



Badger Culling : Alternatives

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The vaccination of badgers against TB is an alternative approach being investigated to address the problem of the disease in cattle. The current available vaccine for badgers, which is injectable, has been shown to reduce the burden of disease in badger populations. However administering the vaccine involves baiting and trapping, and is resource intensive. There is as yet no evidence that use of the vaccine in badgers would reduce levels of disease in cattle. There is no date for when an oral badger vaccine, which would be easier to administer, will be available

TB vaccination of cattle is also being explored as an option, with the Government expecting to commence field trials in 2015. This is expected to take two to five year to complete. For this to be a useful option the test needs to be effective at distinguishing between infected and vaccinated cattle. TB vaccination of cattle would also have to be approved at EU level, which the Government expects would take up to 2023 to achieve.

Defra has also has carried out investigations into the use of gases such as carbon monoxide or anoxic gas-filled foam as a sett-based means of humane culling. They are also investigating the options for using oral and injectable contraceptives in badgers.

The Welsh Government suspended a badger cull programme in 2011 and replaced it with a five year trapping and vaccination programme which is ongoing, and which published its first year report in January 2013. In Northern Ireland a test and vaccinate or remove method is currently being tested.

For further information Library note SNSC 3751 summarises the findings of the [Randomised Badger Culling Trials](#) (RBCT) published in 2007 and the previous Government's decision not to carry out a cull. Library note SNSC 5873 on [Badger Culling](#) summarises developments since 2010, including the current Government's decision to cull badgers using controlled shooting. Library Note SNSC 6387 covers details of the [controlled shooting pilots](#) in England. Library Note SNSC 6081 covers [Bovine TB Statistics](#)

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1 TB Vaccine for Badgers

The vaccination of badgers against TB is an alternative approach being investigated to address the problem of the disease in cattle. There already is an injectable vaccine available for TB in badgers, but this requires badgers to be trapped in a cage before it can be administered. The [veterinary guidelines](#) for the vaccine produced by the Food and Environment Research Agency (FERA) in March 2010 summarise how the vaccine was tested and its effectiveness in badgers:

The injectable BCG badger vaccine, BadgerBCG, is the first tuberculosis vaccine authorised for use in badgers in the United Kingdom. Vaccination of badgers aims to reduce transmission of TB between badgers and from badgers to cattle by reducing the prevalence of disease in badger populations and the severity of disease and shedding of bacteria from infected individual badgers.

FERA also highlights the potential for use of the vaccine for reducing TB in cattle, although it stressed that no trials had been carried out to determine whether it would be effective:

The reduced severity of disease and reduction in shedding of the bacteria from infected badgers could have the desired effects of reduction of badger to badger transmission, therefore a reduction in prevalence of disease in badgers and a reduction of the risk of transmission to cattle. There have been no field trials of the effect of BadgerBCG on TB incidence in cattle.

2 Vaccine Trials

The Government announced in June 2010 that it would be reducing the number of proposed areas covered by the Badger Vaccine Deployment Project (BVDP) trials from six to one in view of its intention of reviewing policy on badger control, and the need to reduce spending. Further details were set out in a Written Answer:

Bovine Tuberculosis: Vaccination

Hilary Benn: To ask the Secretary of State for Environment, Food and Rural Affairs what her plans are for the six badger vaccination demonstration projects approved by the previous Government. [4745]

Mr Paice: On 25 June it was announced that the Badger Vaccine Deployment Project (BVDP) has been reviewed and for the time being will proceed only in one area (Gloucestershire, near Stroud), in order to help maintain capacity at the Food and Environment Research Agency to train lay vaccinators. Badger sett surveys will also be completed in the Gloucestershire area near Cheltenham since this was already well under way. The areas in Staffordshire, Herefordshire/Worcestershire and Devon where the BVDP was due to take place will not now be trapped and vaccinated as part of the project.¹

The aim of the five year trial is to build confidence in the principle and practicalities of vaccination and provide an opportunity to learn how best to address practical difficulties.² Further details on the trial can be found on the [Food and Environment Research Agency](#) webpage, together with details of other voluntary vaccination programmes.

