

MC1001: REVIEW OF HISTORIC ANTE MORTEM AND POST MORTEM INSPECTION DATA

A report of work conducted in project MC1001 in 2010
(VLA project code FS245001)

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DOCUMENT HISTORY

Version	Date	Comments
1.0 Working report	29/10/2010	Working report for first review. All recommendations are provisional.
2.0 Final report	24/12/2010	Final report.
2.1 Final report	02/02/2011	Final report following FSA review and minor revision.
2.2 Final report	13/05/2011	Link to full data reports in Annex C added and correction to project coding (MC1001).



¹ CERA 4

² CERA 3

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¹ As at 13/05/2011, the full set of data reports presented in Annex C are available from this link: http://vla.defra.gov.uk/reports/rep_rev_ampm_data.htm. Please note that this link may be subject to change in the future. If this occurs then a revised report with an updated link will be provided.

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EXECUTIVE SUMMARY

This report reviews the data that are collected during ante mortem and post mortem inspection at abattoirs in Great Britain. During the course of this work we visited abattoirs to understand how the data are collected and visited FSA York offices to understand how the information is managed. We were provided with a data extract to help us to further explore the data.

Integral to this, we reviewed the list of conditions that were being used at ante mortem and post mortem inspection. This was done with the assistance of stakeholders.

From these components we were able to draw together observations on data quality, identify where there were gaps in the data and explore opportunities for use of the data.

At the outset, we would like to recognise the efforts that go into the collection of the data. The requirement for data recording at the abattoir is well embedded in the inspection procedure. It is also important to note that at the time of this review data systems were in a transitional state, with the recent introduction of a new Next Generation AM/PM system to manage data from pigs and poultry.

Currently, the accuracy of data is compromised through variation in the recording of conditions at the animal level and the expression of a clear denominator. There is also the need for an administrative layer to remove complexity and check for consistency before data can be used more widely. It is recognised that many of the issues we identify in this report are in the process of being addressed as the Next Generation AM/PM system extends to cover cattle and sheep.

We have made recommendations that we feel are practical and constructive with the objective of gaining maximum value from the data. A full discussion with recommendations is given in Section 5, but in short, we make the following recommendations:

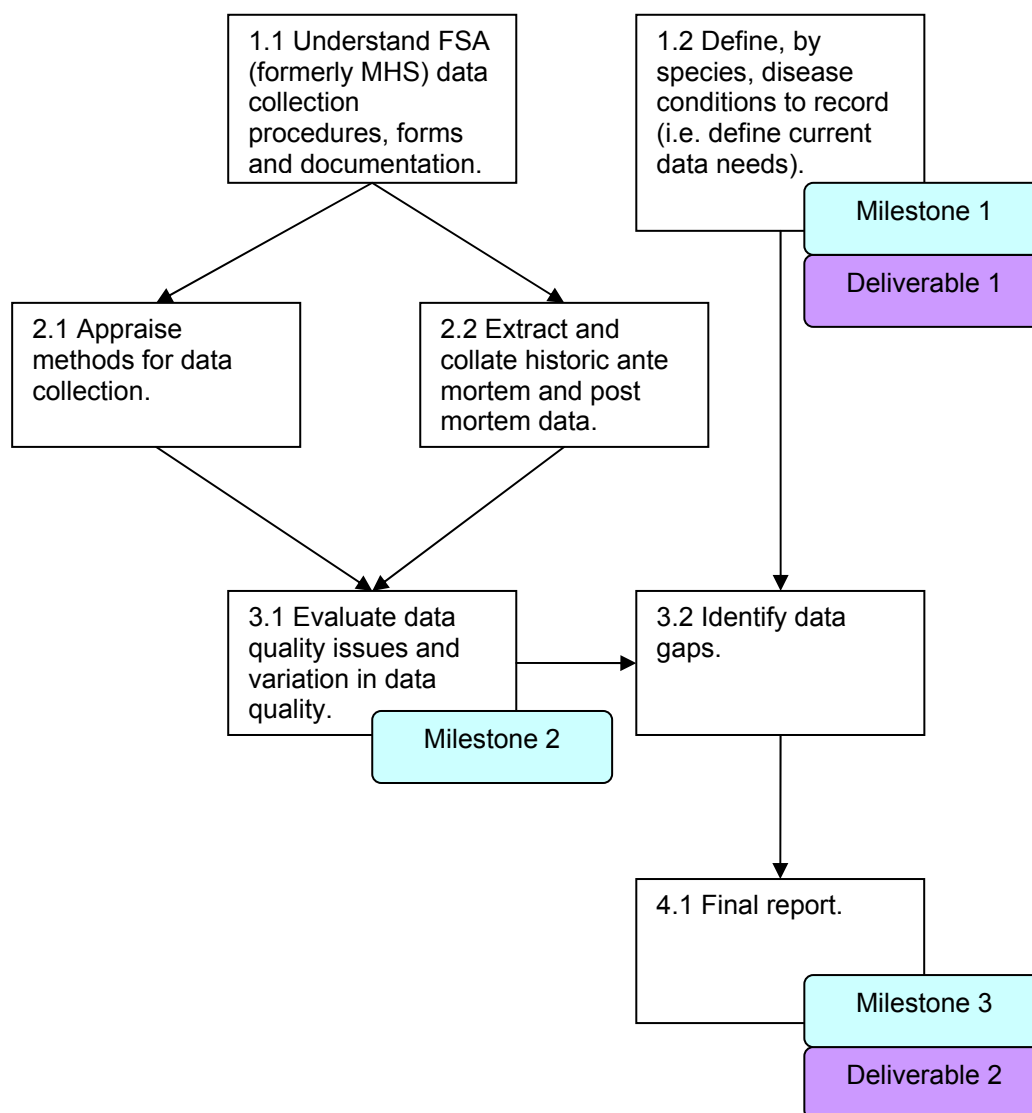
- FSA should actively promote the availability of ante mortem and post mortem inspection data.
- The list of conditions must be reviewed regularly to ensure it is workable. The matrix of conditions and body parts, where appropriate, must be as concise as possible.
- It is important to define the working process to add clarity for the recording of data for each species.
- The data need to be described in a way that points out any limitations.
- CCIR data should be promoted and developed across all the livestock sectors.
- There needs to be a clear program for the longer term development of data systems management.

Finally, during the course of this work it has become apparent that there are many stakeholders with an active interest in this data. There are considerable opportunities for FSA to engage with stakeholders and develop the contribution this data can make to protecting animal health – both at the farm level and to complement national disease surveillance.

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SECTION 1: BACKGROUND**Outline of the study**

- 1.1. This report is the deliverable from the work undertaken in project MC1001. The scope of the work was to; review the recording of conditions at ante and post mortem inspection, to assess the fitness for purpose of these data, and to provide recommendations as appropriate. A schematic of the project is shown in Figure 1.1.

Figure 1.1 Schematic outline of the study

- 1.2. The report does not include a comprehensive literature review of the subject, but where appropriate, references to previously published work have been used to illustrate key points.
- 1.3. Work began in March 2010 and was completed in December 2010. Progress summary reports were provided during the course of the work. The key time points are summarised in Table 1.1.

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Table 1.1 Summary of study progress

Date	Actions
March 2010	Contract documents completed. Request FSA assistance for abattoir visits and data extract. Copies of forms provided and list of conditions extracted.
May 2010	Expert review of conditions in progress. Liaise with FSA to provide historic data extract.
July 2010	Visits to seven abattoirs completed. Expert review of conditions in progress. Attend BPEX health information workshop re: pig conditions. Attend FSA FCI/CCIR cattle and sheep stakeholder meeting. Data extract received from FSA. Review of data quality in progress.
October 2010	Visit to FSA York for revised dataset. Working report in preparation, to include: review of conditions, revised conditions list, appraisal of historic data, listing of data quality issues and provisional recommendations. Working report submitted 29/10/10.
November 2010	Working report presentation to FSA for discussion and review.
December 2010	Visit to FSA York for review of working report. Final report completed following FSA feedback on working report and CVI, Wageningen consultancy.

Abattoirs in Great Britain

- 1.4. There are many abattoirs in operation in Great Britain (GB). Table 1.2 gives a breakdown of abattoirs in GB. It is important to note that many abattoirs will kill more than one species and therefore may be counted more than once.

Table 1.2 Number of abattoirs in GB (July 2010)²

		England	Scotland	Wales	GB
Ungulates	Cattle	183	28	23	234
	Goats	135	21	18	174
	Sheep	180	30	25	235
	Pigs	131	25	16	172
	Other farmed mammals; deer, wild boar, bison	99	26	5	130
Poultry	Poultry	75	7 ^a	4	86
Small Game	Wild birds	42	12	-	54
	Wild lagomorphs	43	10	-	53
Large Game	Wild ungulates ^b	40	19	1	60
TOTAL abattoirs^b		383	65	32	480

^a Two are "on farm slaughter" facilities

^b Many abattoirs will handle than one species.

- 1.5. There is variation in how abattoirs collate data, but generally daily totals are collated locally before being sent weekly to FSA York. Traditionally this has taken the format of paper records being posted and manually entered onto the database at FSA York. With the phased introduction of the new Next Generation AM/PM system, data recording and transfer of totals will be done daily and electronically in eligible plants.

² Data for this table has been derived from:
<http://www.food.gov.uk/foodindustry/meat/meatplantsprems/meatpremlicence>

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FSA regions

- 1.6. There are 12 defined FSA business areas and 37 sub-business areas covering GB. These business areas or sub-business areas are not directly comparable with Nomenclature of Units for Territorial Statistics (NUTS). However postal code reference for each abattoir can be used to allocate NUTS region(s).
- 1.7. One point to note is that the abattoir postal code is the final destination of the animal and does not refer to the last premise the animal was kept.

List of conditions

- 1.8. The list of conditions has evolved from the early days of meat inspection, through the introduction of a computerised recording system in 2006, to the current listings used today. The most recent and significant development in the listing of conditions follows the implementation of Food Chain Information (FCI) and with it the Collection and Communication of Inspection Results (CCIR). FCI refers to information that might affect the process in the abattoir (for example, medicine withdrawal periods) and the producer must make this information available to the Food Business Operator (FBO). CCIR refers to the data on conditions recorded during abattoir inspection and must be reported to the producer. This is in response to EU regulations; 853/2004 (FCI) and 854/2004 (CCIR), which came into force on 1 January 2006. A short history of meat inspection in GB is summarised in Annex F.
- 1.9. In GB, implementation is a phased process, during which time the FSA, formerly Meat Hygiene Service (MHS) has worked with the industry and other stakeholders to develop new condition headings under which the inspection results will be recorded. Critically this has two aims³;
 - "...gathering information and reporting it in a form which will be of maximum benefit for all – slaughterhouse operators, pig producers and their vets", and
 - "...better methods of recording inspection results will permit improved analysis for disease surveillance purposes."

Data management

- 1.10. Historically data collection and reporting has been paper based, with records being transferred into a central database. This is still largely the case for non pig and poultry species. For the purposes of this report, **the paper based working process will be referred to as the 'AM/PM system'**. In practice, CCIR for the FBO and producer has been available for all species since 2006 using these paper based reports.
- 1.11. However, **to make the process of handling FCI and CCIR more efficient there has been a requirement for an additional Information Technology (IT) system**. The response to this has been the introduction of a new Next Generation AM/PM system. We understand that the Next Generation AM/PM

³ <http://www.food.gov.uk/multimedia/pdfs/fcipigletterscot071113.pdf>

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system was built to a detailed specification provided by FSA using a commercial IT application. Further details of the application are available directly from Rosie Ripley, IT department, FSA (personal communication).

- 1.12. Currently the provision of FCI and CCIR electronically is in place for pigs and poultry, with planned introduction for cattle and sheep during 20011-12 (Table 1.3). For the purposes of this report, **the 'Next Generation AM/PM system' will be used to refer to the electronic working process.**

Table 1.3 The phased introduction of the Next Generation AM/PM system for FCI and CCIR

Species	Date of implementation	Notes
Cattle	Not implemented	Planned 2011
Calves	Not implemented	Planned 2011
Sheep	Not implemented	Planned 2012
Goats	Not implemented	Planned 2012
Pigs	August 2010	From 25/10/2010 all plants in GB are using the Next Generation AM/PM system.
Poultry	July 2010	From 25/07/2010 all plants in GB are using the Next Generation AM/PM system.
Small Game	Not defined.	The introduction of the Next Generation AM/PM system is dependent on approved funding.
Large Game (includes farmed deer)	Not defined.	The introduction of the Next Generation AM/PM system is dependent on approved funding.

- 1.13. The AM/PM system works on paper based forms. There are **multiple forms in use to record conditions**. These are summarised in Table 1.4.

Table 1.4 Summary of forms for recording data

Species	Ante mortem: daily	Ante mortem: weekly	Post mortem: daily	Post mortem: weekly
Cattle	AMI 2/5	AMI 2/6	PMI 4/1	PMI 4/9
Calves	AMI 2/5	AMI 2/6	PMI 4/1	PMI 4/9
Sheep	AMI 2/5	AMI 2/6	PMI 4/6	PMI 4/9
Goats	AMI 2/5	AMI 2/6	PMI 4/3	PMI 4/9
Pigs (& wild boar)	CIR 12/2		PMI 4/5 CIR 12/2	
Avian (broilers, hens, turkeys, geese, ducks, guinea fowl and quail)	AMI 2/4	AMI 2/4	CIR 12/1	PMI 4/10
Farmed deer	AMI 2/5	AMI 2/6	PMI 4/2	PMI 4/9
Large wild game (deer)	-	-	-	PMI 4/12
Small wild game (pheasant/grouse/partridge, pigeon, duck/snipe/other, rabbit/hare)	-	-	-	PMI 4/12

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SECTION 2: REVIEW OF DATA QUALITY**Methodology**

2.1 The review of data quality was based on:

- Semi-structured interviews during abattoir visits,
- Understanding data management at FSA York,
- Examination of a sample dataset, and
- Knowledge from reviewer participation at workshops.

Abattoir visits

2.2 **Seven abattoirs were visited** and these are summarised in Table 2.1. During abattoir visits the reviewers were able to hold discussions with Senior/Meat Hygiene Inspectors (S/MHIs), Official Veterinarians (OVs) and plant staff. Discussions were informal, using a semi-structured approach with a series of questions. Questions were related to:

- Appraisal of local procedures (throughput, data collection and recording),
- Data quality issues (recording accuracy, variation within and between plants and audit/verification procedures),
- Rationale and motivation to record (current or amended list of conditions), and
- Suggestions for changes in procedures to enhance accurate and complete data recording.

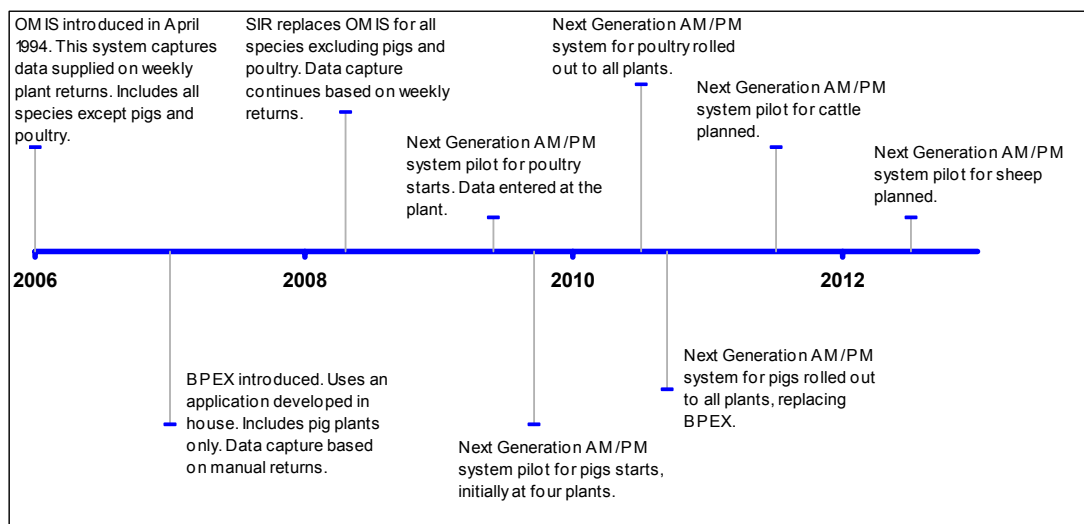
Table 2.1 Summary of abattoir visits

#	Plant	Category	Date visited	Throughput (estimated)	Number of MHIs on line	Data recording
1	ABP Guildford (Surrey)	Cattle only Medium throughput	18/6/10 EW, EM, JW	Cattle 150/d (including 6 calves/week)	5	Whiteboard to local paper form to FSA form.
2	Southern Traditional Meats (Sussex)	Red meat Low throughput	21/6/10 EW, EM, JW	Cattle 10-20/week Pigs 70/wk Sheep 350/wk	1	Paper note (post-it or paper sheet) to FSA forms. To Next Generation AM/PM system for pigs.
3	Beesons Crewe (Cheshire)	Cattle only, incl. dairy cattle (OTM) and TB reactors Medium throughput	24/6/10 EW	Cattle 200/week	5	Whiteboard to local paper form to FSA form.
4	Moy Park Ashbourne (Derbyshire)	White meat (poultry) High throughput	25/6/10 EW	Broilers 580,000/week	2	Local procedures with clickers, white boards and paper forms.
5	Dalehead Foods Spalding (Lincolnshire)	Pig only (finishing pigs <6 months only) High throughput	30/06/10 EW	Pigs 12,500/week	5	Laminated forms to Next Generation AM/PM system.
6	2 Sisters Food Group Scunthorpe (Lincolnshire)	Poultry High throughput	01/07/10 EW	Broilers c. 1.7m/week	6	Local procedures with clickers, paper forms to Next Generation AM/PM system.
7	Vicars Newbury (Berkshire)	Game Cutting plant	06/07/10 EM	Varies with season and type of animals.	1	Day book

Understanding data management

- 2.3 **Ante mortem and post mortem inspection data are managed by FSA in York.** Staff have expertise in data systems and in the daily use of the data warehouse.
- 2.4 In simple terms, **data are in a transitional stage from the old to Next Generation AM/PM system.** This means that current and historic data for pigs and poultry are kept across the old and Next Generation AM/PM systems, and that for other species this transitional stage will follow over the next few years. This is relatively straightforward in terms of recording conditions identified at ante mortem and post mortem inspection; allowing for counts of conditions to be retrieved. Figure 2.1 provides a summary of the database chronology.

