Prevention is better than cure: Examples from the veterinary profession

Jonathan Rushton

Norbrook endowed chair in Veterinary Business Management and personal chair in Animal Health Economics

jrushton@rvc.ac.uk

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Reference Centre for Veterinary Epidemiology of the United Nations - Food and Agriculture Organisation
Dedication

> On 13th March 2014 we lost Lord Ballyedmond of Mourne an entrepreneur who built a major pharmaceutical company - Norbrook Laboratories

> I would like to dedicate this presentation to him and his family
Acknowledgements

I want to acknowledge the support of RVC, Norbrook Laboratories, LCIRAH, and Erasmus Lifelong Learning Programme

Many colleagues have contributed to the ideas and analysis I will present

- Barbara Haesler, Theo Knight-Jones, Will Gilbert, Nick Lyons

Organisers of the conference – in particular Jan Vaarten
Introduction

> Whilst we accept the statement “prevention is better than cure” we rarely examine how we react to the presence or risk of disease

> From an economic perspective this would changed to a question of “Is prevention better than cure?”
Introduction

- In order to examine this more carefully it is important to understand the **impact of disease** as a basis to understand our responses
- Through two examples, **FMD and BSE**, I will demonstrate the need for prevention rather than cure at a national level
- And I want to leave some **conclusions** on other diseases
Disease Impacts
Animal Health Impact

Losses

Visible Losses
- Dead animals
- Thin animals
- Animals poorly developed
- Low returns
- Poor quality products

Invisible Losses
- Fertility problems
- Change in herd structure
- Delay in the sale of animals and products
- Public health costs
- High prices for livestock and livestock products

Expenditure

Additional Costs
- Medicines
- Vaccines
- Insecticide
- Time
- Treatment of products
Animal Health Impact

Impact caused by the disease

Visible Losses
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Invisible Losses
- Medicines
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- Insecticide
- Time
- Treatment of products

Impact caused by human reaction

Expenditure & Actions
- Additional Costs
- Lost Revenue
- Access to better markets denied
- Sub-optimal use of technology
And the impact if a disease is eradicated?

- Eradication requires **large investments** in order to have constant benefits of eliminating
  - Disease losses
  - Disease expenditure and actions towards disease
- BUT if a disease is eradicated then we create:
  - **Naïve populations**
  - **People unfamiliar** with disease detection and management
- Therefore there needs to be more attention to **PREVENTION**
Foot-and-mouth disease
- an eradicated disease issue
FMD cases in the UK 1922 to 1966
The estimated annual impact of FMD in terms of production losses and vaccination alone are between US$6.5 to 21 billion.
Costs of major outbreaks in previously free countries

A further US$20 billion in losses were incurred due to epidemics in countries that were free since 1997

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<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Taiwan$^1$</td>
<td>Uruguay$^2$</td>
<td>UK$^1$</td>
<td>Japan$^3$</td>
<td>Rep. Korea$^4$</td>
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<tr>
<td><strong>Costs (US$ millions)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Direct costs</td>
<td>254</td>
<td>-</td>
<td>3,558</td>
<td>550</td>
<td>2,780</td>
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<tr>
<td>Indirect costs</td>
<td>6,363</td>
<td>700</td>
<td>5,615</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Total cost</td>
<td>6,617</td>
<td>700</td>
<td>9,204</td>
<td>&gt;550</td>
<td>&gt;2,780</td>
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<td>As percentage of GDP</td>
<td>&gt;64%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Duration (months)</td>
<td>4.5</td>
<td>4</td>
<td>7.5</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Slaughtered Animals</td>
<td>4 million</td>
<td>20,000</td>
<td>6.24m</td>
<td>290,000</td>
<td>3.47m</td>
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</table>

**Key:** S.O. = Stamping out, Vacc = Vaccination. N/A = Data not available.

**Sources:** $^1$ FAO. $^2$ Personal Communication F. Muzio $^3$ Muroga, N. et al., 2011. $^4$ Yonhap News Agency
BSE
- an emerging problem
Confirmed BSE cases in the UK 1988 to 2013
When a link was finally made to human health the potential implications for the worst case scenario were horrific – the disease in humans appeared to affect the 20 to 40 years olds.
The lack of adult animals

Source: DEFRA (2011)
Most recent estimates of the costs of control of BSE in the UK indicate a cost of £3.5 billion from work carried out over ten years ago.
And the impact of BSE in other countries

- In countries with stringent control and limited disease
  - In Germany costs were estimated to range between €1.8 and 2.9 billion for the detection, feed ban, active surveillance measures and incineration of animal protein (Probst et al, 2013)

- In terms of trade
  - International livestock trade ban was estimated to a drop of $2.5 billion in cattle sales (Mitura & De Piétrò, 2004)
  - Trade ban on the USA was estimated to have an impact of between US$3.2 to 4.7 billion (Coffey et al, 2005)
Investments in disease control

- **Major public investments** in coordinated animal health programmes to support the efforts of livestock keepers and private veterinarians has improved animal health status.
- Large **populations of animals** now **never encounter the major economic and zoonotic diseases**.
- The **absence of disease** is the **basis for investments and improvements** of the livestock sector.
Benefits, risks and consequences

> However, there **continue to be risks** of incursions of the eradicated diseases and the emergence of new ones

> The **social and economic consequences** of these **incursions** can be **enormous**

> These are largely underwritten by governments in order to guarantee the stability of animal production and the food industry
Conclusions
Conclusions

> Prevention is better than cure appears **clear** for some animal diseases and zoonoses

> Yet our actions with regards other diseases requires further evidence on the value of disease management

  • Do we control?
  • Do we eradicate?
  • How do we manage naïve populations?
Conclusions

- Given the **importance of animals** in societies other animal diseases should be considered for national programmes
- Yet our current **level of knowledge** of disease impacts are **inadequate** to make decisions on prevention rather than cure
Recommendation

To make decisions on future preventive or control actions **more information** is required in **disease impacts**

- Similar to the human health global burden of disease

This needs to be based on:

- **Surveillance** – disease and livestock sectors
- **Epidemiology** to identify risk factors and populations at risk
- **Socio-economic analysis** to determine private and societal benefits
Further information

➢ For more information on NEAT please look at
  • www.neat-network.eu
➢ For information on the work we are involved in with agriculture and health please look at
  • http://www.lcirah.ac.uk/home
➢ For courses offered at RVC please look at
  • http://www.rvc.ac.uk/Postgraduate/Distance/Index.cfm
  • http://www.atp-ilhp.org
References


Knight-Jones, T.J.D.; Rushton, J. (2013) The economic impacts of foot and mouth disease – What are they, how big are they and where do they occur? Preventive Veterinary Medicine 112 (3-4) pp 161-173

General References


BSE References


FMD References


Knight-Jones, T.J.D.; Rushton, J. (2013) The economic impacts of foot and mouth disease – What are they, how big are they and where do they occur? Preventive Veterinary Medicine 112 (3-4) pp 161-173


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