Results of a field trial on the impacts of the BCG vaccine on badgers were published in December 2010. The trial found that vaccination resulted in a 73.8% reduction in positive blood tests in badgers. The authors concluded:

In common with other species, BCG did not appear to prevent infection of badgers subjected to experimental challenge, but did significantly reduce the overall disease burden. BCG vaccination of badgers could comprise an important component of a comprehensive programme of measures to control bovine TB in cattle.³

3 Government Policy on Vaccination

The Government's view on the implications of the above results was set out in Annex C of the original badger culling consultation:

The results of the laboratory and small-scale field studies do not lend themselves to giving a definitive figure for BCG vaccine efficacy. This could only be determined by vaccine field-testing on a large scale over a long period of time and several thousand badgers would need to be removed to allow the determination of the presence and severity of TB at detailed post-mortem.

An oral badger vaccine, which may be a more practical option in terms of field deployment, is still at the research stage and will not be available until 2015 at the earliest.⁴

The TB Eradication Plan summarised the current position with regards to vaccination:

Badger vaccine deployment project

The vaccine is being used in a Defra-funded Badger Vaccine Deployment Project in Gloucestershire. During the first trapping year more than 500 badgers were vaccinated in the 100km² project area. The project involves training operatives to use the vaccine in the field and seeks to increase confidence in the use of injectable badger vaccines, while looking at the practicalities of the vaccination process. The first commercial

¹ HC Deb 30 June 2010 c561w

² Defra, [Changes to badger vaccine deployment project](#), 24 June 2010

³ Chambers *et al*, [Bacillus Calmette-Guérin vaccination reduces the severity and progression of tuberculosis in badgers](#), *Proc. R. Soc. B*, 1 December 2010

⁴ Defra, [Annex C: Badger TB Vaccines](#), September 2010

training course in badger vaccination was run in October 2010 and more courses are taking place this year.⁵

There are currently several wildlife organisations carrying out vaccine trials across England, including the National Trust, which began a four year trial in Killerton, in Devon, in April 2011.⁶ The Gloucester Wildlife Trust published findings on the costs of a one year vaccination trial in the Stroud area in October 2011. This small study found that the average cost per hectare for vaccinating badgers was £51.⁷

In its announcement in December 2011 to go ahead with badger culling Defra made a commitment to provide funding that would halve the cost of training volunteers to vaccinate badgers.

3.1 EFRA Committee Report

The Environment and Rural Affairs Committee published its report [Vaccination against Bovine TB](#) in June 2013. This examined the options for a badger or cattle vaccine and concluded an oral vaccine for badgers was some years away. It also found:

For too long the Government's strategy for dealing with bovine TB has been reactive and followed the spread of infection. The increase in cases of bovine TB in cattle demonstrates that the Government needs a strategy that will jump ahead of infection. Cattle vaccination is a tool that may allow it to do that in the future but for now increased bio-security and rigorous movement controls are vital. It will be no good vaccinating badgers to create a firewall against the spread of infection only for it to be compromised by movement of infected cattle.⁸

And

Our inquiry has shown that the quality of information in the public domain about the availability of the cattle vaccine and oral badger vaccine and the efficacy of the injectable badger vaccine has not been good enough. There is a great deal of interest in this subject and the Government can do better in satisfying it.⁹

3.2 Progress in Developing Badger and Cattle Vaccine

In a June written response the Government summarised progress in developing a cattle vaccine and an oral badger vaccine:

David Morris: To ask the Secretary of State for Environment, Food and Rural Affairs what plans he has to test a tuberculosis vaccine on (a) cattle and (b) badgers; and if he will make a statement.

Mr Heath We hope to have successfully completed all the cattle vaccine experimental work, including studies on safety of meat and milk, during 2014. We will then be able to make an application to the Veterinary Medicines Directorate for an Animal Test Certificate to begin the field trials proposed in EU Commissioner Tonio Borg's letter to the Secretary of State for Environment, Food and Rural Affairs dated 14 January 2013.