Figure 2.1 Summary of FSA data collection systems from 2006.



- 2.5 To ensure correct information is relayed, we sought the input from FSA York for the following **description for the implementation of the Next Generation AM/PM system.**
- “Moving forward the FSA have purchased software licences to roll out the new AM and PM data collection and reporting application to all abattoirs across GB. The strategy is to systematically decommission the AM/PM system species by species - the Cattle project has already been started. During the roll out of new species specific bespoke batch screens will be specified by the project team this can be for batches or for individual animals depending on what is appropriate. These screens are then created taking into account lessons learned from the pig and poultry projects and where possible improvements will be made across all species e.g. improved front end validation for instance linking producers to species to validate the producer selection. Inspection screens will then be linked to the batch screens which are fully customisable ensuring that the FSA have full control over conditions and body parts and changes can be made to these internally. During the decommissioning process the*

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archive data e.g. from AM/PM and OMIS will be extracted, transformed and loaded into a data warehouse ensuring consistent reporting across systems.” (Howard Betts, FSA York, personal communication).

- 2.6 Again, in short, there are **three relevant datasets in use; the Next Generation AM/PM system, the AM/PM system and throughput**. These three datasets are the cornerstone of any reports making use of the ante mortem and post mortem inspection data. Table 2.2 provides a summary of data management systems. One point of note is that the recording of throughput data (i.e. the numbers of animals presented at each abattoir) is now recorded in the Next Generation AM/PM system.

Table 2.2 Summary of the AM/PM system, Next Generation AM/PM system and throughput database.

System	Species	Database(s)	Comment
AM/PM	Cattle, small ruminant and game species	‘OMIS’ (prior to May 2008) ‘AM/PM’ (from May 2008). The AM/PM system stores data in the ‘SIR’ – Single Information Repository.	100’s of paper forms per week. Paper forms sent by fax, email or post from the plants and received by FSA York for manual input into database.
Next Generation AM/PM	Pigs and poultry	‘Next Generation AM/PM’	Data are entered electronically directly at the abattoir. Includes data on the number of animals presented for slaughter.
Throughput	All	‘Throughput’	Throughput (based on livestock units) is independent, but linked with the AM/PM system.

- 2.7 Subject to available funding, it is planned that data from all species, including lesser species such as game, will be managed through the Next Generation AM/PM system. However it is important to note that there may well be **continued reliance on both the old and Next Generation AM/PM systems for some time beyond 2012**.
- 2.8 Whilst a full review of IT systems is beyond the scope of this report, **we are assured that a long term strategic approach is in place to establish the Next Generation AM/PM system for the recording of inspection data across all species**.

Overview of sample dataset

- 2.9 **The data extract provided to us has proved to be complex**. This is due to the nature of the datasets, which when merged; add a layer of complexity and inconsistency. Primarily, this is due to the evolution of each system to hold different information.
- 2.10 It was anticipated that it would be relatively straightforward to request and receive a data extract for conditions and throughput, against each species, to cover the last five years. In practice, the data extract received was compromised by reportedly insufficient time resource to better formulate the extract to meet our requirement. That is, the **data would have gone through**

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- an administrative filter to remove complexity and check for consistency.** The need to do this supports the observation that the extraction of data from multiple systems is complex.
- 2.11 It is recognised that **looking forwards, with the adoption of the Next Generation AM/PM system, the FSA expect to have an improved data warehouse** that is more suitable to provide assured data extracts.
- 2.12 Annex B summarises the different databases and the data extract used for this report. We were able to construct new universes from the data extract which enabled us to develop our own data queries and outputs.
- 2.13 A list of our reports from the data extract, with descriptions and example outputs, are shown in Annex C.
- 2.14 **The frequency of observations recorded varies by species and between ante mortem and post mortem inspection.** It is not possible to simply define the proportion of animals that are identified as having a condition recorded. This is because **multiple conditions or the multiple occurrence of a condition may be recorded to a single animal** – with variation depending on species. For example, if a pig has one abscess on a hind leg and one on its shoulder, abscess will be recorded twice. Similarly if two pigs each have one abscess, they will also be recorded twice. For a producer stakeholder knowing multiple counts of a condition may be important, and for the FBO may provide justification for total or partial carcase rejection. However, for surveillance purposes, where incidence of a condition is a more useful measure, recording the multiple occurrence of a condition on a single animal can present problems for data analysis.
- 2.15 **The frequency of recording ante mortem conditions is lower than post mortem conditions.** This was consistent across the main species and was expected, given the nature of post mortem inspection compared to ante mortem.
- 2.16 **There are no ante mortem conditions for wild game species.** This is because game plants receive carcasses only. There are fewer post mortem conditions as generally the hunters will examine and remove the viscera. Only in the rare instance where there is an obvious abnormality will the viscera be presented with the carcase for inspection.
- 2.17 Table 2.3 presents the number of conditions recorded at ante mortem and post mortem inspection. **Around a third of the conditions accounted for 95% of all observations.** This was expected; common conditions are common. It does however highlight the conflict between a succinct list of conditions to record common conditions only, and a comprehensive list recording more conditions, which is potentially of greater value across multiple stakeholders. In practice, this is where the need to record for stakeholder requirement has to be matched to working systems and reasonable expectation of what is achievable across abattoirs.

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Table 2.3 Summary of throughput, count of observations recorded and number of conditions contributing to 80, 90 and 95% of all observations. Data for all species, except pigs covers a two year period (01/07/08-30/06/10). Data for pigs covers a one year period (01/09/09-30/08/10).

Species	No. of conditions–incl. 'other'–listed on forms (recorded on dataset)		Total conditions incidents [NB Not animal level - more than one condition may be recorded for the same animal]							
	Ante mortem	Post mortem	Ante mortem				Post mortem			
			Count of obs.	Of all observations, No. of conditions contributing to:			Count of obs.	Of all observations, No. of conditions contributing to:		
				80%	90%	95%		80%	90%	95%
Calves	27	28	1,698	7	10	14	13,755	4	7	10
Cattle	27 (37)	41 (46)	89,610	10	13	14	2,531,382	5	7	10
Sheep	27 (35)	29 (37)	447,935	5	8	12	10,910,973	5	8	11
Goats	27 (33)	29	2,218	7	11	14	114,544	6	8	11
Pigs	35 (31)	47 (40)	35,730	5	7	10	1,714,865	6	9	12
Broilers		21 (21)					13,294,351	9	12	15
Ducks		21 (21)					347,460	7	10	13
Geese		21 (14)					307	6	8	10
Hens		21 (21)					1,114,769	7	9	11
Turkeys		21 (21)					133,909	7	8	10
Large wild game	-	27	-	-	-	-	NA	NA	NA	NA
Small wild game	-	28 (20)	-	-	-	-	223,001	4	5	6

Observations on data quality

- 2.18 We have tried to present our observations in an order that broadly follows the steps from stakeholder requirement, through collection and management, to stakeholder reporting.
- 2.19 **Data for GB are available in a central warehouse and available electronically.** This is a significant achievement and as such places FSA in an enviable position of having full GB representation. Whilst this may seem to be taken for granted, it is not the position in The Netherlands, where there is no central recording of data on a national scale (Swanenburg M, Central Veterinary Institute, NL, personal communication).
- 2.20 **The data are potentially very valuable to a range of stakeholders.** Data may be used to provide simple baseline information for endemic disease, welfare (on-farm or in transport), zoonoses and exotic/notifiable disease. Data may equally be useful in demonstrating the absence of specific conditions. The data are of most use when set against a denominator. For example, 1% of 2.2 million sheep presented "lame".
- 2.21 **The notion of recording for disease surveillance purposes is established for poultry.** "The farmer may use this information to improve the health status of his stock. Defra will use the data for disease surveillance therefore the accuracy of the information is vital⁴." It is a requirement of the legislation to provide information to producers (CCIR), however not all

⁴ Manual for Official Controls, Chapter 2.1: FCI and CCIR Amendment 36, Section 3-1

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producers are interested in the results, for example producers were not interested in the results from cull ewes⁵.

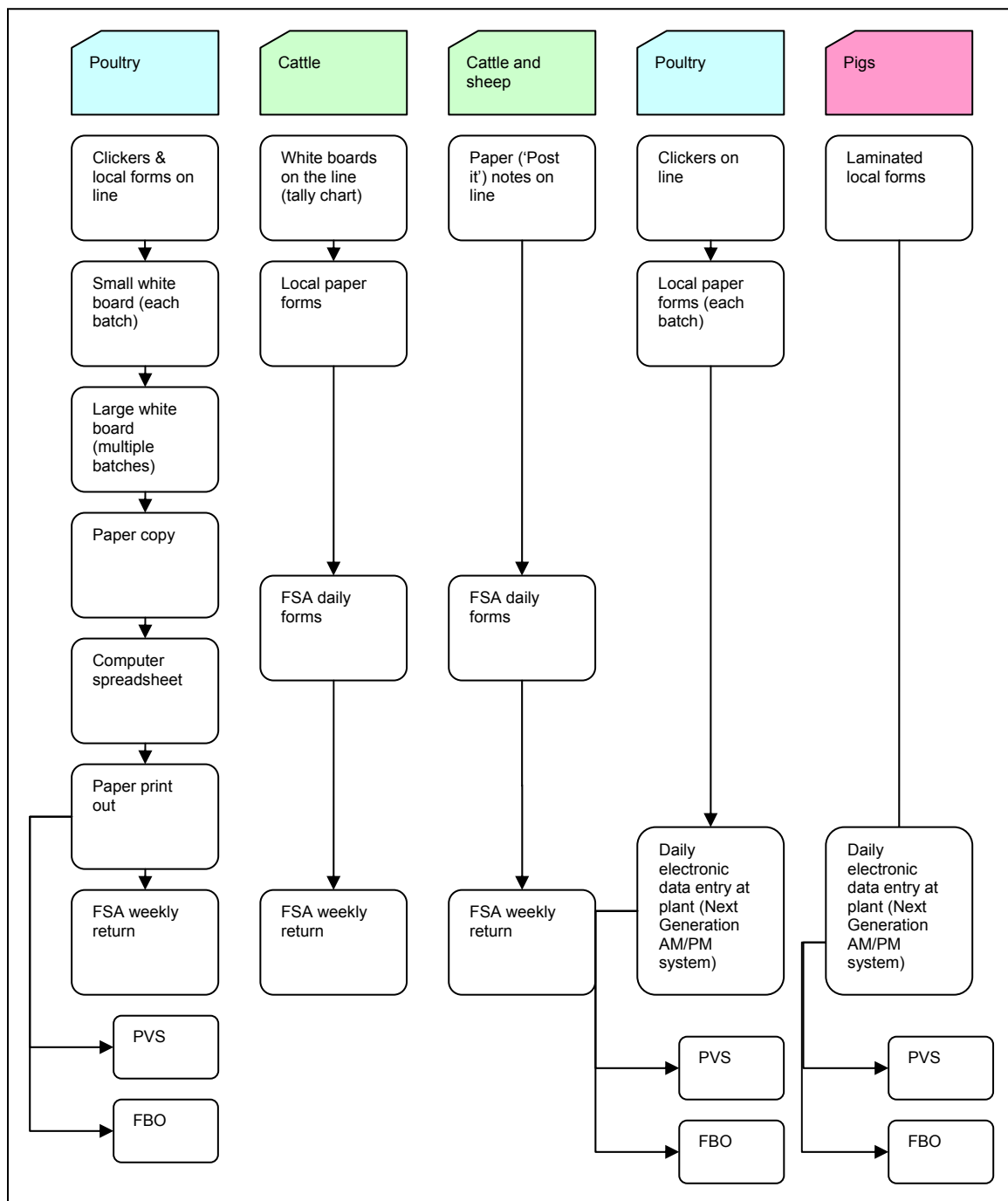
- 2.22 **Meat Hygiene Inspectors (MHI) and Official Veterinarians (OV) were largely unaware of the potential value of the data with regard to GB surveillance** and how it could potentially complement existing scanning surveillance. There was a variable response as to how MHIs saw their role; from “to protect the food chain, not surveillance for disease” and “don’t know why record – to whose advantage” to “interested to contribute to surveillance” and “identify where your bit fits into the bigger picture”.
- 2.23 **MHIs and OVs receive little or no feedback on the trends of conditions recorded.** This is unfortunate as potentially this is of great interest, either at a local plant level or as part of a wider regional or national level. Some plants reviewed local records but these were mainly for the FBO to assess plant working practice and costs with regard to levels of carcass contamination. One Lead Veterinarian (LV) commented that “feedback would be a stimulus to record”. We identified three routes of feedback of data currently available;
- As an article in ‘**Tech Files**’. Tech Files is a monthly newsletter produced by FSA York staff. It contains news items of current interest and includes information on conditions as appropriate.
 - Through ‘**disease cards**’. Disease cards are an in-house information note on selected conditions across selected species, primarily poultry and pigs. As an example on the use of condition data the current (at July 2010) disease card for pododermatitis describes “the average level of rejection for pododermatitis in poultry GB 2007 = 0.05%”. This is limited information and out of date.
 - Through the ‘**broiler condition report**’ that is an output from the Next Generation AM/PM system and presents a batch summary of conditions for broilers where selected conditions exceed a threshold.
- 2.24 Late in the course of this work we identified that there are **scheduled formatted reports available from FSA York** that describe frequency of conditions, by species and plant (similar to report 5 in Annex C that we created from the data extract). It would be favourable to make these reports available to MHIs and OVs. Ideally there would be the means to have a simple ‘query tool’ to facilitate local custom reports. We have not determined further how this could be implemented or the feasibility of access by all abattoirs.
- 2.25 **The recording of condition data is a statutory requirement and the principles are firmly embedded in day to day working.** The process for recording data varies between plants. This is understandable as it is a procedure that has to integrate with the practicalities of the plant. To ensure that the paperwork was kept clean, many opted to transcribe information away from the line. It was not practical to record data on the form directly on the line. At each plant visited different local procedures were in place; however the end point was the same with records being collated.

⁵ Point 8.5 from minutes of Meeting on food chain information (FCI) and collection and communication of inspection results (CCIR) for cattle and sheep, 08/07/2010, FSA, Aviation House.

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- 2.26 **It is a requirement that the FBO facilitates adequate inspection and recording points for MHIs.** MHI can intervene and control line speed to ensure adequate time to inspect and record as required.
- 2.27 The line speed influences capability to record. **In general terms, it is harder to record accurately the faster the throughput** (see examples below). Line speeds vary tremendously between plants and species. High throughput poultry plants may work at 1 bird/0.8 seconds and high throughput pig plants may work at 1 pig/8 seconds.
- At one plant, it was estimated that at the current line speed of 30 cattle per hour, 99% of conditions were recorded, whereas in the same plant when the line ran at 60 cattle per hour, around 50% of conditions were recorded.
 - At one cattle plant where the line speed was considered to be slow enough to record easily, then it was suggested that recording was “not 100%, but pretty good”.
 - At one plant it was suggested that 80-90% of conditions are recorded, although may be less if there is a batch of pigs with a lot of pathology.
 - In one poultry plant it was estimated that recording was “pretty accurate”, with 80-90% of conditions being recorded. It was thought that if the recording of conditions was wildly inaccurate then this would be picked up as contentious by the FBO, producer or PVS.
- 2.28 It was acknowledged that there **may be some loss of recording on high speed poultry lines during MHI staff changeovers** (c. every 30 minutes).
- 2.29 Crucially, **it is important to note that the majority of data comes from fast inspection lines.**
- 2.30 **MHIs enforce meat inspection of every carcase and viscera.** This means under-recording is as a consequence of procedures rather than any selection bias.
- 2.31 **All inspection staff (MHIs, OVs and Poultry Inspection Assistants) have completed appropriate training in the identification and recording of lesions.** This includes classroom based modules, for example, on animal welfare, microbiology and safety, as well as working on the line under supervision of an experienced MHI or OV.
- 2.32 **There is considerable effort that goes into the recording process.** We wish to acknowledge the efforts of OVs, and MHIs in collecting data in what is generally a difficult working environment.
- 2.33 **There is variation in the data collection process.** The more processes involved the greater the potential for transcription errors. Figure 2.2 is a schematic of different recording procedures.

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Figure 2.2 Examples of local recording procedures for post mortem conditions

- 2.34 Some poultry plants use Poultry Inspection Assistants (PIA). These inspectors are plant staff (non FSA) that are trained to carry out inspection procedures under supervision. Some plants have a 'hybrid system' of both MHIs and PIAs. Provisional analysis of data (raw data provided by FSA London) shows **there is variation in the recording of conditions at PIA and PIA hybrid plants compared to non-PIA plants**. The variation is not consistently in the same direction. For example, for 'respiratory disease', recording is lower in PIA and hybrid PIA plants than non-PIA plants. Conversely, some conditions, for example 'salpingitis', were recorded more frequently in PIA plants than in non-PIA plants. The data have not been fully

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explored to evaluate any confounding factors such as unusually poor batch(es) of birds being seen at an individual plant.

