The Royal Veterinary College

Veterinary Epidemiology and Public Health

Surveillance and Investigation of Animal Health

VPM015

STUDY GUIDE

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Contents

Introduction to the Course

Module 1 Risk Analysis

Module 1 Overview

Unit 1 Introduction to Risk Analysis and Risk Assessment

Section 1 Basic concepts of risk analysis and risk assessment 1.4
Section 2 Hazards and hazard identification 1.13
Section 3 Risk assessment methodology 1.17
Section 4 Qualitative risk assessment 1.23
Section 5 Quantitative risk assessment 1.28
Summary 1.32
References 1.33

Unit 2 Probability and Statistics in QRA Modelling

Section 1 Probabilistic QRA modelling 2.4
Section 2 Probability distributions: notation and properties 2.10
Section 3 Important statistical measures 2.17
Section 4 Probability distributions used in QRA modelling 2.22
Section 5 Important probability rules and Venn diagrams 2.29
Section 6 Deriving the probability distribution 2.32
Section 7 Quantifying uncertainty about model parameters 2.38
Summary 2.43
References 2.43

Unit 3 Practical Quantitative Risk Assessment

Section 1 Building a QRA model on paper 3.4
Section 2 Monte-Carlo simulation 3.9
Section 3 Introduction to @RISK 3.11
Section 4 Using @RISK in practice 3.20
Summary 3.30
References 3.30

Module 2 Herd Health Surveillance and Management

Module 2 Overview

Unit 4 Design and Evaluation of Animal Health Surveillance Systems

Section 1 Surveillance in animal health 4.4
Section 2 Designing a surveillance system 4.13
Section 3 Evaluation of surveillance systems 4.46
Summary 4.56
References 4.57

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Unit 5 Disease Control Methods Involving Multiple Herds

Section 1 Principles of disease control 5.4
Section 2 Components of a disease control programme 5.13
Section 3 Selecting a control strategy 5.28
Section 4 Implementing and evaluating a disease control programme 5.35
Section 5 Outbreak investigation 5.44
Section 6 Animal disease emergency plans and contingency planning 5.52
Summary 5.60
References 5.61

Unit 6 Farm-level Animal Disease and Production Surveillance

Section 1 Description of herd health programmes 6.4
Section 2 The principles of herd health programmes 6.10
Section 3 Examples of herd health schemes 6.20
Summary 6.37
References 6.38

Unit 7 Computers in Herd Health Management

Section 1 Record systems to support decision making 7.5
Section 2 Computerized record keeping 7.12
Section 3 Use of computerized records in herd investigation 7.17
Section 4 Computer models 7.34
Summary 7.46
References 7.47

Module 3 Introduction to Data Management and Simulation Modelling

Module 3 Overview

Unit 8 Introduction to Database Management

Section 1 Information, data and databases 8.4
Section 2 Using spreadsheet software for data management 8.10
Section 3 Database structure and queries 8.24
Section 4 Database programming 8.39
Section 5 Choosing between data management tools 8.52
Summary 8.53
References 8.53

Unit 9 Basic Concepts of Disease Modelling

Section 1 The purpose and scope of modelling in epidemiology 9.4
Section 2 Modelling disease processes in populations 9.13
Section 3 Increasing the realism of models 9.30
Section 4 Use of models in development of disease control policy 9.39
Summary 9.43
References 9.44

Tutor-marked assignments

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Surveillance and Investigation
of Animal Health

Introduction to the Course

Welcome to the course

Welcome to *Surveillance and Investigation of Animal Health*. This is an optional course in the Veterinary Epidemiology and Public Health programme of the Royal Veterinary College.

The treatment and prevention of problems in animal health and production require an understanding of the impact of risk factors. In addition, it is necessary to monitor disease occurrence and animal productivity using surveillance and monitoring systems. This activity will provide the baseline data about what is normal, and will also help in detecting disease outbreaks and the emergence of new diseases. Data can be analysed at different levels of aggregation, from farm to national or even international level. Farmers will be particularly interested in livestock production performance as well as disease and welfare, whereas the emphasis for regulatory authorities will usually be disease and welfare. Since any data collection is very costly, it needs to be used strategically, which is where methods such as risk analysis and simulation modelling come in. Owing to the large amounts of information generated by surveillance and monitoring systems, efficient use of these systems requires an understanding of the basic concepts in database design and data manipulation.

This course will provide you with an overview of the different methods suitable for designing surveillance programmes as well as the tools that can be used to assist decision making in relation to control and prevention. During the course, we will cover the topic of risk analysis which has now become a standard component of policy development in animal health. The concepts of disease surveillance at national and farm level will be examined in some detail. The use of computer technology has become an important feature of animal health management: as you work through the course you will have an opportunity to use software packages designed especially for this purpose. Database development and use for simple analyses will be introduced and you will then explore the basic principles of simulation modelling for optimizing disease control strategies.

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What will you learn from this course?

By the end of this course you should be able to:

- describe the methods involved in risk analysis of animal health problems
- explain the components of disease surveillance and control at regional and farm level
- discuss the use of farm-level health and production information systems
- describe selected approaches to database design and data manipulation
- outline how simulation modelling can be used as part of policy development in animal health.

Course structure

The course consists of nine units of study, all of which you should complete. They make up the following three modules.

Module 1 *Risk Analysis*

In this module (Units 1–3) risk analysis is introduced, with a particular emphasis on its use for trade policy decisions. It begins with a thorough discussion of the generic framework underlying this methodology. Both qualitative and quantitative risk assessment methods are presented in some detail, and models are developed actively using @RISK computer software. An introduction to probability theory is included as it is required in the design of quantitative risk assessment models.

Module 2 *Herd Health Surveillance and Management*

The second module (Units 4–7) covers various aspects of design and implementation of regional and farm-level production and disease surveillance programmes. It includes the specific requirements for dealing with epidemic, exotic and emerging disease problems. The methods and the necessary infrastructure are discussed, and control strategies for handling disease outbreaks are introduced. This module also provides background on the use of farm-level herd health and production programmes. The use of computers to enhance the efficiency of herd health management is illustrated using CamDairy software.

Module 3 *Introduction to Data Management and Simulation Modelling*

The third module (Units 8 and 9) provides an introduction to database design and related methods for more effective manipulation of data collected as part of surveillance or research activities. The basic principles of simulation modelling as a tool in animal health decision making are then introduced.

Tutor-marked assignments

In addition to your work on the nine units, you are required to complete and submit at least one tutor-marked assignment (TMA) for assessment. If you submit more than one – and you may submit up to three – your best TMA will be used in the calculation of your final mark. Full information on how to approach and submit TMAs is provided in your *Student Handbook* and in the assignments themselves. You should bear in mind that your TMA will count for 20% of your final mark for the course.

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Study time

The entire course, including revision and examination, is designed to take approximately 240 hours to complete. This is made up of approximately 20 hours' study time for each unit, 10–20 hours for the TMA(s) and the remaining time for personal study and revision.

You may find that some units will take you more or less time than estimated, depending on your familiarity with the subject.

Assessment

Your work for this course will be assessed by means of a 3-hour unseen written examination paper which will take the form of essay questions. In addition, you must submit at least one and up to three TMAs. There are TMA submission deadlines for each module and for details please refer to your *Student Handbook*.

The grade awarded will be based on the mark obtained in the written examination (80%) and on the mark for the compulsory assignment (20%).

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