

## **The Application of Modelling in Animal Health Policy**

A course outline for discussion by the QUADs EpiTeam, February 2010

### **1. Introduction**

Over the past decade there has been a notable increase in the magnitude and variety of modelling work in the realm of animal health. Similarly, there has been an increase in the extent to which modelling is used as an instrument in the development of animal health policy; for example, in the preparedness and response to infectious diseases of livestock.

With these rapid developments comes a substantial potential for model output to be misused with respect to its influence on the development of policy. This includes underuse because of scepticism and/or lack of confidence; overuse (or over-reliance) through lack of due validation, appraisal or consideration to other information sources; and a variety of other misuses ultimately attributable to poor communication between policy-makers, technical advisors and modellers.

The EpiTeam perceives a need for greater collaboration and understanding between all people involved in the development and use of models in animal health policy.

### **2. Aims and objectives of the project**

This paper proposes the development of a course that would promote good practice in the application of modelling in animal health policy and enhance the understanding and linkages between all the key players in this field. The aim of the EpiTeam project would be to develop a detailed outline (if not specific course materials) of such a course. The intention would be for the course to be deliverable by each country, but there may also be potential for a multi-country course/workshop in conjunction with an international conference.

### **3. Target audience**

The target audience would include all people with some connection to the creation and use of models. Specifically, this would include:

- Policy-makers—those that pose the policy or scientific questions, commission modelling work and use model outputs in the development of policy
- Intermediaries— those that are responsible for working with modellers and communicating model results to policy-makers; e.g. technical advisors, epidemiologists, subject experts etc
- Modellers

Participants should come from across the policy—technical/advisory—modelling continuum and could be facilitated by those at the interface. A key theme would be

to stress the importance of clear and accurate communication and collaboration between all players.

#### **4. Duration and mode of delivery**

A one-day face-to-face workshop would be appropriate, taking into account the very limited time available to higher-level people. However, it may be possible to include additional components/modules and background as an on-line resource, enabling each country representative to tailor a course for delivery to a particular audience. For example, a course for response advisors (better understanding of modelling) may differ to that presented to modellers (better understanding of policy and model communication).

Modes of delivery have yet to be determined. They may include presentations, scenarios for discussion, etc.

#### **5. Key issues/topics**

The course should aim to promote good practice across the continuum: the policy environment; framing the right question; engaging the modellers; developing and validating the model, interpreting the output; using the model as a component of evidence to inform decision-making and policy development.

- Background/context—what is the need for such a course?
- Introduction to modelling
  - What is a model?
  - Why do we make and use models?
  - Types of models
  - Stage of model development
  - Of what importance are assumptions in modeling?
  - Of what importance are data and knowledge in modeling?
  - Of what importance is simplicity in modeling?
- The application of modelling in animal health—examples
  - Descriptive, explanatory/understanding (If...Then), predictive...
  - Risk analysis, disease models, economic models...etc
  - Overuse, underuse and misuse of models—how and why might this occur? Examples.
- Promoting good practice
  - Formulating the objective—what is the (science or policy) question that the model is supposed to inform?
  - Designing the model—conceptual model, model type, complexity, assumptions
  - Model implementation and evaluation—collaboration, validation, verification, sensitivity analysis, peer-review, documentation etc
  - Application and communication—identifying findings and conclusions with respect to the initial questions.

- Putting it all together—a checklist of issues to address and questions to ask when using models in decision-making.

#### **6. Next steps...**

- EpiTeam to discuss this proposal.
- If the EpiTeam gives in-principle endorsement to the project, discuss in greater detail and establish work plan.