- 2.35 Table 2.4 provides a provisional analysis of the data for non-PIA, PIA and PIA hybrid plants. It is difficult to draw a firm conclusion from this brief analysis; however it does **support the requirement to have firm criteria to define each condition to endeavour to have consistent recording across different plants and inspectors.**

Table 2.4 Comparison of conditions recorded at PIA and PIA hybrid plants compared to non-PIA plants showing odds ratio (OR), 95% confidence intervals (CI95%) and P value. To help with interpretation, ORs < 0.5 or > 2.0 (i.e. half or twice as likely to occur compared to non-PIA plants) have been represented with ↓↓ or ↑↑ respectively.

Conditions where the frequency of recording is:	Throughput	Non-PIA plants (N=29)	PIA plants (N=29)	PIA hybrid plants (N=3)	PIA				PIA hybrid			
		38980264	17374728	12351862	OR	CI 95%	P	Direction change to Non-PIA plants	OR	CI 95%	P	
lower in PIA and PIA hybrid plants compared to Non-PIA plants.	Conditions											
	Respiratory disease (air sacculitis)	4843	21	322	0.01	0.01;0.02	>0.005	↓↓	↓↓	0.21	0.19;0.24	>0.005
	Dermatitis	12728	1896	427	0.33	0.32;0.35	>0.005	↓↓	↓↓	0.11	0.09;0.12	>0.005
	Machine Damage	225535	36965	33495	0.37	0.36;0.37	>0.005	↓↓	↓↓	0.47	0.46;0.47	>0.005
	Cellulitis	57578	13036	4093	0.51	0.50;0.52	>0.005	↓↓	↓↓	0.22	0.22;0.23	>0.005
	Contamination	36310	8224	8536	0.51	0.50;0.52	>0.005	↓	↓	0.74	0.73;0.76	>0.005
	Joint Lesions	6612	1700	85	0.58	0.55;0.61	>0.005	↓	↓	0.04	0.03;0.05	>0.005
	Perihepatitis/peritonitis	25712	8178	6121	0.71	0.70;0.73	>0.005	↓	↓	0.75	0.73;0.77	>0.005
	Antemortem rejects (cull/ runts)	8773	2900	220	0.74	0.71;0.77	>0.005	↓	↓	0.08	0.07;0.09	>0.005
	Tumours/nodules	7446	2509	343	0.76	0.72;0.79	>0.005	↓	↓	0.15	0.13;0.16	>0.005
lower in PIA plants, but higher in PIA hybrid plants compared to Non-PIA plants.	Overscald	48259	9417	16837	0.44	0.43;0.45	>0.005	↓↓	↑	1.1	1.08;1.12	>0.005
	Other factory (poor plucking, product requirements not met)	11204	2729	11583	0.55	0.52;0.57	>0.005	↓	↑↑	3.26	3.18;3.35	>0.005
	Ascites/Oedema	67941	22618	31521	0.75	0.74;0.76	>0.005	↓	↑	1.46	1.45;1.48	>0.005
	Abnormal colour/fevered	61008	25046	27333	0.92	0.91;0.94	>0.005	↓	↑	1.41	1.39;1.43	>0.005
higher in PIA plants, but lower in PIA hybrid plants compared to Non-PIA plants.	Salpingitis	24	57	1	5.33	3.31;8.59	>0.005	↑↑	↓↓	0.13	0.02;0.97	0.019
	Other farm (Jaundice, Oregon, white muscle, congenital malformations)	1510	1861	212	2.77	2.59;2.96	>0.005	↑↑	↓↓	0.44	0.38;0.51	>0.005
	Bruising/Fractures	127026	100983	1761	1.78	1.77;1.80	>0.005	↑	↓↓	0.04	0.04;0.05	>0.005
	Death other than slaughter (uncut/badly bled)	1696	1250	401	1.65	1.54;1.78	>0.005	↑	↓	0.75	0.67;0.83	>0.005
	Pericarditis	8836	5147	1048	1.31	1.26;1.35	>0.005	↑	↓↓	0.37	0.35;0.40	>0.005
	Dead on Arrival/ Death in the lairage (DOA)	41284	24100	12415	1.31	1.29;1.33	>0.005	↑	↓	0.95	0.93;0.97	>0.005
	Hepatitis	80769	37561	23383	1.04	1.03;1.06	>0.005	↑	↓	0.91	0.90;0.93	>0.005
	Emaciation	18963	8464	4613	1.00	0.98;1.03	0.917	←	↓	0.77	0.74;0.79	>0.005

- 2.36 **There is potential for under or over recording of conditions.** This may be due to;

- MHIs tend to keep a mental note of the frequency of conditions and record these as and when convenient e.g. at the end of a batch or after five observations made. This is likely to be fallible, depending on line speed, the presentation of carcasses and the intensity of the working environment.
- Some MHIs referred to conditions not on the current list. For example, counts of 'emphysema' were made and then transcribed as 'lung lesions' for recording purposes. Whilst this is not incorrect, it may suggest that the list of conditions is not universally regarded as being the definitive text. Similarly, the recording of 'kidney lesions' might be made up of counts of 'infarct' or 'hydronephrosis'.

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- 2.37 **It is difficult to fully assess the sensitivity of recording for each condition.** However, we can draw on some observations, summarised in Table 2.5 below.

Table 2.5 Summary of observations on sensitivity of routine inspection

Example	Observation
TB in cattle	In 2008-9, 70.6% (1551/2196) of samples (= individual animals) from visibly lesioned non-reactor (clean) cattle were confirmed to be <i>M. bovis</i> on laboratory culture. Of those samples found not to be <i>M. bovis</i> , 68.7% (n=443) were culture negative, 6.0% (n=39) were other or unclassified Mycobacterium, 25.1% (n=162) were <i>Actinobacillus</i> spp. and 0.2% (n=1) were contaminated. The proportion of visibly lesioned skin test reactors that have <i>M. bovis</i> positive cultures since 2003 is 95-97%. (Goodchild T, VLA, personal communication).
Eye condition in cattle – ante mortem.	At one visit, an adult cow was observed with an eye lesion but this was not seen or recorded by the OV. It was suggested that the condition would have been picked up at post mortem head inspection.
Tapeworm cysts in cattle	One plant reported that some 'hydatids' had been sent off as part of a university project and were subsequently identified as 'tumours'.
Bruising	Superficial bruising, as may be encountered in transport, may be trimmed out but not recorded as trauma (bruising).
Pneumonia, pleurisy, milk spot, pericarditis and peritonitis in pigs (post mortem)	There is poor agreement between the reported prevalence by BPHS and CCIR for the five lesions investigated. (Sanchez M, SAC, personal communication).
Pneumonia and pleurisy in pigs	"Recording severity in addition to prevalence probably not hugely beneficial" ⁶ .
Chronic pleuritis in pigs	A study in Denmark reported the sensitivity of traditional post mortem meat inspection for chronic pleuritis to range from 39.2% to 87.3% in 1997-98. The study noted that: 1) post mortem inspection data should be validated before use in national disease statistics or research projects, and 2) that estimates of sensitivity, specificity and prevalence are slaughterhouse specific ⁷ .
Ante mortem inspection in pigs	Sensitivity of ante mortem inspection is greater for in-movement inspection than for pen-side inspection. For example, emaciation 76% v 88%, cough 20% v 60% and lame 11% v 98% ⁸ .

- 2.38 There is a system to measure abnormalities detected after post mortem inspection has been completed. This is known as '**Verification of Post Mortem Inspection**'. It is a requirement of each plant that a proportion of carcasses, viscera and offal are examined daily (for example 10 pig carcasses/day). Results recorded under five headings; pathology, statutory requirements, contamination, health marking and other⁹. The system was introduced in April 2010.
- 2.39 The results for pathology are shown in Table 2.6. **The results show a very low level of pathology being identified post inspection** i.e. conditions missed at routine inspection. This is consistent with comments from the abattoir visits where it was suggested that pathology "rarely recorded", or "of 600 birds inspected/day maybe 1 bird per week found with pathology". Where pathology was identified it may relate to a deep abscess on the back of the head (pigs) i.e. a lesion not easily identifiable during normal line operation. It

⁶ Tucker D (2009) Abattoir pathology data: its use in the investigation of pleurisy in pigs. Presentation at Veterinary Public Health Association, Spring Scientific Meeting, Liverpool, UK.

⁷ Enoe C and others (2003). The need for built in validation of surveillance data so that changes in diagnostic performance of post mortem meat inspection can be detected. Prev. Vet. Med. 57, 117-125

⁸ Schemann AK and others (2010). Assessment of current disease surveillance activities for pigs post-farmgate in New South Wales. Aus. Vet. J. 88, 75-83

⁹ Manual for Official Controls, Chapter 2.4, Section 2-10 (Amendment 35)

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is important to recognise that this does not provide a sensitivity measure for conditions recorded, rather it is purely a sensitivity measure of the inspection process to eliminate carcass or offals with conditions making it unfit for consumption.

Table 2.6 Results from verification of post mortem inspection April 2010-September 2010

Species	Total pathology	Inspected	%	Range (%) across 12 Business areas
Cattle	72	71,692	0.10	0.00-1.60
Pigs	143	49,066	0.29	0.00-2.09
Poultry	3505	1,608,857	0.22	0.00-1.44
Sheep	151	93,386	0.16	0.00-0.65

- 2.40 **The recording of conditions is not independent.** That is, if there are multiple conditions present then the dominant condition may be recorded. This is **most likely in poultry where it is accepted that “only one” condition is recorded per bird.** In this example ‘Pathology’ might be recorded if the whole pluck is rejected rather than ‘Pleurisy’ and ‘Pericarditis’.
- 2.41 **In red meat plants, where inspection times or inspection points for carcass, viscera and offal are greater, then the recording of multiple conditions is more likely.** It is common for MHIs to communicate findings from one part of the carcass with colleagues inspecting other parts – a ‘heads up’ that there may be gross pathology present. However, within an inspection point (carcass, viscera and offal) there may only be a single condition recorded, for example the most “risky” condition might be recorded. As examples:
- A liver abscess (category 2 waste) may be recorded in preference to concurrent liver fluke (category 3 waste).
 - Where a whole carcass is rejected (e.g. poultry with dermatitis) the viscera and offal may also be rejected without inspection. In this event it is reasonable to expect the main reason for whole carcass rejection to be recorded only.
- 2.42 Whilst this is sound for the protection of food safety, and sound as a working practice, it does mean that **data need to be understood before analysis.**
- 2.43 **In low throughput plants it is possible to record all conditions to the animal level. However this makes up the minority and generally the best that conditions are recorded to is a batch level.** The use of touch screen monitors for recording was raised at a number of plants visited. Touch screens are a common method for data collection in other countries. For example, in Northern Ireland, we understand all plants use touch screen recording for cattle, sheep and pigs. It is recognised that there are comparatively fewer plants in NI than GB. Post mortem conditions are recorded using two screens; one for the carcass and one for the offals. Conditions are recorded to individual animal level for cattle, and linked to eartag identification, and to batch level for sheep and pigs. Ante mortem and

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post mortem data are available directly to farmers, agents or veterinary practitioners through a web portal¹⁰.

- 2.44 **The FSA daily recording forms are not suitable for recording and local procedures are in place to collect data.** A number of plants visited said it was “easier to use our own forms”. The general principle was that a few conditions were common and an exhaustive listing was unnecessary for recording on the line. For example, there are 38 conditions listed for ante mortem inspection of cattle, yet one plant suggested only “abscess, lameness, eye condition and mastitis” were really needed. In our review of the data extract for cattle, the top ten ante mortem conditions (covering 82% of recorded conditions) were; Lameness (27.8%), Pneumonia/respiratory (10.3%), Mastitis (8.5%), Joint lesions (6.8%), Trauma (6.0%), Papilloma/warts (5.3%), Dermatitis (4.8%), Ringworm (4.6%), Eye condition (4.3%) and Abscess (4.2%).
- 2.45 In one example, the OV had recorded “joint lesion/lameness/arthritis” on a local paper form, which was transcribed as “joint lesion” for data recording, as joint lesion was the first description used. This is in part a weakness of the list of conditions as well as recording procedure. Figures 2.3, 2.4 and 2.5 show some examples of local recording forms.

Figure 2.3 This form is in use for recording post mortem conditions in pigs.

This example shows conditions recorded as a tally, in groups of 10 and as a percentage of the batch (i.e. 60% of the batch of 201 pigs affected with milk spot, giving a count of 120).

Lot/Slap	No in Lot
	201
FULL PLUCK	
PATHOLOGY	3 11
PATHOLOGY	
FAECAL	
BILE	2 11
LUNGS	
PNEUMONIA	55 10101010 10
PNEUMONIA	
PLEURISY	5 11
PLEURISY SEPTIC	
ABSCESS	
FAECAL	
BILE	
HEART	
PERICARDITIS	10 11 11
LIVER	
HEPATOPATHY	
MILK SPOT	(120) 60%
FAECAL	
BILE	
GUTS	
PERITONITIS	7 11 11
FAECAL	
BILE	2 11
ENTERITIS	1 11
KIDNEYS	
LESIONS	9 11 11

¹⁰ Animal and public health Information System (APHIS).
<http://eservices.ruralni.gov.uk/online/eservices/secure/aphis.asp>

BOVINE REJECTIONS		DATE:	
LIVERS	*****	Kill no	Fluke (d /l)
ABSCCESS		Abscess	Pest onitis
FLUKE		Tb	Pneumonia
PERITONITIS		Fleural sy	Emphysema
HYDATID		Hydatid	Telangectasias
LUNGS		Pericarditis	C Bovids
ABSCCESS		Other	
PNEUMONIA			
EMPHYSEMA			
KIDNEYS			
NEPHRITIS			
HEARTS			
PERICARDITIS			
CONTAMINATION			
TAILS			
SKIRTS			
LIVERS			
LUNGS			
TONGUES			
KIDNEYS			
HEADS			
HEARTS			
MELANOSIS			
LIVERS/LUNGS			
OTHER			
DETAINED CARCASSES			

	Liver	Heart	Skin	Lung	Pluck	TOTAL
Faecal						
Slit						
Other						

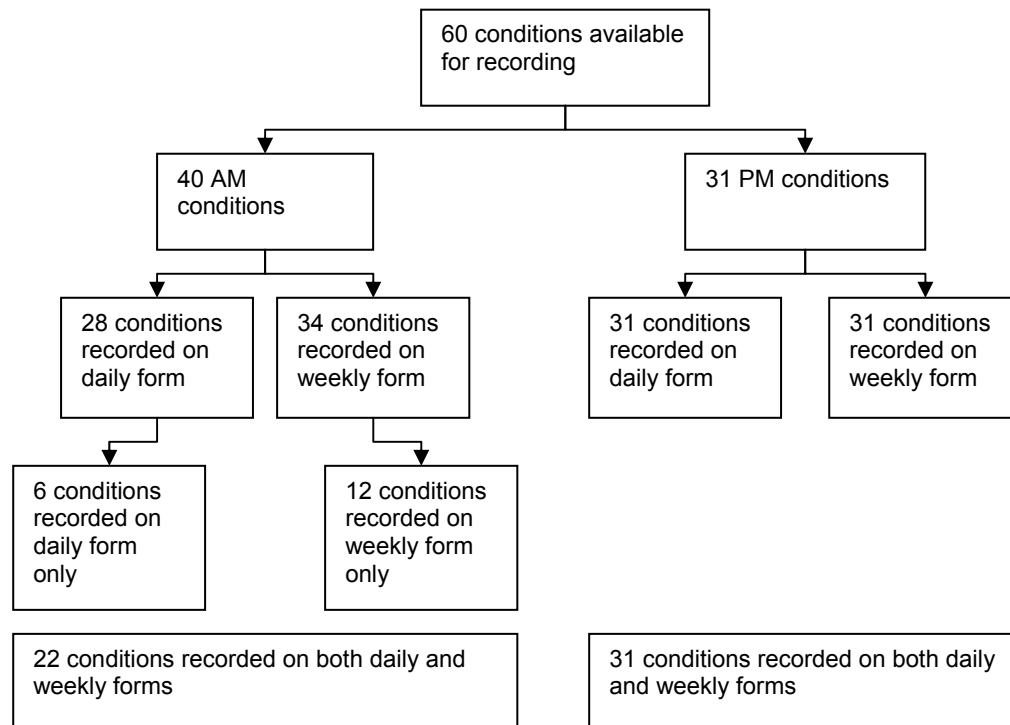
FBO representative (print and sign) _____ MHS representative (print and sign) _____

Page _____ of _____

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Figure 2.6 The number of conditions* available for recording on daily and weekly ante and post mortem forms for sheep.

* There is variation in the counts depending on terminology used on daily and weekly forms. These counts should be seen as broadly correct.