⁵ Defra, [Bovine TB Eradication Programme for England](#), July 2011

⁶ National Trust, [New programme to demonstrate badger vaccination as effective alternative in bovine TB control](#), April 2011

⁷ Gloucestershire Wildlife Trust, [Nature Reserves Badger Vaccine Deployment Programme 2011](#), October 2011.

⁸ EFRA Select Committee, [Vaccination against Bovine TB](#), June 2013

⁹ *ibid*

An injectable badger vaccine was licensed in 2010. We are investing in the development of an oral badger vaccine but this work is still at the research stage and we cannot say with any confidence when a usable vaccine might become available.¹⁰

However in a written response in February 2014 the Government confirmed that common use of a TB vaccine in cattle could still be a long way off due to the need to amend EU trade rules to allow it use:

Bill Wiggin: In 2017, I hope that the Secretary of State and I will be campaigning to leave the European Union. When we succeed, the excuse that it is the EU that is preventing us from vaccinating our cattle will no longer be valid. Will he ensure that his Department is ready to vaccinate cattle when we leave?

George Eustice: I hope that we will be able to reform the European Union and make it fit for purpose in the 21st century and campaign to stay in. On the point my hon. Friend makes, the European Commission set out the steps that would be needed to be taken in order for it to make proposals for new EU rules allowing trade in vaccinated cattle. Its tentative time line suggests that that would not be before 2023. We may be in a position to commence field trials next year. The trials will take between two to five years, and there will be a further two to three years to agree for trade in cattle to take place in the European Union. In reality, it will most likely be 2023, which underlines the importance in the meantime of our using every tool open to us to bear down on this terrible disease.¹¹

More recently the Farmer's Guardian has reported that the Ministers are considering the option of a large scale trial of TB vaccination in cattle.¹²

3.3 Funding

The Government laid out DEFRA research funding costs (past and projected) for different vaccine options for tackling TB written response in November 2013.¹³ It should be noted that the projected costs for cattle vaccine and diagnostics research does not include the costs of any field trials which may have commenced after November 2013.

£						
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Oral badger vaccine research	2,476,273	2,127,448	1,684,948	2,027,956	2,008,748	2,427,390
Injectable badger vaccine research	301,943	136,178	87,959	66,387	40,000	—
Cattle vaccine and associated diagnostics research	2,683,843	2,210,441	2,709,163	3,994,677	2,041,706	1,916,714

¹⁰ HC Deb 19 Jun 2013 : Column 670W

¹¹ HC Deb 13 Feb 2014 : Column 998

¹² Farmers Guardian, [Ministers consider cattle TB vaccine field trial](#), 12 June 2014

¹³ HC Deb 22 Nov 2013 : Column 1060-2W

4 Gassing

Gassing badgers using cyanide was outlawed in 1982 on the grounds that it was inhumane, however gassing using carbon monoxide gas, or gas laden foam, has been suggested as an alternative approach to controlled shooting.

In November 2013 the Government indicated that research into alternative culling methods, including gassing, was under consideration although none had been commissioned:

Caroline Lucas: To ask the Secretary of State for Environment, Food and Rural Affairs pursuant to the answer of 10 October 2013, *Official Report*, column 284, if he will commission new research to demonstrate whether gassing can be proven to be safe, humane and effective; and if he will make a statement. [175929]

George Eustice: As set out in our draft “Strategy for achieving officially free bovine tuberculosis-free status for England”, further research into alternative population control methods (e.g. sett-based culling methods and non-lethal methods) is under consideration. This includes investigating the potential use of anoxic gas or gas-filled foam as a sett-based means of humane culling. No new research has been commissioned at this stage.¹⁴

That humane gassing was being considered was further confirmed in [The Strategy for achieving Officially Bovine Tuberculosis Free status for England](#) published in April 2104, which stated:

Further research into alternative methods for dealing with the risk of *M. bovis* from badgers (e.g. sett-based culling methods and non-lethal methods) has been considered. This includes investigations into the use of gases such as carbon monoxide or anoxic gas-filled foam as a sett-based means of humane culling. Anoxic gases are used humanely to cull farmed animals such as pigs and poultry. The use of hydrogen cyanide gas to cull badgers will not be considered.

