



## Presentation at BVA Congress

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# Bluetongue: perspective from industry

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## Structure

- History of BTV vaccination in UK
- BTV vaccination in EU
- Reflections
- Future directions
- Conclusions



## History of BTV-8 vaccination

- Sept 07            BTV-8 identified in S.E. England
- England and Wales
  - Voluntary vaccination
  - Nov 07            Defra issues tender request to underwrite supply
  - Dec 07            Intervet Schering-Plough wins tender
    - 22.5 m doses    Vaccination begins April 08
  - Jun 08            Merial wins second tender
    - 13 m doses     Product available from August 08
- Scotland
  - Compulsory vaccination
  - Apr 08            Scottish Government issues tender request
  - Jul 08            Merial wins tender
    - 12 m doses     Vaccination begins November 08
- Northern Ireland
  - Maintain BTV-8 freedom without vaccination



## Vaccines available in GB



Zulvac® 8 Bovis  
Zulvac® 8 Ovis  
Fort Dodge Animal Health



Bovilis® BTv8  
Intervet Schering-Plough  
Animal Health



BTVPUR AISap® 8  
Merial Animal Health



## R&D process: from flask to field

- Develop challenge model
- Design vaccine to control viraemia
- Scale-up
  - Two GMP manufacturing sites in the EU: Weesp (NL), Olot (Sp)
  - Over 80 million doses manufactured in 2008
- Condensed timelines
- Diversion of resources
- Financial risk



## Present status

- Cases of BTV-1 and BTV-8 in imported cattle
  - Identified on post-import checks
  - None since Nov 2008
- BTV-8 not circulating in UK
- Vaccine uptake variable in Eng and Wales
  - Over 80% in parts of S.E. England
  - Much lower in Wales and N. England
- Vaccination played critical role in preventing disease in 2008 despite virus incursion<sup>1</sup>
  - Good planning and implementation or just good fortune?

1. Burgin, L. *et al* (2009) Why were there no outbreaks of bluetongue in the UK during 2008? *Veterinary Record* 164, 384-387



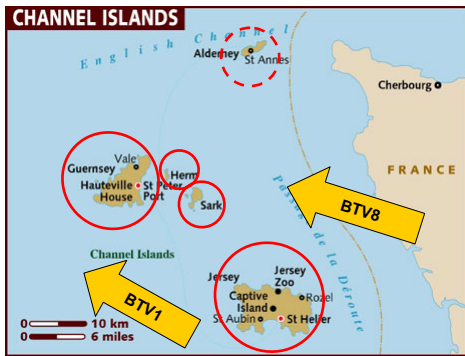
## Present threat to UK



Adapted from: Baird, G. (2009) Don't be blue over bluetongue. *Veterinary Times* Vol. 39, No. 22, p. 14-15



# Channel Islands



Bailiwicks of Jersey and Guernsey ordered French-labelled

Zulvac® 1 Ovis

Zulvac® 1 Bovis

from France under terms of an export licence, in advance of UK marketing authorisation,

BTV-1 vaccination commenced:

Jersey Apr 09

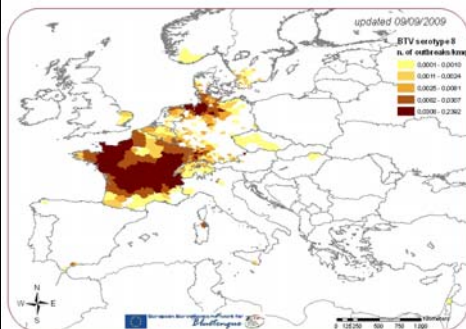
Guernsey Jun 09

BTV-8 vaccination commenced 2008

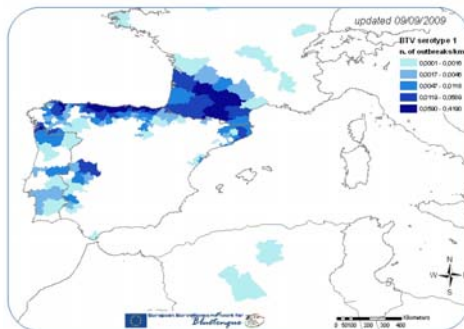


# Present situation in EU

EU BTV outbreaks from 01 May 08 to 09 Sep 09



BTV-8



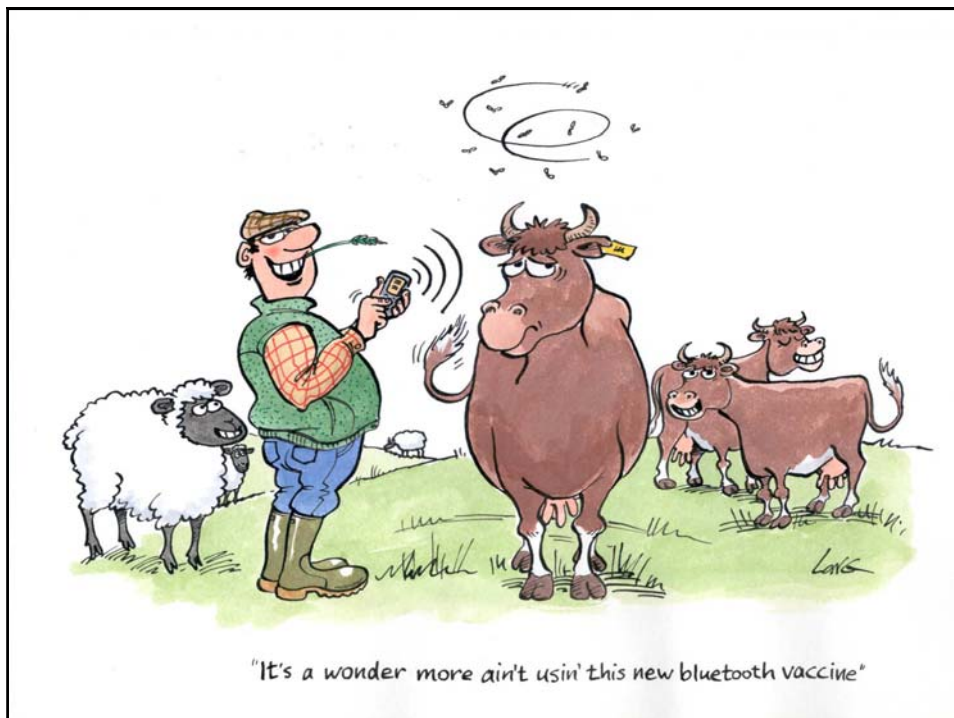
BTV-1

Source: <http://eubtnet.izs.it/btnet/reports/Outbreaks.html>

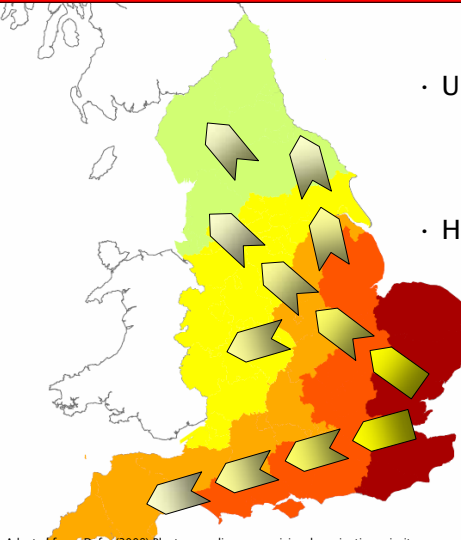


## EU market for BTV vaccine

- Approx. 250 million doses (2008)
- 3 international manufacturers of inactivated vaccines
  - Fort Dodge Zulvac® 1, 1+8, 4, 8
  - Intervet S-P. Bovilis® BTV 8
  - Merial BTVPUR AISap® 1, 1+8, 2, 2+4, 4, 8, 9
- Zulvac® is EU brand market leader €s (2008)
- Fort Dodge 1<sup>st</sup> of international companies to market
  - BTV serotype 1 vaccine (Cattle and sheep)
  - multivalent BTV serotype 1+8 vaccine (Cattle and sheep)
- Other BTV vaccine manufacturers
  - Carlier, CZ Veterinaria, Syva Spain
  - IZS Teramo Italy



# Reflections



### Risk-based roll-out

- Uptake declined in successive zones
  - Range 25% (North) to 95% (SE)
  - April to September roll-out
  - England 60% overall in 2008
  - Total of 16m doses sold in 2008
- Higher uptake with faster roll-out?
  - E.g. uptake in Wales (23%)
    - 'severely hampered by delays in supplies from the manufacturer'<sup>1</sup>
  - Split tender with multiple suppliers
    - Speed up roll-out
    - Spread risk in case of vaccine batch failure
  - Balance against potential issues
    - Product label differences - communication
    - Differential brand demand - supply problems

Adapted from: Defra (2008) Bluetongue disease provisional vaccination priority areas in England, 1 April 2008. Available at: <http://www.defra.gov.uk/animalh/diseases/notifiable/bluetongue/pdf/mapvacc-080401.pdf>

1. Defra (2009) Animal Health 2008. The report of the Chief Veterinary Officer, Defra, London. Available at: <http://www.defra.gov.uk/animalh/cvo/pdf/2008report.pdf>

# Reflections

- Perception of low disease risk
  - Farmer complacency
  - Vector control with synthetic pyrethroid pour-ons
    - Mitigation only
  - No evidence of circulating disease
  - No reports of BTV in UK since Nov 2008