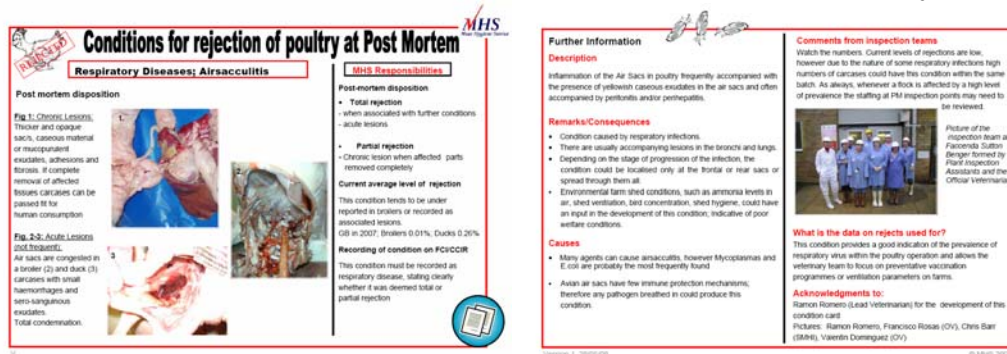


- 2.50 **The forms generally appear to be in alphabetical order, but not consistently.** For example, AMI 2/5 lists; Arthritis, Abscess, Anaemia, Ascites, Bloat...
- 2.51 **There is variation in the listing of the same or similar conditions.** This may be between daily and weekly forms or between ante and post mortem forms. For example;
- 'Emaciation/oedema' vs. 'Oedema/emaciation'
 - 'Mange/sheep scab' vs. 'Sheep scab'
 - 'Maggots' vs. 'Fly strike'
 - 'Fever' vs. 'Suspect fever' vs. 'Suspect fever/abnormal colour'
 - Some conditions appear to be eligible for inappropriate species. For example, 'Mange/Sheep scab' appears to be eligible for cattle. This should be separate for Mange and Sheep scab and appropriate to each species.
- 2.52 **There is variation in terminology between the point of recording and the CCIR report.** For example 'Ascariasis (milkspot)' is used on the form (PMI4/5), whereas the database uses 'Milkspot' and the CCIR output refers to 'Milkspot like lesions'.

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- 2.53 **Some conditions are listed twice on the same form.** For example, 'Suspect fever/abnormal colour' is listed twice for goats on form PMI 4/9.
- 2.54 **There is variation in the syntax used.** For example, 'Joint lesion' (PMI 4/6) vs. 'Joint lesions' (PMI4/3). In this example the use of joint lesions may suggest more than lesion/joint to be affected.
- 2.55 **Diagnostic criteria (guidance) are set out for a few conditions, in a few species only.** Guidance is provided in the Manual for Official Controls (Chapter 2.4: Post mortem, Health and identification Marking, Section 4-2) for; TSE, Glanders, Brucellosis, *Cysticercus bovis*, Tuberculosis, Arthritis, Tumour in bovines, *Trichinella* and Aujeszky's Disease.
- 2.56 **In house disease cards are available for a few selected conditions for poultry and pigs.** These provide both descriptive text and images in an easy to read format. An example, Airsacculitis in poultry, is shown in Figure 2.7. It is acknowledged that the hope is to be able to produce such disease cards for all conditions and species in the future.

Figure 2.7 Example of a disease card. This one is for airsacculitis in poultry.



- 2.57 **Diagnostic criteria need to be clear to avoid misinterpretation.** For example, it was suggested that superficial bruises, as might be encountered during transport, are trimmed from the carcass (protection of food chain) but not recorded. It was considered that the current condition of 'Trauma (bruising, fractures, dislocations)' was not appropriate and that this meant muscle damage extending beyond superficial tissues and assessed as long standing. This might be valid criteria, but it needs to be captured, adhered to and transparent for data users.
- 2.58 **Consistent condition descriptions will provide a more useful dataset for interpretation. The same, or similar conditions, may be listed with subtle variations.** For example;
- 'Abscess' vs. 'Abscess (localised, injection)' vs. 'Abscesses (localised/hepatic/injection)' vs. 'Caseous lymphadenitis' vs. 'Suspect pyaemia/generalised abscessation'
 - 'Suspect fever/abnormal colour' vs. 'Jaundice' (PMI 4/9). In this example jaundice may be abnormal colour.
 - 'Dermatitis' vs. 'Skin condition' (AMI 2/6)
 - 'Foot lesions' vs. 'Foot rot' vs. 'Joint lesions' vs. 'Lameness' (AMI 2/6)
 - 'Orf' vs. 'Papilloma/warts' vs. 'Skin condition' (AMI 2/6). In this example both orf and papilloma/warts are a skin condition.

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2.59 There is **no option to record unknown conditions**. In practice these are very few, however the option to record 'Pathology of unknown aetiology – describe briefly' would enable such observations to be captured and reviewed. Where an unrecognised condition is observed, the practice is for MHIs to refer to the OV. The MHI and OV may use reference material to try and identify the unknown condition. Useful reference sources were identified as being;

- Text books, for example Blacks Dictionary, Veterinary Anatomy (Dyce)
- MHS reference CD on cattle conditions
- Internet searches, for example the University of Bristol vet. school or University of Glasgow vet. school pathology web pages
- Local referral of samples, for example to Liverpool University or VLA
- Referral of images to Royal Society for Public Health

It is recognised that during this time of trying to identify the unknown condition the carcase may be detained, depending on the extent and severity of the unknown condition, and that there is a short time window in which to draw a decision as to condemn or release the carcase. Holding carcases beyond one day would be difficult and generally carcases would be rejected rather than being detained pending investigation. A further limiting factor in the pursuit of a diagnosis for unknown conditions is that there is no resource to pay for these investigations. Costs of onward testing would have to be born by the FBO or producer – neither of whom is likely to consider it favourable. Only one abattoir could recall the FBO 'authorising' onward testing, in this instance, histopathology on samples of white breast meat in poultry.

2.60 **We are informed that there is an audit process to confirm that a data return is received by FSA York from each plant each week.**

2.60.1 **The paper based AM/PM system relies on a spreadsheet to record which data records have or have not been received and by what means, for example email, fax or post.** Assurance was given that every effort is made to recover missing returns. Similarly efforts are made to identify and correct data returns having a mismatch with date (week number) and/or plant identification. It was estimated that 3-5 data returns each week had some form of mismatch.

2.60.2 **For the electronic Next Generation AM/PM system missing returns can be easily identified as a function of the system.** This is clearly more desirable, offering an automated audit process and will become increasingly important as the Next Generation AM/PM system includes all species.

2.61 Although efforts are made to recover missing returns, we are unable to quantify missing data. **Missing data is likely to be less of an issue for large plants dealing with poultry and the main red meat species, but may be more relevant for game cutting plants, where in our limited experience, no condition data was reported to FSA York, despite some data were recorded in the plant day book.**

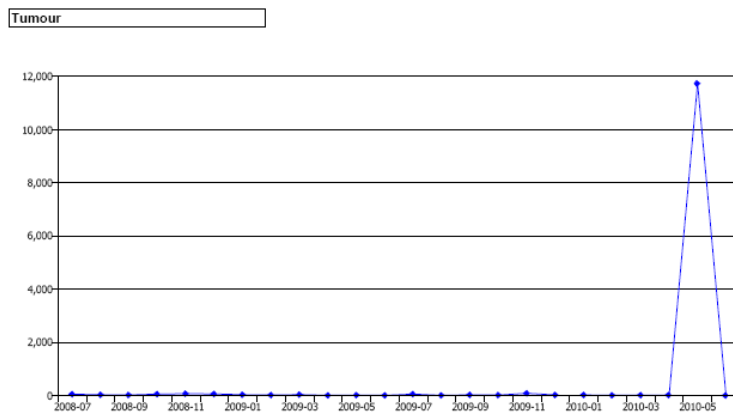
2.62 There are multiple databases covering different species over varying time periods. This means that **the animal throughput data may be separate from the count of conditions**. Historically, the number of animals inspected (throughput) was collected for charging purposes and handled in a separate

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system. It is understood that the Next Generation AM/PM system will capture animal throughput directly.

- 2.63 It also means that **the list of animal type, or species, is unclear in some cases**. For example, 'cattle' are made up from five different types (OTM, UTM, OCDS, 30-48 months and over 48 months), but exclude 'calves'. Whilst this is not really a problem, it does mean that the animal type needs to be understood. Similarly 'ruminants' equates to deer, although there are separate classifications for 'deer (wild)' and 'deer (farmed)'.
- 2.64 We were unable to fully assess the timeliness of data entry for the AM/PM system. It is understood that all data are entered in the week they are received, however we were unable to quantify time periods between the recording, submission and entry of the data. It is likely this is variable, but **it is reasonable to consider data in the AM/PM system to have a lag period of approximately one week**.
- 2.65 **Some effort is made to clean the data**, for example, checking that normally low level diseases have not unusually spiked, **but it was suggested that this was difficult to do regularly**. Figure 2.8 shows an example of an abnormally high spike for tumour in sheep, which we identified from the data extract provided to us for review. The spike jumps to c. 12,000 in May 2010 from a baseline of virtually zero in previous 22 months. This was subsequently identified as an error. The entry had read "1 t/c" (total condemned). A similar spike was present for the same condition and period for cattle. This may suggest a systematic error and prompt the requirement for staff training with regard to data entry.

Figure 2.8 Abnormal spike for tumour recorded at post mortem inspection in sheep, May 2010.



- 2.66 **The Next Generation AM/PM system provides for very rapid (same day or next day) reporting of inspection results**. Data can be reported directly from the database. The 'broiler condition report' requires an intervening step at FSA York to verify the data before the report is forwarded to Animal Health. Even so, the report is available within 48 hours.
- 2.67 **We could not identify any publically accessible periodic report on trends of recorded conditions**. There was uncertainty over a possible monthly 'disease' report made to Defra before 2007 but not since. A '12

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month post mortem cattle and sheep report' was provided following discussions at FSA York in December. This provided a monthly summary of throughput and frequency of conditions between Sep 09 and Aug 10. The data were in Excel format and could be suitable for the basis of wider quarterly or annual reporting.

- 2.68 **We have only been able to identify and be provided with a few reports that make regular use of the inspection data.** Of those identified, most are as a requirement for regulated conditions, for example samples collected for Aujeszky's disease testing. Table 2.7 provides a summary of reports generated from inspection data.

Table 2.7 Reports from inspection data (information provided by FSA York).

Report title & description	Reporting to;	Frequency
Hydatidosis in cattle and sheep. Reports an incidence based on observed/throughput.	EFSA (as part of Trends and Sources of Zoonoses and Zoonotic Agents in the EU)	Data are compiled monthly.
Broiler Condition Report. This report shows the prevalence of defined conditions and highlights where this exceeds an agreed threshold.	Animal Health (as part of Broiler Directive)	Report for every batch of birds is produced within 48 hours.
Aujeszky's Disease. Reports number of breeding boars tested.	Defra	Data are compiled monthly.
Trichinella. Reports number of pigs tested.	EFSA (as part of Trends and Sources of Zoonoses and Zoonotic Agents in the EU)	Data are compiled monthly.
Bespoke data requests. For example welfare of end of lay hens during transport.	Bristol University	Ad-hoc as part of research project.

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SECTION 3: REVIEW OF THE LIST OF CONDITIONS

- 3.1 **The current conditions list was challenged to see if it was fit for purpose.** Many observations have been made on the list of conditions in the section on review of data quality. From these observations alone there is evidence that the list requires a full review.
- 3.2 It is acknowledged that **the current listing has evolved into a diverse list of conditions that attempts to cover a range of clinical signs** (e.g. pyrexia), gross lesions (e.g. liver cirrhosis) and specific diseases (e.g. fluke).
- 3.3 **It is unclear as to when revisions are made to the list of conditions.** In our experience, MHIs in the one plant thought the same list had been in place for poultry for more than four years. However, we understand from FSA York, that the condition list was reviewed approximately two years ago to accompany the planned introduction of the Next Generation AM/PM system.
- 3.4 **It is acknowledged that there is intent to have a comprehensive review of all conditions across all species,** including recording to body part as appropriate, by a FSA working group starting in January 2011.
- 3.5 **The list of conditions was reviewed by selected stakeholders.** Table 3.1 summarises the stakeholders that helped review the list of conditions.

Table 3.1 Summary of stakeholders in review of conditions

Stakeholder classification	Stakeholders providing expert opinion
Endemic disease monitoring	VLA/SAC species expert groups
Zoonoses / public health	VLA Non-statutory zoonoses lead
Statutory disease notification	VLA/SAC species expert groups
Welfare	VLA welfare lead Defra welfare team (welfare on farm, at markets and fitness to travel)
FSA / FCI / CCIR	FSA policy led documents (primarily those provided by FSA York)
DARDNI	DARDNI
Other	VLA Chemical Food Safety lead SAC EGENES BPEX workshop

- 3.6 **The revision of conditions was done using the evidence gathered from stakeholders.** We identified how many stakeholders considered the data derived from each condition to be informative and reviewed the expert comment(s) for each condition. This was a subjective process; conditions were not necessarily selected on number of stakeholders alone as some conditions, for example those of welfare or statutory notification were important to retain. The full review of stakeholder comments is not presented in this report.
- 3.7 **The data were reviewed by a frequency 'score'** based on how frequently the condition was recorded *[date range(s)]* as a proportion of all conditions recorded for each species. The top condition was identified, followed by conditions recorded > 10% (most common), 1-9.99% (frequent), 0.10-0.99% (rare) and, 0.09% (very rare or never).

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3.8 The frequencies of the top three conditions for GB are shown in Table 3.2 (ante mortem) and Table 3.3 (post mortem).

Table 3.2 Top three ante mortem conditions as a proportion of all conditions by species (SIR data).

Species	GB top 3	%	England Top 3	%	Scotland Top 3	%	Wales Top 3	%
Calves	Pneumonia /respiratory disease	19.4	Pneumonia /respiratory disease	18.9	Pneumonia /respiratory disease	48.7	Diarrhoea	35.4
	Diarrhoea	15.0	Lameness	16.8	Lameness	21.6	Dermatitis	19.3
	Lameness	14.5	Other	14.4	Foot lesion	18.9	Pneumonia /respiratory disease	18.4
Cattle	Lameness	27.8	Lameness	28.3	Lameness	24.0	Lameness	33.0
	Pneumonia /respiratory disease	10.3	Mastitis	10.3	Pneumonia /respiratory disease	17.2	Foot lesion	13.2
	Mastitis	8.5	Pneumonia /respiratory disease	9.0	Joint lesions	8.5	Joint lesions	7.6
Goats	Lameness	40.5	Lameness	41.3	Pneumonia /respiratory disease	37.8	Foot rot	60.0
	Mastitis	12.4	Mastitis	13.3	Lameness	28.2	Lameness	20.0
	Pneumonia /respiratory disease	11.3	Pneumonia /respiratory disease	9.5	Eye condition	11.1	Pneumonia /respiratory disease	20.0
Sheep	Lameness	32.9	Lameness	38.0	Pneumonia /respiratory disease	47.4	Lameness	44.5
	Pneumonia /respiratory disease	26.7	Pneumonia /respiratory disease	21.9	Foot rot	31.8	Pneumonia /respiratory disease	18.2
	Foot rot	11.5	Dermatitis	7.6	Lameness	8.9	Foot rot	10.8
Deer	Trauma	49.7	Trauma	56.8	Pneumonia /respiratory disease	34.8	-	-
	Skin lesions	20.5	Skin lesions	21.6	Other	26.1	-	-
	Other	8.77	Other	6.1	Skin lesion and Dermatitis	13.0	-	-

Table 3.3 Top three post mortem conditions as a proportion of all conditions by species (SIR data).

Species	GB top 3	%	England Top 3	%	Scotland Top 3	%	Wales Top 3	%
Calves	Contamination	32.2	Contamination	30.4	Fascioliasis	62.2	Contamination	44.2
	Kidney lesions	23.8	Kidney lesions	27.3	Total carcase rejects	32.4	Pleurisy/pneumonia	22.8
	Pleurisy/pneumonia	23.3	Pleurisy/pneumonia	23.4	Pleurisy /pneumonia	5.4	Total carcase rejects	11.1
Cattle	Fascioliasis	33.4	Fascioliasis	30.0	Fascioliasis	39.0	Fascioliasis	46.0
	Contamination	23.0	Contamination	19.7	Contamination	30.2	Contamination	26.6
	Kidney lesions	12.3	Kidney lesions	14.3	Kidney lesions	9.6	Abscesses	9.8
Goats	Fascioliasis	18.5	Lung lesions	19.9	Fascioliasis	26.6	Cysticercus tenuicollis	43.2
	Lung lesions	17.8	Fascioliasis	16.5	Lung lesions	23.8	Fascioliasis	31.2
	Cysticercus tenuicollis	15.6	Contamination	13.4	Pleurisy / Pneumonia	19.5	Pleurisy / Pneumonia	8.5
Sheep	Cysticercus tenuicollis	20.8	Cysticercus tenuicollis	20.6	Lung lesions	24.0	Cysticercus tenuicollis	31.7
	Fascioliasis	19.8	Fascioliasis	19.1	Fascioliasis	23.3	Fascioliasis	20.6
	Contamination	16.0	Contamination	16.5	Pleurisy / Pneumonia	15.9	Contamination	13.5
Deer	Warble fly	33.0	Contamination	31.3	Warble fly	72.2	Contamination	36.2
	Contamination	23.2	Trauma	28.0	Trauma	7.8	Fascioliasis	31.2
	Trauma	21.5	Warble fly	16.5	Fascioliasis	6.0	Pleurisy /pneumonia	11.6
Broilers	Ascites/oedema	17.2	Ascites/oedema	15.9	Ascites/oedema	23.4	Ascites/oedema	29.2
	Abnormal Colour/fevered	14.6	Abnormal Colour/fevered	14.7	Cellulitis	17.7	Abnormal Colour/fevered	24.3
	Dead on arrival	10.4	Dead on arrival	10.6	Abnormal Colour/fevered	9.2	Dead on arrival	13.8
Hens	Perihepatitis / peritonitis	21.3	Perihepatitis / peritonitis	21.4	Dead on arrival	21.4	Abnormal colour / fevered	40.0
	Dead on arrival	18.3	Dead on arrival	18.3	Machine damage	16.1	DOA	30.0
	Abnormal colour / fevered	11.7	Abnormal colour / fevered	11.7	Contamination	14.5	Machine damage	30.0

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- 3.9 **The field ‘Other’ is used regularly across the species.** Unfortunately the usefulness of this field, by definition, is limited. In many cases stakeholders will follow up by asking what is included in ‘other’. In some way this can be answered through the Next Generation AM/PM system where a free text comment is available (see Annex C, report 7: “Comments” section for pigs).
- 3.10 Similarly, stakeholders may want the **reason for ‘Dead on arrival’, Dead in lairage’ or ‘Killed in lairage’**. Again this information is available in the form of free text in the Next Generation AM/PM system (see examples in Table 3.4). A brief review of these comments suggested that many of the incidents described in DOA and DIL would be better assigned to KIL.