A freedom of information [response](#) from Defra from June 2014 set out further details of what has been done so far.

The Strategy also stated that the Government was funding research into oral and vaccinated contraceptives for badgers.

5 Welsh Vaccination Programme

Following the Welsh Assembly elections in May 2011 there was an announcement that proposals for badger culling would be suspended pending a review of the science. This was followed by an announcement in March 2012 by the Environment Minister, John Griffiths, of new [Strategic Framework for Bovine TB Eradication](#) and the cancellation of the proposed culling, which would be replaced by a badger vaccination programme:

“We have a Government commitment to take a science led approach to tackling this serious disease and I am personally committed to the eradication of bovine TB in Wales. “The Strategic Framework for Bovine TB Eradication that I am launching today acknowledges that we must deal with all sources of bovine TB, including wildlife, if we are going to achieve our goal of eradicating this debilitating disease. “I have considered a number of options including whether culling or vaccination of badgers are

¹⁴ HC Deb 25 Nov 2013 c20W

appropriate. After careful consideration I have decided to pursue a badger vaccination project within the Intensive Action Area".¹⁵

The vaccination programme started in summer 2012 and is intended to be carried out annually for five years. The aim of the programme was summarised as follows by the Welsh Government website:

Vaccinating badgers is a risk reduction measure. It is intended to reduce the risk of badgers catching TB and reduce the severity of the disease in those that become infected after vaccination. Over time this should decrease the level of infection, reducing the risk of badgers spreading disease to cattle. Repeated vaccination is likely to result in a gradual build-up of immunity in the badger population. This should reduce the risk to local cattle from badger-to-cattle transmission in the medium to long-term¹⁶

An FAQ document on the [Intensive Action Area](#) set out what it was hoped the programme would achieve:

19. What is the point of vaccinating badgers in an endemic area?

Vaccinating the badgers that are not infected reduces the number of individuals that are susceptible to becoming infected. Even in an endemic area approximately 75% of badgers could be free from bovine TB. As more individuals receive protection from vaccination the prevalence of the disease in badgers should decrease. If fewer badgers are infected there should be a lower risk of transmission of TB from badgers to cattle.

The Welsh Government publishes yearly reports on the programme. This sets out details, including costs and number of badgers vaccinated. The [latest](#), for 2013, concludes as follows:

It is difficult to make inferences based on the comparison between the first and second years. As the project progresses there should be increased scope to interrogate the dataset and reach more meaningful conclusions.¹⁷

6 Northern Ireland: Test and Vaccinate or Remove

Northern Ireland has announced that it will be trialling a test and vaccinate or remove (TVR) approach in 2014. This will trap badgers near their sett. Badgers in the two trial areas will be tested, and vaccinated and released if found to be TB negative or removed if found to be TB positive.¹⁸ Further information can be found on the Northern Ireland Department of Agriculture and Rural Development [website](#).

Some concerns have been raised that this approach may result in the perturbation effect. This is where disturbance of badgers changes their behaviour in ways that result in increasing TB transmission.¹⁹

¹⁵ Welsh Government, [Environment Minister announces programme of badger vaccination](#), 20 March 2012

¹⁶ Welsh Government website, [Badger Vaccination in the IAA](#) [website as of 19 September 2013]

¹⁷ Welsh Government, Bovine TB Eradication Programme, [IAA Badger Vaccination Report](#), Year 2, 2014

¹⁸ DARD, [Test and vaccinate or remove \(TVR\) wildlife intervention research](#) [website as of 3 March 2014]

¹⁹ Bielby et al, 2014, [Badger responses to small-scale culling may compromise targeted control of bovine tuberculosis](#), PNAS