## Reflections

- Perception of vaccine safety
  - Provisional marketing authorisations
  - CVMP overview of field safety data<sup>1</sup>
    - Frequency of reported adverse reactions is 'very low':  
<1 per 10,000 treated animals
  - VMD SARSS (UK), 1 per 6,400 treated animals (2008)<sup>2</sup>
  - Peer-reviewed journal publications on field safety<sup>3</sup>

1. CVMP (2009) An overview of field safety data from the EU for bluetongue virus vaccines serotype 8 emerging from the 2008 national vaccination campaigns. EMEA, London

2. Dyer, F. *et al* (2009) Suspected adverse reactions, 2008. *Veterinary Record* 165, 162-164

3. Gethmann, J. *et al* (2009) Comparative safety study of three inactivated BTV-8 vaccines in sheep and cattle under field conditions. *Vaccine* 27, 4118-4126



## Reflections

- Declining momentum
  - Despite efforts of JAB, manufacturers, veterinary surgeons.....
  - Despite low on-farm cost of vaccine
  - Led to problems with short-dated/expired vaccine
    - Date extensions ruled out
  - Uptake higher if compulsory campaign
    - But would have delayed start
  - Would uptake have been higher if POM-VPS?
  - Would uptake have been higher if roll-out was faster?



## Reflections

- Queries from livestock owners and vets
  - Safety, esp. in pregnancy
  - Use of vaccine in non-target species
    - esp. goats, alpacas
  - Open shelf life
  - Duration of immunity
  - Booster vaccination following primary course of alternative vaccine<sup>1</sup>
  - Concurrent use with other products

1. Bartram, DJ, *et al* (2009) Can cattle primed with one inactivated bluetongue virus serotype 8 (BTV-8) vaccine be boosted with another? Abstracts, Veterinary Laboratories Agency (VLA) International Conference - Animal Diseases 2009, 2-4 September, 2009, London, UK. p 15



## Reflections

- Vaccine differences
  - Routes of administration
  - Volume of dose
  - Number of doses for primary course
  - Species indications
  - Minimum age of stock
- Availability of different pack sizes
- Expiry dates
- Publication of wholesale list price and recommended on-farm prices





## Future directions

- Full marketing authorisations
  - Currently national provisional or
  - EU exceptional circumstances authorisations
- New BTV serotypes and vaccines in EU
- Protection zones (or blue zones?) in UK for new serotypes
  - BTV-1 is most immediate threat, esp. S.E. England
  - Harmonisation of policy across devolved authorities
- Demand-driven market supply of BTV-8 vaccine
- Responsibility and cost sharing agenda
  - Livestock industry contribution to costs of exotic disease outbreaks



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## Future directions

- Minor species indications
- Multivalent BTV vaccines
  - Zulvac® 1+8 Ovis
  - Zulvac® 1+8 Bovis (Spain)
- New modalities of inactivated vaccine?
  - Subunit, recombinant, DIVA
  - Cross-serotype, extended duration of protection
- Exit strategy
  - Is eradication a realistic goal?
  - Or is endemic BTV a more likely outcome?
  - Case for declaring disease freedom will be decided on the potential for economic benefits



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## Future directions

- Other arboviruses
  - African Horse Sickness Virus
  - Epizootic Haemorrhagic Disease Virus
  - Equine Encephalosis Virus
  - West Nile Virus
    - Duvaxyn® WNV (Fort Dodge)
      - European Marketing Authorisation Nov 08
      - Available from Jun 09



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## Challenges

- Re-establish momentum
  - Bought-in and young stock on vaccinated holdings
  - Boosters for stock on vaccinated holdings
  - Unvaccinated holdings
- Risk of BTV infection remains
  - Recrudescence (BTV-8)
  - Incursion (BTV-1 and BTV-8)
  - Importation (BTV-1 and BTV-8 and ....)
- Need to secure availability of new serotype vaccines
  - Initially demand exceeds supply so tender important to ensure vaccine not used in another country that has guaranteed its supply



## Conclusions

- Vaccination is effective and campaign was a success in UK and parts of EU
  - No circulation of disease in UK in 2008 despite BTV-8 virus incursion into S.E. England
  - Spain BTV-4 free after following vaccination
- Importance of effective risk communication campaign
  - Rapid transition from concern to complacency
  - Anecdotal scare stories about vaccine safety gather strength
  - High uptake essential (>80%) to prevent spread
    - Vaccine uptake in France ~20% nationally (2008)
    - >25,000 cases BTV8 in France in 2008



## Conclusions

- Preparedness for new BTV serotype incursions
  - Robust surveillance for early detection
    - Prediction of midge incursions into UK
    - Double post-import testing, bulk milk testing
  - Ensure vaccine availability



don't be complacent!  
**don't hesitate, vaccinate**



**Joint campaign Against Bluetongue**