Table 3.4 A review of comments for Dead on arrival, Dead in lairage and Killed in lairage for pigs.

Condition	Number of records	Number of records with comment recorded	% of records with comment recorded	Number of unique free text descriptions	Example
DOA	1002	96	7.4	16	“1 DOA fractured mandible and maxilla on lorry”
DIL	326	24	9.6	58	“1 with stress died just after unloading”
KIL	2048	1224	59.8	551*	“1 blind to be slaughtered ASAP”

- 3.11 It is important to note that there is a **requirement to have a free text comment field that is used to record findings where the ‘other’ condition is used and a further free text field that can be used by OV’s to annotate individual animals or batches of animals with additional remarks distinct from conditions.**
- 3.12 **It is proposed that the list of conditions are better captured and contained.** This is best done through a clear hierarchical format. We propose five levels; starting at the inspection level (ante mortem or post mortem) and finishing with a clear, agreed definition of each condition. Within this structure it is possible to aggregate species, for example, data from sheep and goats could be explored as ‘small ruminants’. The format is founded on the disease recording system¹¹ that has been in use for animal health surveillance in GB since 1975.
- 3.13 The proposed hierarchical structure for the recording of conditions is summarised in Table 3.5.

¹¹ VIDA – Veterinary Investigation Diagnosis and Analysis. This database collates data from VLA & SAC and is extensively used to provide information to a range of stakeholders, including government and the veterinary profession.

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Table 3.5 Proposed hierarchical structure for recording of conditions.

Level 1	Level 2	Level 3		Level 4		Level 5	
Inspection	Species	Section		Group		Definition	
Ante mortem	Cattle (including calves) Small ruminants (sheep & goats) Pigs Avian (to include poultry and other non-game avian species) Farmed deer Wild game – avian	A	Specific conditions. <i>Conditions currently, and previously, recorded at ante or post mortem inspection.</i>	1	Systemic disease and those not readily classified	Description	
Post mortem				2	Diseases of the digestive system	Criteria	
				3	Diseases of the respiratory system	Notes, with link to external documents or image store as appropriate.	
				4	Diseases of the urinary system		
				5	Diseases of the musculo-skeletal system		
				6	Diseases of the nervous system and organs of special sense		
				7	Diseases of the skin		
				8	Diseases of the blood and lymph circulatory and poietic system		
				9	Diseases of the reproductive and mammary system		
Wild game – rabbit/hare	B	Emergency or not slaughtered for human consumption. <i>Records animals included on FCI but not slaughtered for human consumption.</i>	Individual conditions may be grouped as required.		Description		
Wild game - deer					C	Suspect notifiable. <i>Records animals suspected of having a notifiable disease.</i>	Individual conditions may be grouped as required.
	D	FBO. <i>Records conditions that are present as a result of processing faults.</i>	Individual conditions may be grouped as required, for example 'Contamination'.	Notes, with link to external documents or image store as appropriate.			

- 3.14 **The full list of proposed conditions is provided as an annex to this report;** Annex D lists conditions at ante mortem inspection and Annex E lists conditions for post mortem inspection.
- 3.15 **These documents should be controlled and undergo periodic (annual) revision.**
- 3.16 In addition to a review of current conditions, **a review should be done of any free text comments appropriate to the recording 'other'**. This may help to identify conditions that are currently not recorded, but are being observed with some frequency. It would be expected that this be a subjective process.
- 3.17 Ideally, the **lead OVs should actively contribute to the revision process in consultation with OVs and Senior MHIs**. This will promote ownership of the list and ensure difficulties with recording are resolved. Importantly, it will provide data users with a clear understanding of the conditions recorded.
- 3.18 At the time of our visit to one poultry plant, there was a **local initiative for recording foot pad dermatitis (FPD)**. It is recognised that data on FPD is required by Defra stakeholder and that work is currently in progress to

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determine how this can be gathered. This involves FSA, Defra and FBOs as this condition is currently difficult to observe during normal inspection procedures because the underside of the foot is not readily presented on the slaughter line. Consequently, although it is recognised as a required condition, currently, no data are formally collected on the Next Generation AM/PM system.

- 3.19 Similarly, data were collected locally on detailed post mortem findings on selected 'Dead on arrival' birds. This means that **there is potentially local information that is not collated or reported anywhere**. By having OV's and MHIs direct the list of conditions, thereby making it workable in practice, we are more likely to achieve greater compliance and return of accurate data.
- 3.20 Although best effort has been made to develop the documents, we recognise that **further consultation with end users should be completed before final adoption**. This should include industry bodies that represent recipients of CCIR data.
- 3.21 Depending on the accepted list of conditions, **decisions will have to be made on any use of historic data**. Some conditions may be directly compatible and others may not. It would be advantageous to try and make the revised list of conditions compatible with previous condition lists so as to maximise the value from combined analysis. Further work would be necessary to fully determine how to integrate any historic data if this was appropriate.

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SECTION 4 IDENTIFYING GAPS**Denominators and geo-location**

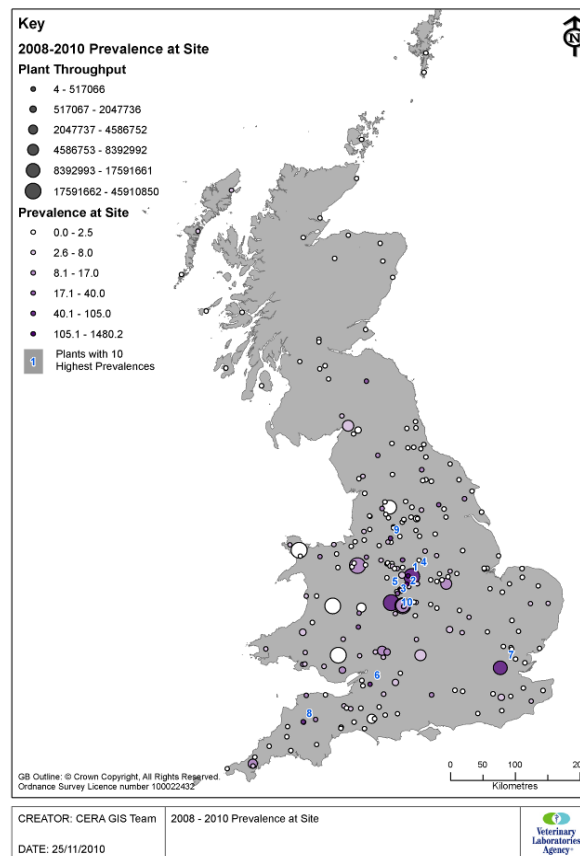
- 4.1 **There is a shortfall in being able to match the frequency of a condition with an animal level denominator** (there may be multiple occurrence of a single condition to a single animal) **or to the last holding** (may only have place of slaughter). The latter issue is addressed as best as it can be through the capture of producer information via FCI, although it has been highlighted that there are recognised deficiencies in using a producer's CPH reference alone. The issue with recording conditions and denominators is more fundamental.
- 4.2 **The denominator will vary depending on the stakeholder requirement for the numerator data**; in some cases a simple count of throughput (animals presented at the abattoir) may be adequate. In other cases there will be a requirement to provide counts of conditions against body part and/or weight rejected. Table 4.1 outlines what may be required for different stakeholders. This is quite a tangled concept and will need to be more fully considered to ensure reports can be compiled and interpreted easily.

Table 4.1 Examples of stakeholder requirements and possible denominator.

Primary objective	Stakeholder	Animal or body part denominator
Health of animals and economic performance	Producer	Animal (count of conditions) Body part (quantity)
Capture what is rejected	FBO	Body part (quantity)
Animal health and welfare	Government	Animal (proportion of throughput)
Production problems	Veterinary practice	Animal (count of conditions)
Public health	Government	Animal (proportion of throughput)

- 4.3 To further illustrate this, we produced a map as might be useful for GB disease surveillance. Figure 4.1 expresses the burden of disease at each plant as a proportion of total throughput (Note: Not UK as stated on map key). The point diameter represents plant throughput. The increasingly deep shades of purple indicate that a high proportion of carcasses at that plant were recorded with hydatidosis. For use in surveillance, it would help to identify sites of significant disease burden regardless of throughput. However, the data highlight that **the disease count for the top three plants was recorded as being greater than the throughput**. (Disease count / Animal throughput; Plant 1: 20900 / 1412, plant 2: 6642 / 968 and, plant 3: 32497716 / 31007496).
- 4.4 In many cases, to use the data most meaningfully for surveillance it is desirable to plot disease occurrence for against a location for the animal. The geo-locator for much of the data is limited to the abattoir location, although as above, it is recognised that the Next Generation AM/PM system will hold producer information that will provide a last holding. (This may also have deficiencies for surveillance use but is beyond the scope of this report to discuss).

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Figure 4.1 Map of plant throughput and disease count (hydatidosis in sheep)**Case studies**

- 4.5 As an exercise, we posed **six case studies to capture issues that will be faced in a day to day situation in making use of the inspection data**. The cases were drawn from real use of data as well as some that drew out specific points. Rather than seeking an absolute answer to the questions, we wanted to compare the steps involved in compiling the answer.
- 4.6 Crucially, we wanted to address the state of transition from the old to the Next Generation AM/PM system. As such, we sought to **explore each case if we asked the question now in 2010 and if we were to ask the same question in six years time**, when the Next Generation AM/PM system would effectively hold historic data.
- 4.7 For each scenario we considered 11 points, as shown below in Table 4.1, mainly devised to test the levels of manual intervention and automation in compiling the data, the usefulness of the data as an epidemiologic tool, the ease with which it might be shared with industry or interested parties and the reliability of the data.
- 4.8 The case studies drew out some issues that have been previously discussed, but there are perhaps three key themes that we can summarise.
- **The numerator** (count of conditions for a defined animal type) **and denominator** (throughput or animal/body part/weight) **data need to be understood to make clear what can be reported.**

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- **For some animal types it may not be possible to identify the last holding that an animal was at.** This is a greater issue with sheep than with pigs or poultry. The absence of this information limits the use of a geo-locator to map out 'disease' occurrence.
- The issues highlighted are not new. Many are being addressed with the implementation of the Next Generation AM/PM system. Consequently, it is expected that **in the future, with an enhanced data warehouse, access and clarity of the data will be improved.**

4.8.1 Table 4.1 summarises the key points from the first case study; "Has there been an increase in fluke in cattle in North East England over the past six years?"

Table 4.1 Summary of key points arising from case study 1; "Has there been an increase in fluke in cattle in North East England over the past six years?"

No.	Consideration	2004 - 2010	2010 - 2016
1	Sources of Data	AM/PM system (SIR condition) and throughput systems.	The Next Generation AM/PM system will start to hold condition and throughput data. Reporting within the Next Generation AM/PM system will allow for the production of multi-purpose reports based on common denominators.
2	Source/System(s) Description	Condition and throughput systems use a slightly different denominator which adds a layer of administration.	
3	Ease of Access to Condition Data	Need data to be merged in excel format - not difficult but requires some manual intervention.	Produced from a single data source.
4	Ease of Access to Throughput Data	Although not technically complex, there is overhead merging data.	No need to merge data.
5	Condition & Throughput Compatibility	Throughput based on two denominators. Conditions based on several age based categories.	No issues.
6	Automated/Manual Processing Required	Mostly automated but requires some manual intervention.	Reports run with no intervention required.
7	Date Ranges Available	AM/PM system (SIR data) reported by week from 2000.	Next Generation AM/PM system data reported by day from mid 2010.
8	Plant Data Availability	Available by plant.	Available by plant.
9	Producer Data Availability	No feedback to producers. Conditions can be matched to place of slaughter.	Feedback available by email if required. Will be able to match conditions to last CPH, and be able to filter out markets etc. to match conditions to a farm holding.
10	Data Quality Considerations	Relies on manual input plus forms being returned to FSA offices via mail or fax.	Relies on manual input but data enter daily at the plant. Validation routines now being considered.
11	Production of outputs: - Regular Reports - Publication - Ad-Hoc queries for Stakeholders or Third Party	Produced from a combination of SQL Server queries, views & spreadsheets. Regular requirements can be semi-automated.	Regular requirements can be automated, ad-hoc queries addressed via SQL queries.

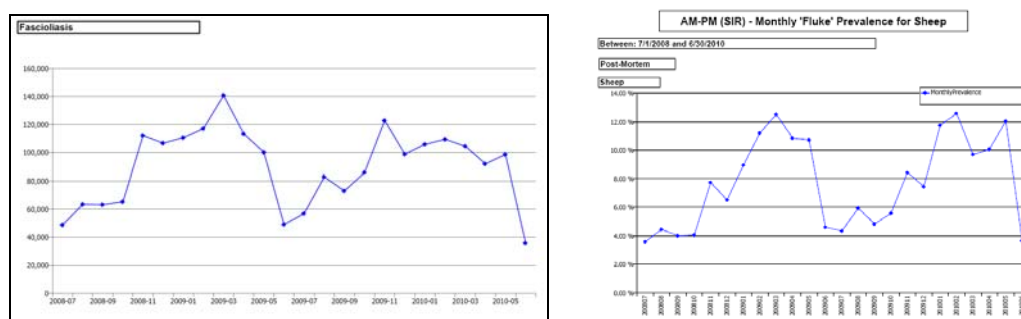
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- 4.9 After the first case study we found that the following five case studies produced broadly the same response. So, taking the first case study as a template, for the following ones only the key differences or issues are highlighted.
- 4.9.1 Case study 2: "Provide a count of ante mortem rejects (all species) and the reason. To include DOA, DIL and KIL".
- Currently, this would be a complicated ad-hoc retrieval from any comments.
- 4.9.2 Case study 3: "What is the incidence of Cysticercosis in England and Scotland in the last three years?"
- The AM/PM system does not hold details on 'last holdings'. The Next Generation AM/PM system will hold keeper address details.
 - Although the Next Generation AM/PM system will differentiate between calves and adult animals it will not hold details of breed, age or sex. However, such information should be available from individual animal eartag identification.
- 4.9.3 Case study 4: "Is there a trend in the incidence of TB-like lesions in pigs and cattle in England and Wales in the last 2 years?"
- Pigs have been spread across the old and Next Generation AM/PM system so data has to be manually merged and conditions have to be grouped.
 - Both the AM/PM and Next Generation AM/PM systems hold the place of slaughter, but in trying to trace back to a holding, producer information is only available from the Next Generation AM/PM system.
- 4.9.4 Case study 5: "How many cattle have had samples collected and submitted for TB testing in England in the last two years?"
- Currently these data are held as a dataset ('TB charging') that is separate to the old or Next Generation AM/PM systems. There is no plan to change this.
- 4.9.5 Case study 6: "What has been the incidence of recorded Newcastle Disease condition in poultry in the last three years?"
- Some 63 suspected cases of Newcastle Disease were recorded. In both systems these are 'suspected' cases. There is no feedback to update the data from any results of follow up investigations or testing.
 - It would be helpful to have some 'front end' validation to guard against incorrect data entry for recording against notifiable diseases.

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Opportunities for using the data

- 4.10 As previously raised, the inspection data are potentially of use for many purposes. However, as with most datasets, the data need to be understood and this is especially important in making use of them in a national surveillance picture. Nonetheless, **it is considered that with suitable caveats and due consideration the inspection data are valuable**. The data will be most valuable if the user is aware of issues relating to recording to body part, animal and batch level are made clear.
- 4.11 **Data may be used to support observations on endemic disease status or to protect animal health.** Previous work by Tucker¹² on pleurisy and pneumonia in pigs, identified that “abattoir pathology data has great potential in understanding disease drivers and dynamics” and that “information on risk and protective factors, together with clear economic impact data should trigger preventative programs”. The use of abattoir data for specialist cattle practitioners has previously (2001) been identified as potentially useful in providing information for evidence based treatment and disease prevention¹³.
- 4.11.1 **Support anecdotal evidence.** For example, “a lot of lamb carcasses have condemned fluke livers at abattoirs in Yorkshire over the past season”. Data could be provided to evaluate this statement and provide evidence to accept or reject the hypothesis. Figure 4.1 shows some example reports that could be available. In this case the potential audience would be veterinary surgeons and livestock sector.

Figure 4.1 Example reports to explore the trend of liver fluke

- 4.12 **Data may be used to help identify potential emerging animal health threats.**
- 4.12.1 There is a current **research initiative in the US** to assess the “potential use of abattoir condemnation data to monitor animal health”¹⁴. This is a novel approach in the US and not yet embedded in an active routine monitoring environment. The current strategy has the objective to “develop a method for weekly monitoring of abattoir condemnation data for the purposes of

¹² Tucker D (2009) Abattoir pathology data: its use in the investigation of pleurisy in pigs. Presentation at Veterinary Public Health Association, Spring Scientific Meeting, Liverpool, UK.

¹³ Thomas PC (2001). The Food Standards Agency: Effect on the cattle practitioner. Cattle Practice Vol. 9, Part 1, 21-25.

