

Protecting countryside users against zoonotic diseases by influencing their behaviour

A Rural Economy and Land Use project investigating the scope for influencing people's behaviour, and helping them to protect themselves against diseases that can pass from animals to humans.



Policy and Practice Notes

Note No. 27
March 2011

The Rural Economy and Land Use Programme is a UK-wide research programme carrying out interdisciplinary research on the multiple challenges facing rural areas. It is funded by the Economic and Social Research Council, the Biotechnology and Biological Sciences Research Council and the Natural Environment Research Council, with additional funding from the Scottish Government and the Department for Environment, Food and Rural Affairs.

The countryside and green spaces are important for our physical and mental wellbeing and government policies encourage more people to make use of them. But there are some hazards that may be unfamiliar, such as zoonotic diseases that can pass from wildlife to humans, for example Lyme disease. Disease of this kind is relatively rare, so it would not be appropriate to tell people not to go out and enjoy the benefits of the countryside, but it is on the increase. This calls for new ways of managing disease and of influencing the behaviour of countryside users – both visitors and those who work there. It requires more than just giving out information.

What are zoonotic diseases?

Zoonoses are infections which are transmitted naturally between vertebrate animals and humans.

There is a wide variety of such diseases. The source of infection may be domestic or wild animals, the infection agent may be a virus, bacterium or protozoon, and transmission may occur through direct contact with an infected animal, by means of a vector (such as a tick or other insect), or by contact with contaminated water or soil. While animal hosts that provide a reservoir of infection may suffer no ill health, infection may be potentially much more serious for humans.

What are the most effective approaches to tackling zoonotic disease?

Zoonotic diseases present serious problems that make the usual routes of medical or veterinary intervention difficult because:

- The disease pathways are often complex, with a multitude of potential hosts, which means that the scope for control of disease by direct intervention is low.
- The infective agent and/or the vector may be pervasive in the environment. Widespread habitat manipulation or removal of hosts may be impractical, or would lead to losses of biodiversity or other environmental damage.
- Pathogens may have multiple strains, making the production of appropriate vaccines both costly and time consuming.

Prevention is the most effective approach because:

- Precautionary actions may mean only small changes in behaviour.
- It is more proportionate and less costly.

What precautions should be taken?

Necessary precautions will vary depending upon the biology of the particular disease and how it is transmitted, the work and visitor activities undertaken (and therefore the habitats used), how the hazard varies over time and space, and the organisational framework in which risk is managed and communicated.

Precautions should be tailored to risk, and attempts to influence behaviour designed in the light of an understanding of the countryside uses. In particular, communication should be made specific, considering five dimensions:

- **Who?** Do actions need to be tailored to particular audiences and their activities?
- **Where?** Is the risk, or are the underlying hazards, place/site-specific?
- **When?** Is the risk specific to time of day or season, and should actions be taken before, during and after a visit?
- **What?** Are there behaviours that can minimise the risk of acquiring the disease?
- **How?** Can behaviours be influenced by measures that encourage, enable, exemplify and/or engage those at risk?

Will providing information achieve behaviour change?

Risk communication is about more than information provision. Organisations and professionals tend to assume that providing information will be enough to influence or change behaviour. However, many studies have clearly shown that this is insufficient, and that people take decisions in response to a wide range of sources and signals. It follows that organisations need to consider a broader set of activities in influencing behaviour. One framework suggests using “the 4Es”:

- Encourage: give the right signals – for example, by providing clear and targeted precautionary information.
- Engage: get people involved – for example, by working with stakeholder groups in the design and evaluation of leaflets and notices.
- Enable: make it easier for people to adopt the desired behaviour – for example, by providing tick removal devices (to counter Lyme disease), or washing facilities (to counter infections such as E. coli).
- Exemplify: lead by example – so that people observe the precautions being taken by those they encounter.

Who could influence behaviour?

It is often unclear who is involved in influencing behaviour, who is responsible for providing definitive advice, or where visitors and other countryside users can access it. This causes problems because:

- Many and conflicting messages may create confusion.
- “Second hand” information may be inaccurate.
- Difficulties in obtaining information may make visitors lose interest.

There is scope for better co-ordination and consistency, but there is a lack of clarity about who should initiate such action and no clear process exists:

- The range of sources and signals that combine in risk communication means that many people and organisations are involved.
- Communications may reflect the responsibility of an organisation (e.g. public health authorities), or the interest of a particular group (e.g. disease support groups).
- Others, such as many land-based organisations, may decide that they have a legal duty of care or liability, or simply want to do the right thing.
- Organisations may need to consider the needs of different groups, for example employees and visitors.

