areas are such that visitor contact with animal faecal matter (particularly ruminant) is minimised or eliminated**
- **There is a need to raise public awareness of the potential infection risks when arriving at a farm attraction, emphasising the parent/carer's decision to allow children to have animal contact**
- **There should be a reassessment of the risk of *E. coli* O157 infection as 'low'. Its probability may be low but the impact is high and the consequences very severe**
- **An Approved Code of Practice (ACoP) should be developed for the Open Farm industry, involving relevant authorities and in close consultation with leading representatives of the industry to underpin the industry's initiative in establishing an accreditation scheme**
- **The regulatory agencies and others should explore ways of working together in regulating Open Farms clarifying roles, responsibilities and relationships**
- **Research should be pursued to assist clinicians in the rapid diagnosis of *E. coli* O157 and the identification of and treatment for children likely to develop severe complications of the infection. Research should also be undertaken aimed at preventing or limiting carriage of the organism in animals.**



The existing regulatory structure is not securing compliance with standards and is unlikely to reduce the risk of future outbreaks at Open Farms unless reinforced. Non-statutory, unenforceable guidance leaves room for doubt about standards of protection; simply revising guidance will not be sufficient to meet the challenge of improving public health protection



While the guidance by HSE in AIS23 is to be commended so far as it goes, following consideration of these documents and evidence given elsewhere, **we conclude** that more should be done to reduce the risk as low as is reasonably practical. In particular, **we conclude** that for farm operators to use handwashing as a primary control measure at Open Farms is a misdirected approach and **we recommend** that operators of Open Farms should ensure that the layout and design of public areas on the farm are such that visitor contact with animal faeces is minimised or eliminated, in order to minimise exposure to *E. coli* O157



## Farm layout and design

1. The layout and design of the farm is critical to control of the risks. The farm should be designated as 'clean non-animal areas'; 'look and see pens' and 'controlled-contact areas'
2. Attention must be given to clearly identifying 'controlled-contact areas'. In 'controlled-contact areas', colour coding should be used to inform the public of the risk status. Gates and/or doors should be used so that these areas are not accessible to unaccompanied children
3. Animal pens must be constructed of impermeable materials, pen fronts must be of solid construction to a suitable height, and surfaces readily cleanable.



**We recommend** that the HSE should take the lead in developing a code of practice for subsequent approval, involving the HPA and other relevant authorities, in close consultation with leading representatives of the industry





**We conclude** that adequate inspection of Open Farms by LAs, under current legislation, is dependent upon EHOs acquiring the competencies required for this specialist activity, and **we recommend** that the regulatory authorities develop training in these competences for EHOs.

**We also recommend** that staff training in conducting risk assessments should be reviewed, and that the benefits of 'on the job' training with inspectors who hold agricultural expertise should be considered

**We recommend** that the authorities pursue this with the CIEH or other training organisations that have the capacity to offer such training

Additionally, **we recommend** that HSE and LACORS publicise the availability of expert advice on agricultural health and safety and the microbiological hazards likely to be present on farms, and that sharing of expertise across LAs should be encouraged, through the identification of 'lead inspectors' with specialist knowledge of Open Farms