¹⁴ Weber W (2009) Potential use of abattoir condemnation data to monitor animal health. Poster at ISVEE conference, Durban, South Africa.

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identifying potential emerging animal diseases and trends in condemnation rates over time". In brief:

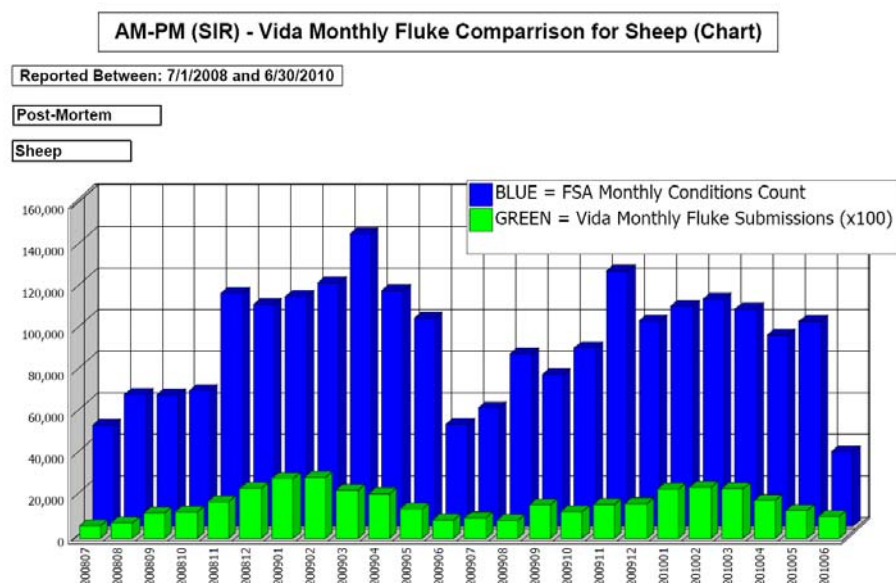
- The surveillance system works by raising alerts and the number of alerts will depend on a threshold value, and
- The system identified a higher than expected swine erysipelas condemnations were identified in a geographical area in 2008.

4.12.2 Data from abattoirs may be collected in response to alerts relating to immediate high priority syndromes, for example following notification of the distribution of suspected contaminated feed or other chemical/toxic event.

4.13 Data may be complementary for routine surveillance. The data from abattoirs may be complementary to other data from scanning surveillance. Using FSA data adds a significant proportion of the GB animal population into the wider surveillance picture. That is, we can start to include information from the 'healthy – culled' population. This is many times larger than the 'sick – on farm' and 'sick – culled' population that may be traditionally used for surveillance reporting. For example, there are around 30,000 diagnostic submissions from cattle made to VLA regional laboratories (England and Wales) annually, whereas there are around 3 million post mortem examinations on slaughtered cattle (GB) annually – some 100 times more. In simple terms, by widening the population we can increase our confidence in changes in disease prevalence.

4.13.1 Figure 4.2 shows an example of the FSA data and VIDA data for fluke in sheep. Although the chart only shows counts of observations (i.e. there is no denominator data), in crude terms there appears to be a good correlation of the two datasets – with both showing seasonal variation as would be expected.

Figure 4.2 Comparison of counts of FSA and VIDA count of fluke in sheep.



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4.14 Data are potentially useful to directly inform the livestock and veterinary profession.

4.14.1 During the course of our work with this project we have been approached by the **English Beef and Lamb Executive (EBLEX) who are interested to include abattoir data and comment in an annual cattle health and welfare report** (driven by Cattle health And Welfare Group (CHAWG) for senior industry stakeholder groups. EBLEX commented that they “would be really interested in getting some information. However, we do not know what information is being collected...” This is a real opportunity to highlight the role of meat inspection and to integrate pre and post farm gate animal health and welfare work, and should be encouraged.

4.14.2 The data have been used to highlight increasing trends of disease occurrence. Figure 4.3 below shows how FSA and VIDA data have been used by Merial Animal Health to create ‘headline’ news.

Figure 4.3 Article in Veterinary Times 3 May 2010.



4.15 It has already been identified that the data are potentially valuable for many research projects. Here are a few examples.

4.15.1 **Welfare impacts of transport on sheep (University of Bristol and VLA research project).** The data would be useful to provide a summary of the conditions recorded at ante mortem inspection. Potentially, data from FCI, via the Next Generation AM/PM system, should enable batch level information on ante mortem conditions, which could be assessed with batch level AMLS data to draw more extensive observations specific to transport.

4.15.2 **Campylobacter prevalence survey (VLA research project OZ0613).** This project made use of data recorded from batches of broilers. However, rather than a direct extract from the FSA database, the reasons for condemnation were captured on a project specific data collection form. Data was collected for 11 conditions (including free text for other), all of which are routinely recorded. Figure 4.4 shows how the data were used and it is clear that, subject to data quality, this type of approach could be applied across other studies.

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Figure 4.4 Summary of how condition data was used in one study

In 2007 a three-year UK national survey aimed at determining the prevalence of Campylobacter in broiler flocks at slaughter commenced. The survey collected data, via a questionnaire on broiler production practices in the UK and allowed the investigation of potential risk factors associated with Campylobacter in broiler flocks. In particular, data on reasons for condemnations, rejects (%) and mortality (%) were also collected at the time on sample collection in the abattoir. Univariable logistic regression models were used to identify potential risk factors and a χ^2 -test was used to estimate the statistical significance (p-value) of crude associations between exposure variables and Campylobacter status.

Peritonitis, septicaemia and emaciated were not significantly associated with Campylobacter at the univariable level, but joint lesions, pericarditis, ascites and skin lesions were significant.

The data collected at slaughter on various conditions has proved to be particularly useful in the survey and additional projects aimed at assessing the effect of interventions will also want to collect this data as the three-year survey dataset will act as a baseline comparator. Data collected at FSA ante and post mortem inspection, if sufficiently validated, would also be extremely useful in adding value to any intervention study as many more risk factors can be investigated at little cost to a project due to the fact that this data is being routinely collected.

4.15.3 Risk factor studies. For example, use the data collected on 'tail bite' in pigs to measure any association with spinal abscess, or if there is a difference in prevalence between outdoor and indoor reared pigs. This would also make use of data collected from the FCI.

4.16 Data may be used to inform policy makers. Here is one example.

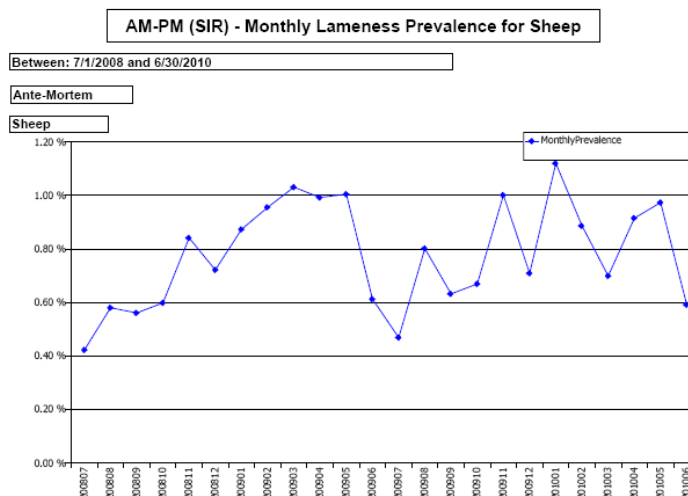
4.16.1 Figures on lameness and foot lesions in sheep as a proportion of total sheep presented to abattoirs (Defra FFG-ANW). The data could be used to clarify the statement "there are no national records of prevalence or incidence of lameness in sheep and no central records of prevalence of foot lesions" as presented in a draft FAWC report on sheep lameness. It would be expected that the data could readily provide for this type of enquiry. However, in the current format data would need to be aggregated to provide for "lameness" and "foot lesions" – see Table 4.1 and Figure 4.5 below. Ideally the data would differentiate between lambs and adults (this is not achievable in the current recording format) and be presented alongside a denominator i.e. what proportion of sheep killed were recorded a) lame, b) with foot rot or c) with other limb / foot lesions. This could be a neat annual report with data presented by year quarters.

Table 4.1 Possible grouping of lameness and foot lesions based on current conditions list.

Classification	Eligible conditions	
	Ante mortem	Post mortem
Lameness	Lameness	
	Joint lesions	Joint lesion
Foot lesions	Foot lesions	
	Foot rot	

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Figure 4.5 Example output of monthly incidence of lameness in sheep report.
NB – includes ‘Lameness’, ‘Joint lesions’, ‘Foot lesions’ and ‘Foot rot’.



- 4.17 Data can be used to alert Animal Health to possible on-farm welfare problems.** There is a requirement to record eight post mortem conditions in broilers to fulfil the requirements of the EU Meat Chicken Directive. Where levels exceed a threshold (trigger level) the owner/keeper of the birds and Animal Health will be alerted. One of these conditions is Foot Pad Dermatitis (FPD) which is not currently recorded and others represent an aggregation of specific conditions (Table 4.2 below).

Table 4.2 Conditions recorded as a requirement of the EU Meat Chicken Directive

Post mortem condition	To be reported as	Currently recorded?
Ascites/Oedema	Ascites/Oedema	Yes, as 'Ascites/Oedema'.
Cellulitis & Dermatitis	Cellulitis & Dermatitis	Yes, although 'Cellulitis' and 'Dermatitis' are separate categories and data would need to be aggregated.
Dead on Arrival	Dead on Arrival	Yes, as 'Dead on arrival/in lairage'. Also 'Death other than slaughter'.
Emaciation	Emaciation	Yes.
Joint lesions/Arthritis	Joint lesions	Yes, as 'Joint lesions/arthritis'.
Septicaemia/Respiratory	Respiratory problems	Yes, although 'Septicaemia/toxaemia', 'Respiratory disease' and 'Respiratory disease (airsacculitis)' are separate and data would need to be aggregated.
Total rejections	Total rejections	? on CCIR
FPD score	FPD score	No.

- 4.18 Potentially, data may be used to inform genetic parameters for improved animal production.** The following paragraph is drawn directly from discussions with Edinburgh Genetic Evaluation Services¹⁵ (Low and Coffey, personal communication).

The use of individual animal identification, in cattle, provides an opportunity to explore genetic trends. This is already established with the use of national milk records, where information is used to provide predictions of lifespan breeding values. The progression from this is that improved genetic trends in

¹⁵ Link to EGENES. <http://www.sac.ac.uk/research/groups/sls/teams/services/edinburghgeneticevaluations/>

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lifespan results in lower green house gas (GHG) emissions by reducing the size of the follower herd. Other work has used milk records to determine the heritability of TB; leading to the development of an estimated breeding value (EBV) for TB resistance. A feasibility study using abattoir carcass traits has provided EBVs that could be used in the beef sector to increase output and thereby reduce GHG emission per Kg of product. If records from abattoirs could be attributed to the individual animal then there is an opportunity to produce EBVs for almost any condition recorded, although the initial thought would be to consider liver fluke and lung lesions. Again, selectively breeding can help with efficient production (through reduced disease burden) and reduced GHG emissions.

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SECTION 5: DISCUSSION AND RECOMMENDATIONS

- 5.1 Before making recommendations, it is useful to bear in mind a few key points:
- 5.1.1 However data are recorded, it is important that the information from it is of value to stakeholders. Different stakeholders have different requirements. The challenge is to record enough data in a useable structure, but not to lose accuracy by making it difficult to record.
- 5.1.2 There is inevitably a compromise between losing accuracy within the detail of many very specific conditions and losing detail within more generic, recording of fewer conditions. In practice, this may be a balance between what is desirable and what is achievable.
- 5.1.3 Currently, understanding the data is not straight forward. The data are compromised by variation at the point of collection across species and plants. By addressing the list of conditions, the clear recording to animal or body part and the use of a clear denominator, it will be easier to make better use of the data.
- 5.2 **RECOMMENDATION: FSA should actively promote the availability of ante mortem and post mortem inspection data.** It was encouraging to find that there were a large number of stakeholders who had an interest in the data having been prompted and shown what is potentially available. Against this, it was disappointing that there were no identifiable external outputs of the data, with the exception of old review style papers by Blamire and others^{16, 17}, Parker and Hinton¹⁸, and Bremner¹⁹. In simple terms an annual publication of counts would provide a starting point, similar to the annual publication of VIDA data²⁰ – see Figure 5.1.

Figure 5.1 Extract from annual VIDA publication.

VIDA TABLE 3: CATTLE 2002 - 2009	2002	2003	2004	2005	2006	2007	2008	2009
Group 1: Systemic Disease and those not readily classified organically								
Hereditary/developmental abnormalities	36	61	40	44	57	31	53	65
Foul in the Foot	3	4	1	1	7	5	1	0
Clostridial disease not otherwise specified	21	22	39	42	69	63	53	45
Botulism	0	0	0	0	0	0	23	17
<i>Clostridium chauvoei</i> disease	80	78	81	65	56	72	51	58

- 5.3 FSA inspection data is a valuable deposit for endemic, TB and exotic disease information as well as chronic welfare problems. **RECOMMENDATION: So as to promote data use it is proposed that data are made available in a structure that is compatible for RADAR²¹.** The data to RADAR needs to be timely and direct.

¹⁶ Blamire RV and others (1970). A review of some animal diseases encountered at meat inspection 1960-1968. Veterinary Record 87, 234-238.

¹⁷ Blamire RV and others (1980). A review of some animal diseases encountered at meat inspections in England and Wales, 1969-1978. Veterinary Record 106, 195-199.

¹⁸ Parker DWH and Hinton M (1990). Disease conditions diagnosed in culled adult cattle sent to an abattoir either with or without a veterinary certificate. Veterinary Record 126, 189-190.

¹⁹ Bremner AS (1994). Post mortem condemnation returns from poultry slaughterhouses in England and Wales. Veterinary Record 135, 622-623.

²⁰ Link to VIDA 2009 publication. http://www.defra.gov.uk/via/reports/rep_vida09.htm

²¹ Rapid Analysis & Detection of Animal-related Risks, Defra. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/vetsurveillance/radar/index.htm>

- 5.4 To gain maximum value from the data, any denominator must be clearly expressed. Similarly, where data are presented for an animal type, the animal type needs to be clear, as does any aggregation of multiple animal types.
RECOMMENDATION: There is a need for an audit procedure to confirm a data return has been completed for each batch of animals.
- 5.5 Currently the pig and poultry sector appear to be the main livestock stakeholders that value and use CCIR information, although there is inevitably variation between producers. In the pig sector, it is recognised that specialist pig veterinary practitioners perceive abattoir data to be unreliable and therefore, generally, do not use it extensively for decision making for pig health. However, they do recognise that the data may provide a valuable 'syndrome flag' or alert to prompt further investigation on farm; for example, increased recording of lung lesions may stimulate investigation into respiratory disease. In other sectors, and based on limited questioning at the abattoir visits, it was suggested that fewer than 10% of sheep producers had ever asked for feedback on conditions (mostly liver condemnations for fluke). However, where the feedback was asked for it would appear there was intent to use the information to protect animal health.
- 5.6 **RECOMMENDATION: CCIR data should be promoted and developed across all the livestock sectors.** The provision of FCI and receipt of CCIR is a sound principle, although it seems to be hampered in being perceived as "another piece of paper" or "red tape". Both the FCI and CCIR needs to be in a user-friendly format. One suggestion, to produce the FCI form on an A4 envelope, offers a practical solution for cattle producers to provide FCI and enclose animal passports with the consignment of animals, if not provided electronically beforehand (preferred option). Establishing a common template for CCIR that meets producers' requirement will help. Producers need to be engaged in the process of developing CCIR reports. The CCIR report must be seen as adding value to the producer. CCIR is an important component of the "information cycle" on animal health and welfare.
- 5.7 **RECCOMENDATION: Producers, their agents and vets should have direct access to their CCIR information.** This may be best achieved through a secure web portal. Whilst email notification of batch results is helpful, easy access to an archive of data may encourage uptake and use of the data for on farm health planning.
- 5.8 It has been estimated that c.50-60% of lambs slaughtered are via a livestock market. In this circumstance, which also applies to cattle, it is not possible for CCIR to be fed back to the producer as the one batch from the market is now made up of multiple batches of lambs from different producers. This is a deficiency in the chain of animal recording rather than being technically prohibitive.
- 5.9 **RECOMMENDATION: The data need to be clearly described in a way that points out any limitations,** for example the recognition that the conditions data may not be independent and thus, the absence of a condition count may not truly reflect the absence of the condition. This may take the form of a data quality statement. This may be a generic statement on how data is collected and used, as well as a more bespoke statement for specific data extracts or reports.

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- 5.10 Section 2 of this report identified a number of observations on data quality and these should be appraised individually.
- 5.11 There is a practical trade off against the ideal of recording all conditions for all body parts from all individuals and the recording of a single main condition for the rejection of a whole carcass. Almost certainly, it is not possible to prescribe a common approach across all species because of the variation in the inspection process from low throughput red meat plants to high throughput poultry plants.
- 5.12 However, there are specific cases that highlight the very real need to adopt individual animal recording wherever possible. For example, although TB is rare in sheep, it may be considered important to trace cases for public or animal health reasons. To do this fully, it is necessary for the head, carcass and offals to be matched to the same animal and for the recording of any lesions to be at an individual animal level, particularly if from a mixed source batch. It is recognised however, that even with individual animal recording, in this example it may still be difficult to trace sheep if the last movement was through a market.
- 5.13 Therefore it may be better to define a working process that draws from best practice. That is, what we can reasonably expect to record from the inspection process. **RECOMMENDATION: It is important to define the working process to add clarity for the recording of data for each species.** Table 5.1 sets out a proposal for how conditions should be recorded for each species. It is beyond the scope of the report to fully establish such a working process and we recommend that this is reviewed alongside a review of the conditions list.