What are the implications for policy and practice?

The implications for policy and practitioners are that:

- The proportionate and effective response to most zoonotic diseases is to influence behaviour, so that people using the countryside take appropriate precautions to protect themselves.
- Influencing behaviour is about more than risk communication, which in turn requires more than just the provision of information.
- Successful behaviour change will require a diverse range of actions from different people and organisations.
- A range of disciplines needs to be involved, so that strategies are based on sound biological and ecological knowledge, as well as an understanding of risk communication, how messages are received and which sources are trusted.
- Land managers are key to achieving success. They could work with health professionals, sharing and developing knowledge, formulating response strategies, and identifying target audiences.
- Together, health authorities and land managers could establish an authoritative knowledge base on which individuals and organisations could draw. There should be organisational links to enable this to happen.

Framework for risk communication, using precautions against tick bites and Lyme disease as an example

		WHEN? The points in time at which behaviour may be influenced and specific actions taken				
		Pre visit	Visit	Post visit	Post tick-bite	Post infection
WHAT? The possible behaviours that can minimise risk of acquiring the disease		Obtain appropriate clothing and repellent	Consider route and activity	Check for ticks	Prompt removal and subsequent monitoring of bite location	Prompt help-seeking and appropriate treatment
WHO? Who might need to consider precautionary behaviours		Potential visitor	Visitor engaged in specific activities	Visitor engaged in specific activities	Visitor engaged in specific activities	Patient (public or employee) Medical staff
WHERE? The extent to which the risk and risk communication is place specific		Particular routes and vegetation types	On path/off path	Place of residence or holiday	Place of residence or holiday	GP surgery
HOW? Influencing actions are required to encourage precautionary behaviours	Encourage [Give the right signals]	Information on web	Notices in car park suggesting post-visit precautions	De-briefing of conducted visits reminding of need for checks	Information at GPs surgeries and e.g. NHS Direct website explaining tick removal methods	Ensure GP awareness of Lyme disease
	Exemplify [Lead by example]	Staff drawing attention to at risk areas & behaviours in briefings	Staff wearing appropriate clothing	Staff checking for ticks after visits		
	Engage [Get people involved]	Involve public in communication evaluation	Share knowledge with groups such as recreation activity providers	Share knowledge with groups such as recreation activity providers	Share knowledge with groups such as accommodation providers	Share knowledge with groups such as GP practices and pharmacies
	Enable [Make it easier]	Routing of path; location of picnic sites	Provide tick removal devices	Provide tick removal devices	Provide tick removal devices	Improve diagnostic tools and keys

What is Lyme disease?

Lyme disease is one example of a zoonotic disease found in the UK.

- It is caused by bacteria, which are transmitted between a wide range of birds and animals and human beings by ticks.
- Tick abundance varies with habitat, host abundance, and time of year.
- Early symptoms can include a bull-eye rash and flu-like symptoms, and at this stage the disease is readily treated with antibiotics.
- Without treatment, there can be late stage complications involving various parts of the body, especially the nervous system, joints and heart.
- Several strands of evidence suggest that there has been an increase in tick numbers and in the incidence of Lyme disease in the UK.
- There is currently no vaccine to protect against Lyme disease.
- Appropriate precautions to avoid infection include covering skin to avoid being bitten, avoiding high risk areas/times of year, and prompt removal of ticks if bites occur - transmission is rare during the first 24 hours of attachment.

Further information

This research was carried out by Forest Research and the universities of Brunel, Oxford and Surrey. The assistance of members of the Project Advisory Board and Practitioner Panel is gratefully acknowledged.

Key contact:

Dr Chris Quine, Forest Research, Centre for Human and Ecological Sciences.
email: chris.quine@forestry.gsi.gov.uk
Project website: Assessing and communicating animal disease risks for countryside users www.AD4RD.soton.ac.uk

Useful resources:

Quine, C.P., Barnett, J., Dobson, A.D.M., Marcu, A., Marzano, M., Moseley, D., O'Brien, L., Randolph, S.E., Taylor, J.L. and Uzzell, D. In press. Frameworks for risk communication and disease management: the case of Lyme disease and countryside users. *Philosophical Transactions of the Royal Society B*. 4Es Framework – see Dolan, P., Hallsworth, M., Halpern, D., King, D. & Vlaev, I. 2010 *MINDSPACE: Influencing behaviour through public policy*. London: Institute for Government.

Useful websites:

Health Protection Agency website:
<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Zoonoses/>