Table 5.1 Proposal for how conditions are recorded, by species.

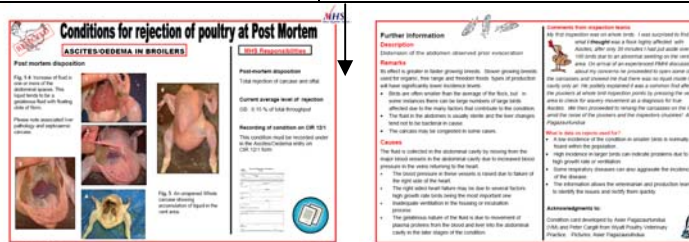
Species	Working process for data recording	Comment
Poultry (and avian game species)	For whole bird carcass rejection, record a single condition. Where two or more conditions are present in the carcass, the dominant condition should be recorded. This should be the major condition. Record dominant condition for part carcass or offal rejection.	It may be felt that adopting estimates of a proportion of the batch affected is more practical as best practice?
Cattle (and calves)	All conditions should be examined for and recorded if identified. This should be done by body part for individual carcasses and offals. A condition should be recorded only once for a body part.	In this case, the aim should be to record ante mortem and post mortem conditions at individual animal level and linked to individual animal ear tag identification.
Sheep (and goats)	All conditions should be examined for and recorded if identified. This should be done by body part for individual carcasses and offals. A condition should be recorded only once for a body part.	The aim should be as for cattle where electronic identification of individuals is available. Where this is not possible, observations should be linked to a batch.
Pigs	All conditions should be examined for and recorded if identified. This should be done by body part for individual carcasses and offals. A condition should be recorded only once for a body part.	Observations should be linked to a batch as a minimum and for post mortem conditions to individual carcasses wherever possible.
Game species	For avian species and small game follow poultry. For large game and farmed deer follow pigs.	To be determined, but consider scope of options used above.

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- 5.14 The recording of post mortem conditions against individual animals is possible in fully integrated electronic abattoirs. The adoption of touch screen recording has the additional benefits of reducing paperwork, eliminating transcription errors, automation of data management and reporting of CCIR to producers at individual animal/batch level. This would work best when an individual animal (or batch) kill number could be associated with the recording of the condition(s). The recording of conditions to individual animals may only be suitable for “very small or very sophisticated plants”.
- 5.15 **RECOMMENDATION: The list of conditions must be reviewed regularly to ensure it is workable. The matrix of conditions and body parts, where appropriate, must be as concise as possible.** In practice this may be a compromise between what is desirable and what is achievable. The more that is looked for the less accurately it will be done. It would be better to correctly record the count of more generic conditions (for example, non-specific gastro-intestinal disease) than to incorrectly record very specific conditions (for example, Johnes disease).
- 5.16 **RECOMMENDATION: The list of conditions should undergo annual review and they need to have clear criteria.** This will provide clarity and ensure the recording of conditions can and is applied consistently. It is outside the scope of this report but consideration should also be given to solicit review comments for FCI. For example, it may be that for poultry, knowing the “mortality in the last 7 days” would be better than “mortality at 28 or 35 days of age”.
- 5.17 **RECOMMENDATION: The list of conditions, with criteria, should be in a single look up style reference document that allows web access for staff.** It is helpful if there is consistent use of terminology for conditions from the point of data capture to dissemination.
- 5.18 The list of conditions should be supplemented with official images to use as reference and for training purposes. This may be along the lines of linking to ‘disease cards’ that are available for selected conditions in selected species. Figure 5.2 gives an example for ‘Ascites’ in poultry. Disease cards should also be reviewed annually, alongside the review of the conditions, and updated as required. In addition, the list of conditions can be supplemented with links to other FSA guidance notes or relevant regulations.

Figure 5.2 Proposed format of linking supplementary information to the revised conditions list.

FSA No.	Description	Criteria	Notes
055	Ascites	An increase of fluid in one or more abdominal spaces. This liquid tends to be a gelatinous fluid with floating clots of fibrin.	There may be associated liver pathology and the carcass may appear septicaemic. Link to disease card.



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- 5.18 In practice any unknown conditions (rarely observed) are lost amongst the recording of known conditions. This may be of minor consequence, but in a role of surveillance, the identification of unknown conditions may be the first indicator of a new or emerging disease. It is proposed that there is an option to record 'pathology of unknown aetiology – describe briefly'.
- 5.19 There is an opportunity to establish better links between FSA and VLA or SAC to provide a diagnostic service or ad-hoc consultancy (validate a diagnosis, QA a sample of rejected offals or investigate unknown pathology). Good links are already established between TB reactor plants and the TB section at VLA Weybridge.
- 5.19 During abattoir visits, MHIs commented that the investigation of the unusual helps to keep the work interesting. One plant had a collection of images on CD of known and unknown conditions that had been observed in poultry over the years. This was very much down to the local enthusiasm of MHIs in the plant. This resource is potentially valuable for training and for providing a visual reference source to supplement the list of conditions.
RECOMMENDATION: The FSA should try and hold a central web based image library linked to the list of conditions. Any such library does need a curator to ensure that the image truly is of the condition stated.
- 5.20 **RECOMMENDATION: There needs to be improved communication, both ways, between FSA London and FSA York with regard to making use of the data.** It is essential that both parties are actively engaged in an ongoing review of conditions, understanding data collection or recording issues and developing the use of the data for stakeholders. There may be benefit in both parties contributing to the monthly Tech Files newsletter.
- 5.21 **RECOMMENDATION: There needs to be a clear program for the longer term development of data systems.** It is recognised that the Next Generation AM/PM system will eventually create a better warehouse, but it may be many years before a single system is in place for all species and all plants.
- 5.22 It has been identified that there is a division in veterinary services between the farm and beyond the farm gate. The better linking of veterinary services across the food chain would be beneficial. In many ways FCI and CCIR is a considerable step towards this, however, more needs to be done. Given the considerable effort that is made to collect the data at the abattoir it is disheartening that the inspection data are not used more widely.
- 5.23 Finally, there is considerable opportunity for FSA veterinary staff to engage in the production of GB surveillance outputs. This may be through future work with VLA or SAC or directly with industry bodies. This will help to highlight the role of meat inspection beyond that of protecting the food chain.

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ANNEX B: SUMMARY OF DATA EXTRACT

Database	No. of Records	Start Date	End Date	Species	Breed	Conditions	Body Parts	Licences (abattoirs)	Producers
Next Generation AM/PM system Pig condition data	434633	17/08/2009	08/09/2010	Pigs	N/A	85	26	176	3452
Next Generation AM/PM system Poultry condition data	601113	30/06/2009	08/09/2010	Broiler, Hens, Ducks, Turkeys, Geese, Guinea Fowl, Rabbits (1), Quail, Other	Cobb, Hubbard, Hybro, Ross, Other, Not provided	24	N/A	36	2260
AM/PM system (AM/PM – SIR) condition data	390196	01/04/2008 (2)	25/07/2010	(6)	(3)	194 (4)	N/A	2407 (5)	N/A

(1) There are 26 condition entries for 'Rabbits' within the Next Generation AM/PM system Poultry condition dataset

(2) There are several spurious date entries and for practical purposes data was used after Mar 2008 when the system went live.

(3) Breed is not used within the AM/PM system and there are groups carried over from the OMIS system and no longer used.

(4) AM/PM system (AM/PM (SIR) conditions are date ranged and species specific.

(5) Licenses are date ranged so not all are current.

(6) The AM/PM system (AM/PM – SIR) contains 75 'species'. These are detailed below:

Cattle	OTMS Cattle non hc	Cold Storage Meat Products	Farmed Land Mammals
Calves	Small Game	Minced Meat	Farmed Land Mammals not dom ung
Solipeds	Pheasants/Grouse	Meat Preparations	Farmed Land Mammals not dom ung
Pigs	Partridge	Delayed evisceration	Farmed Land Mammals ()
Goats	Pigeon	Effile production	Farmed Land Mammals not D Ung
Sheep	Duck/Geese/Snipe	Over 48 mths Cattle	Rendered animal fats and greaves
Deer	Rabbit/Hare	TB reactor project	Stomach bladders intestines
Wild Boar	Ruminants	MSM	Gelatine
Ratites	Red Meat Cutting Plant Tonnage	Large Wild Game	Collagen
Broilers	White Meat Cutting Plant Tonnage	Small wild game in feather	Storage of Food of Animal Origin
Hens	Game Cutting Plant Tonnage	Small wild game in fur	remove sp cord older sheep goat
Quail	Cattle 30 to 48mth	Large wild game cutting	cold storage minced meat
Guinea Fowl	OCDS Cattle	Small wild game cutting	cold storage meat preparations
Ducks	VC Removal	Farmed deer	National Measures CD Facilities
Geese	Ready to Eat Meats	Farmed wild boar	National Measures Detained Meat
Turkeys	Meat Products	Re wrapping	
Rabbits	Re Wrapping	Alpacas	
Bison	Cold Storage Red	Guanacos	
Buffalo	Cold Storage White	Dressing of Ratites	
Poultry	Cold Storage Wild Game	Farmed Game Cutting	

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ANNEX C: SUMMARY OF DATA REPORTS

As at 13/05/2011, the full set of data reports presented in Annex C are available from this link: http://vla.defra.gov.uk/reports/rep_rev_ampm_data.htm. Please note that this link may be subject to change in the future. If this occurs then a revised report with an updated link will be provided.

1- Frequency of ante mortem and post mortem conditions recorded for [various species]. Results are presented for GB country.

This report lists all conditions recorded during meat inspection between 1 July 2008 and 30 June 2010. The conditions are identified either at ante mortem or post mortem. The report shows the number of times each condition is recorded and the frequency (%) of each condition for each GB country (England, Scotland and Wales). It is therefore possible to see if the most frequently identified condition in one country is similarly recorded one in the other countries. It also gives the total number of conditions recorded in GB. The data were extracted from the old (SIR) system. The report gives results for:

Species	Ante mortem	Post mortem
Broilers		✓
Calves	✓	✓
Cattle	✓	✓
Cattle 30 to 48	✓	✓
Deer	✓	✓
Duck/Geese/Small game		✓
Ducks		✓
Geese		✓
Goats	✓	✓
Guinea Fowl		✓
Hens		✓
OCDs Cattle		✓
Over 48 months Cattle		✓
Partridge		✓
Pheasants/Grouse		✓
Pigeon		✓
Poultry		✓
Quail		✓
Rabbit/Hare		✓
Rabbits		✓
Ratites		✓
Ruminants		✓
Sheep	✓	✓
Small Game		✓
Solipeds	✓	✓
Turkeys		✓

AM-PM (SIR) Species Condition Data - Condition Distribution

Conditions Reported Between: 7/1/2008 and 6/30/2010

Ante-Mortem

Calves

	England	%	Scotland	%	Wales	%	Total	%	Cum %
Pneumonia / Respirator	256	77.56 %	16	9.45 %	56	16.97 %	328	19.43 %	19.43 %
Diarrhoea	146	57.46 %			108	42.52 %	254	14.96 %	34.39 %
Lameness	228	92.66 %	8	3.25 %	10	4.07 %	246	14.49 %	48.88 %
Other	195	100.00 %					195	11.48 %	60.37 %
Eye condition	159	95.93 %	1	0.61 %	4	2.45 %	163	9.60 %	69.96 %
Dermatitis	68	53.54 %			59	46.46 %	127	7.48 %	77.44 %
Dehydration	33	42.86 %			44	57.14 %	77	4.53 %	81.98 %
Abcesses	51	54.04 %			3	3.55 %	54	3.18 %	85.16 %
Joint lesions	42	65.71 %			7	14.29 %	49	2.89 %	88.04 %
Congenital Deformity	36	61.82 %	2	4.55 %	6	13.64 %	44	2.59 %	90.64 %
Skin condition	30	100.00 %					30	1.77 %	92.40 %
Papilloma / Warts	20	100.00 %					20	1.18 %	93.58 %
Foot Lesion	11	61.11 %	7	38.89 %			18	1.06 %	94.64 %
Emaciation / Oedema	12	75.00 %			4	25.00 %	16	0.94 %	95.58 %
Mange	13	100.00 %					13	0.77 %	96.35 %
Recumbent	10	50.01 %	1	9.09 %			11	0.65 %	97.00 %
Rupture / Hernia	11	100.00 %					11	0.65 %	97.64 %
Neurological Symptoms	7	77.76 %			2	22.22 %	9	0.53 %	98.17 %
Trauma	7	77.76 %			2	22.22 %	9	0.53 %	98.70 %
Died on arrival (DOA)	8	100.00 %			0	0.00 %	8	0.47 %	99.18 %
Ascites	5	100.00 %					5	0.29 %	99.47 %
Morbund	5	100.00 %					5	0.29 %	99.76 %
Bloat	1	100.00 %					1	0.06 %	99.82 %

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2- Frequency per country of every ante mortem and post mortem conditions recorded.

This report lists all conditions recorded during meat inspection between 1 July 2008 and 30 June 2010. The conditions are identified either at ante mortem or post mortem. The report shows the number of times a condition was recorded. The rate at which each condition is observed in each GB country is also presented. It is therefore possible to see which country identifies the most of each condition. The data were extracted from the old (SIR) system. The report gives results for the same species presented in report 1.

AM-PM (SIR) Species Condition Data - Regional Distribution

Conditions Reported Between: 7/1/2008 and 6/30/2010

Ante-Mortem

Calves

	England	%	Scotland	%	Wales	%	Total	%	Cum %
Pneumonia / Respirator	256	18.88 %	18	48.65 %	56	18.36 %	330	19.43 %	19.43 %
Diarrhoea	146	10.77 %			108	35.41 %	254	14.96 %	34.39 %
Lameness	228	16.81 %	8	21.62 %	10	3.28 %	246	14.49 %	48.88 %
Other	195	14.38 %					195	11.48 %	60.37 %
Eye condition	158	11.65 %	1	2.70 %	4	1.31 %	163	9.60 %	69.96 %
Dermatitis	68	5.01 %			59	19.34 %	127	7.48 %	77.44 %
Dehydration	33	2.43 %			44	14.43 %	77	4.53 %	81.98 %
Abscess	51	3.76 %			3	0.98 %	54	3.18 %	85.16 %
Joint lesions	42	3.10 %			7	2.30 %	49	2.89 %	88.04 %
Congenital Deformity	36	2.65 %	2	5.41 %	6	1.97 %	44	2.59 %	90.64 %
Skin condition	30	2.21 %					30	1.77 %	92.40 %
Papilloma / Warts	20	1.47 %					20	1.18 %	93.58 %
Foot Lesion	11	0.81 %	7	18.92 %			18	1.06 %	94.64 %
Emaciation / Oedema	12	0.88 %			4	1.31 %	16	0.94 %	95.58 %
Mange	13	0.96 %					13	0.77 %	96.35 %
Recumbent	10	0.74 %	1	2.70 %			11	0.65 %	97.00 %
Rupture / Hernia	11	0.81 %					11	0.65 %	97.64 %
Neurological Symptoms	7	0.52 %			2	0.66 %	9	0.53 %	98.17 %
Trauma	7	0.52 %			2	0.66 %	9	0.53 %	98.70 %
Died on arrival (DOA)	8	0.59 %			0	0.00 %	8	0.47 %	99.18 %
Ascites	5	0.37 %					5	0.29 %	99.47 %
Moribund	5	0.37 %					5	0.29 %	99.76 %
Bloat	1	0.07 %					1	0.06 %	99.82 %

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3- Prevalence of conditions recorded ante mortem and post mortem in sheep. Results are presented for each GB country.

This report lists all conditions recorded during inspection of sheep between 1 July 2008 and 30 June 2010. The conditions are identified either during ante mortem or post mortem inspection. The report shows the number of times a condition was recorded. The prevalence of each condition is also presented for each country. There were 40.8 million sheep slaughtered during that period. It is possible to see which condition is more prevalent in each country and which conditions are most prevalent in GB. The data was extracted from the old (SIR) system.

AM-PM (SIR) - Sheep Prevalence Data

40,825,404 Conditions Reported Between: 7/1/2008 and 6/30/2010

Ante-Mortem

Sheep

	England	% Prev	Scotland	% Prev	Wales	% Prev	Total	% Prev
Lameness	105,617	0.26 %	8,936	0.02 %	32,659	0.08 %	147,212	0.36 %
Pneumonia / Respiratory	60,864	0.15 %	45,512	0.11 %	13,398	0.03 %	119,774	0.29 %
Foot-Rot	11,876	0.03 %	31,833	0.08 %	7,903	0.02 %	51,612	0.13 %
Dermatitis	20,468	0.05 %	2,013	0.00 %	5,188	0.01 %	27,669	0.07 %
Eye condition	14,260	0.03 %	1,365	0.00 %	2,862	0.01 %	18,487	0.05 %
Mastitis	16,527	0.04 %	460	0.00 %	395	0.00 %	17,382	0.04 %
Joint lesions	10,939	0.03 %	2,183	0.01 %	4,206	0.01 %	17,328	0.04 %
Orf	4,908	0.01 %	544	0.00 %	2,250	0.01 %	7,702	0.02 %
Foot Lesion	6,227	0.02 %	496	0.00 %	699	0.00 %	7,422	0.02 %
Emaciation / Oedema	4,575	0.01 %	163	0.00 %	168	0.00 %	4,906	0.01 %
Trauma	2,570	0.01 %	403	0.00 %	659	0.00 %	3,632	0.01 %
Skin condition	2,987	0.01 %	121	0.00 %	280	0.00 %	3,388	0.01 %
Abscess	2,242	0.01 %	282	0.00 %	347	0.00 %	2,871	0.01 %
Sheep Scab	1,562	0.00 %	351	0.00 %	537	0.00 %	2,450	0.01 %
Diarrhoea	1,906	0.00 %	160	0.00 %	97	0.00 %	2,163	0.01 %
Other	1,847	0.00 %	100	0.00 %	167	0.00 %	2,114	0.01 %
Rhinitis	1,378	0.00 %	452	0.00 %	4	0.00 %	1,834	0.00 %
Died in lairage (DIL)	1,175	0.00 %	309	0.00 %	224	0.00 %	1,708	0.00 %
Recumbent	1,374	0.00 %	37	0.00 %	29	0.00 %	1,440	0.00 %
Maggots	606	0.00 %	42	0.00 %	600	0.00 %	1,248	0.00 %
Prolapse	710	0.00 %	28	0.00 %	123	0.00 %	861	0.00 %
Ascites	762	0.00 %	9	0.00 %	34	0.00 %	805	0.00 %
Congenital Deformity	491	0.00 %	87	0.00 %	146	0.00 %	724	0.00 %

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4- Frequency per NUTS 2 regions of ante mortem and post mortem conditions recorded for [various species].

This report presents a list of all conditions recorded during meat inspection between 1 July 2008 and 30 June 2010. The conditions are identified either during ante mortem or post mortem inspection for all species. The report shows the frequency at which a condition is observed in each NUTS 2 region. It is possible to see in which NUTS 2 region a condition is mostly recorded. The data was extracted from the old (SIR) system and presents information for all species described in report 1.

AM-PM (SIR) Species Condition Data - Nuts2 Distribution

Conditions Reported Between: 1/1/11

Ante-Mortem

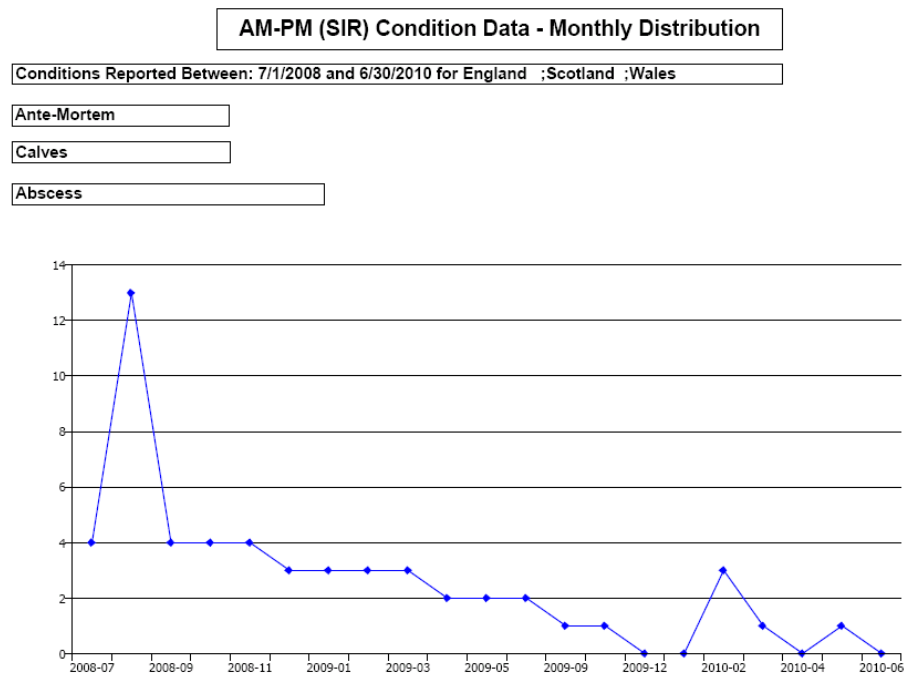
Calves

	Beds and Herbs		Berkshire, Berks		Cheshire		Cornwall And Isles Of Sci		Cumbria		Derby, Motts		Devon		Dorset And Somerset		East Anglia		East Scotland		East Wales		Essex		Gloucesters, Wiltshire	
	Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ		Σ	
Pneumonia / Respiratory	1.00	0.00	3.00	0.01	3.00	0.01	5.00	0.01	1.00	0.00	5.00	0.01	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	25.00	0.07
Lameness					14.00	0.05	2.00	0.01			1.00	0.00	48.00	0.17	4.00	0.01	6.00	0.02			1.00	0.00	100.00	0.42	10.00	0.04
Diarrhoea					12.00	0.05	34.00	0.13					2.00	0.01									107.00	0.42	13.00	0.05
Other					1.00	0.01	2.00	0.01	4.00	0.02	1.00	0.01	1.00	0.01	2.00	0.01									10.00	0.05
Eye condition					68.00	0.41	27.00	0.16			1.00	0.01			1.00	0.01	1.00	0.01	1.00	0.01	1.00	0.01	3.00	0.02	21.00	0.13
Dermatitis					6.00	0.04	3.00	0.07															53.00	0.43	37.00	0.27
Dehydration					3.00	0.04					2.00	0.02	4.00	0.05									44.00	0.54	5.00	0.06
Abscess							1.00	0.02							1.00	0.02									13.00	0.23
Congenital Deformity	1.00	0.02			1.00	0.02	2.00	0.04			1.00	0.02	1.00	0.02								2.00	0.04		6.00	0.11
Joint lesions			2.00	0.04	2.00	0.04	1.00	0.02	2.00	0.04			1.00	0.02	1.00	0.02	0.00	0.00							5.00	0.10
Skin condition																									22.00	0.73
Papilloma / Warts																										
Foot Lesion					1.00	0.06																			2.00	0.11
Emaciation / Oedema					3.00	0.19	1.00	0.06							6.00	0.38						1.00	0.06			
Mange													12.00	0.32	0.00	0.00	0.00	0.00								
Recumbent																									3.00	0.23
Rupture / Hernia			1.00	0.03																					1.00	0.03
Trauma					1.00	0.03					1.00	0.03													1.00	0.03
Neurological Symptoms					1.00	0.11											1.00	0.11				1.00	0.11		1.00	0.11
Ringworm											3.00	0.33													1.00	0.11
Died on arrival (DOA)							1.00	0.13					1.00	0.13								0.00	0.00		1.00	0.13
Ascites			1.00	0.17																					1.00	0.17
Moribund																						0.00	0.00		1.00	0.17
Tumour																									1.00	0.33
Bloat																										
Prolapse																										
Suspect fever																										
Suspect Residues																										
Died in lairage (DIL)																										

FINAL REPORT

5- Monthly variation of the condition's frequency presented per condition and per species in GB

This graph shows the monthly variation of a specific condition's frequency. The conditions are separated into two groups: ante mortem and post mortem. It shows how frequently a condition was recorded every month between 1 July 2008 and 30 June 2010 and for a specific species. This graph helps to see if a condition is found consistently or if there are times during the year where it is more often diagnosed (peak).



FINAL REPORT

6- Prevalence of conditions recorded in pigs in GB

This table presents a list of conditions recorded during pig inspection. The conditions are recorded under ante mortem and post mortem. The post mortem conditions are divided into four different categories: notifiable conditions, conditions from the offal, condition from the carcass and general conditions. For each condition, the number of rejections due to a condition is presented. The prevalence is also calculated for the period between 1 September 2009 and 31 August 2010. The number of pigs slaughtered over that period was 2.53 million pigs. The data come from the Next Generation AM/PM system for pigs in GB. Note: one pig may have more than one condition.

	Pig Condition Prevalence(AM)
--	-------------------------------------

2,533,201 Slaughtered Between: 9/1/2009 and 8/31/2010
--

Condition	Count	Prevalence	%	Cum %
Hernia/Rupture	10,841	0.43 %	30.95 %	30.95 %
Lameness	7,508	0.30 %	21.43 %	52.38 %
Abscess	4,373	0.17 %	12.48 %	64.86 %
Joint Lesion	4,070	0.16 %	11.62 %	76.48 %
Foot Lesion	1,654	0.07 %	4.72 %	81.20 %
Killed in Lairage (KIL)	1,611	0.06 %	4.60 %	85.80 %
Lumps/Swelling	1,208	0.05 %	3.45 %	89.25 %
Prolapse	898	0.04 %	2.56 %	91.81 %
Leg Lesion	718	0.03 %	2.05 %	93.86 %
Dead on Arrival (DOA)	578	0.02 %	1.65 %	95.51 %
Open Wound	379	0.01 %	1.08 %	96.59 %
Mastitis	278	0.01 %	0.79 %	97.39 %
Dead in Lairage (DIL)	171	0.01 %	0.49 %	97.87 %
Eye condition	163	0.01 %	0.47 %	98.34 %
Bruising	128	0.01 %	0.37 %	98.70 %
Emaciated	108	0.00 %	0.31 %	99.01 %
Fracture	102	0.00 %	0.29 %	99.30 %
Neurological Symptoms/ Convulsions	72	0.00 %	0.21 %	99.51 %
Oorchitis	62	0.00 %	0.18 %	99.69 %
Collapsed/Moribund/Recumbent	57	0.00 %	0.16 %	99.85 %
Diarrhoea	53	0.00 %	0.15 %	100.00 %
Total:	35,032			

Body Parts Chosen: Total number of each condition identified in batch (more than one condition may be entered for each pig)
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FINAL REPORT

7- List of comments (for pigs) recorded under condition: A) “other”; B) DIL, DOA, and KIL

In the Next Generation AM/PM system for pigs, many batches of pigs have comments recorded. They are not associated to a specific condition but may be used to clarify the reason why a carcass or an organ was rejected or to specify what “Other” condition was identified and not listed on the form. A very high proportion (approximately a third of all entries) refers to “tongue contamination”. Amongst the most frequent comments, conditions such as “peritonitis”, “otohematoma”, “pneumonia”, “pericarditis”, “full pluck pathology” were recorded.

- 1- The way the comments are written and entered in the system makes it very difficult to analyse, compile and use that information. There is no consistency in the way each comment is written: orthography, the use of capital letters versus lower case, the use of space, multiple entries, and same condition recorded under different names, etc. It is acknowledged however, that the original specification for the comments field was to “provide additional information to the FBO and producer” (Howard Betts, FSA York, personal communication) rather than to foster a requirement for extended use for surveillance or review of conditions.
- 2- Many conditions could be recorded directly using the list of condition, but that would necessitate knowing more details about the pathology. For example, many conditions recorded in “comments” were “peritonitis”. To be able to record that condition on the form, you need to know whether the condition was on the carcass or on the offal. If on the carcass, you need to know whether it was with an abscess or without an abscess. In both case, you need to remember to which organ the condition was observed. It may be possible that this information is not collected and therefore not possible to record it under the appropriate condition.
- 3- Many conditions are repeated. A fixed list of “other conditions” may be useful to reduce data entry variation.

FINAL REPORT

Pig Condition Comments

Comments Recorded Between: 1/1/1900 and 12/31/2014

Other

Comments	No Of Records	%
Null Entry	19,724	80.01 %
other=pathology	113	0.46 %
2 tongues: contamination	102	0.41 %
4 tongues cont	83	0.34 %
A.S.D.P	69	0.28 %
FULL PLUCK PATHOLOGY	67	0.27 %
3 tongues: contamination	64	0.26 %
4 tongues: contamination	62	0.25 %
1 tongue: contamination	61	0.25 %
2 tongues: contamination	60	0.24 %
other = septic peritonitis	58	0.24 %
4 tongues f/con	52	0.21 %
1 tongues: contamination	49	0.20 %
Other = Septic peritonitis.	46	0.19 %
4 tongues: contamination	45	0.18 %
ASDP	45	0.18 %
2 Tongues: contamination	43	0.17 %
4tongues	43	0.17 %
3 tongues: contamination	41	0.17 %
1 pig presented otohematoma	38	0.15 %
3 tongues cont	38	0.15 %
6 tongues: contamination	38	0.15 %
1 tongue: contamination	37	0.15 %
2 tongues cont	37	0.15 %
6 tongues cont	36	0.15 %
septic peritonitis	34	0.14 %
1 tongues: contamination	33	0.13 %
4 Tongues: contamination	33	0.13 %
1 tongues: contamination	31	0.13 %
5 tongues: contamination	31	0.13 %
1 peritonitis	30	0.12 %
1 Tongues: contamination	29	0.12 %
1 PERITONITIS	28	0.11 %
6 tongues f/con	28	0.11 %
1 TONGUE: CONTAMINATION	27	0.11 %
6 tongues: contamination	27	0.11 %
2 tongues: contamination	26	0.11 %
1 septic peritonitis	25	0.10 %
2 TONGUES: CONTAMINATION	25	0.10 %
Tongues - 4	25	0.10 %
3 tongues f/con	23	0.09 %
4 tongues cont.	22	0.09 %

FINAL REPORT

Pig Condition Comments(DILs, DOAs & KILs)

Comments Recorded Between: 1/1/1900 and 12/31/2014

Dead in Lairage (DIL)

Comments	No Of Records	%
Null Entry	302	92.64 %
1 dead in lairage	2	0.61 %
1 DEFORMED LEG TO BE SLAUGHTERED ASAP	2	0.61 %
1 pig presented otohematoma	2	0.61 %
1 pig rejected at ante mortem, very pale, poor condition.	2	0.61 %
3 small pigs received in this lot	2	0.61 %
KIL - broken jaw	2	0.61 %
Owner: 1 skinny pig with pot belly	2	0.61 %
1 pig kill in lairage weak on rear legs	2	0.61 %
Other tumor	2	0.61 %
1 PIG KILLED IN THE LAIRAGE DUE TO LAMENESS	1	0.31 %
1 pig presented tilted head	1	0.31 %
1 shot in a lairage	1	0.31 %
1 with stress died just after unloading	1	0.31 %
DEAD IN LAIRAGE DIED BEFORE IT COULD BE SHOT. IT WAS STR	1	0.31 %
DIED IN LAIRAGE FROM HEART ATTACK	1	0.31 %
I KILLED IN LAIR AFTER COLLAPSING	1	0.31 %
Several small, one with abdominal distension	1	0.31 %
Total:	326	100.00 %

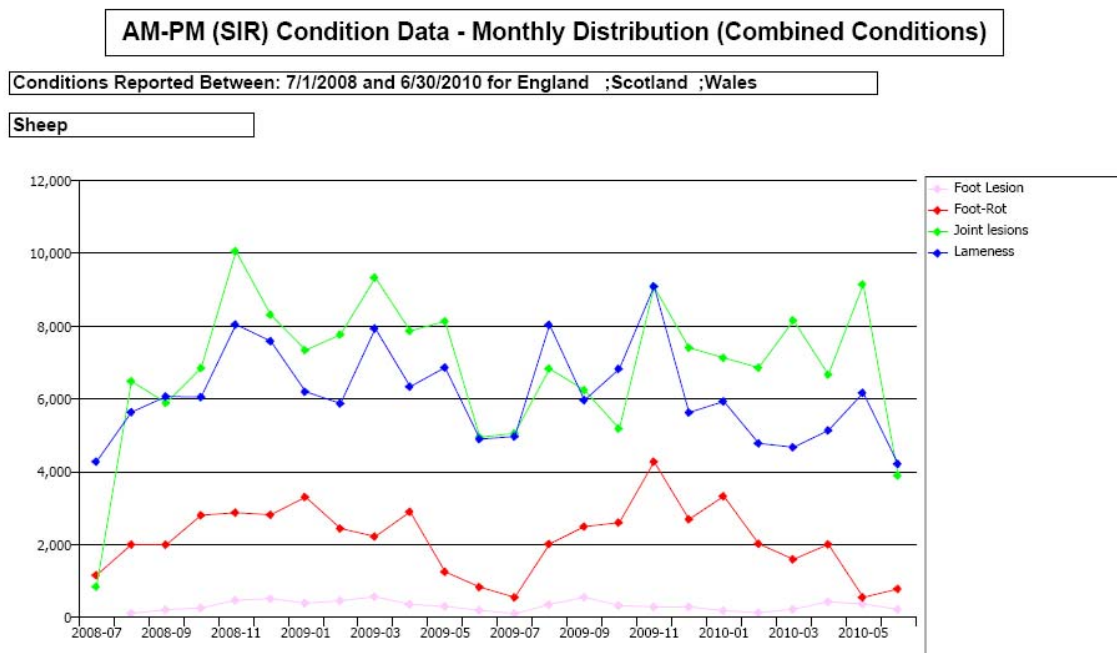
Dead on Arrival (DOA)

Comments	No Of Records	%
Null Entry	906	90.42 %
1 ABDOMINAL RUPTURE TO BE SLAUGHTERED THE LAST	4	0.40 %
1 PROLAPSE TO BE SLAUGHTERED ASAP	4	0.40 %
2 RUPTURES TO BE SLAUGHTERED THE LAST	4	0.40 %
105 ON LOAD ONE DOA THEREFORE 104 PRESENTED FOR	2	0.20 %
1 ABCESS TO BE SLAUGHTERED THE LAST	2	0.20 %
1 DOA	2	0.20 %
1 DOA; no signs or noticable disease	2	0.20 %
1 pig given 10 withdrawal period	2	0.20 %
1 JOINT LESION AND 1 LAME TO BE SLAUGHTERED ASAP	2	0.20 %
1 kill in lairage, prolapse	2	0.20 %
1 LAME + TAIL BITE TO BE SLAUGHTERED ASAP	2	0.20 %
1 LAME TO BE SLAUGHTERED ASAP	2	0.20 %
1 RUPTURE TO BE SLAUGHTERED THE LAST	2	0.20 %
1 pig DOA	2	0.20 %
1 pig killed on 14/07 due to lameness. Vehicle overcrowded driver spoke	2	0.20 %
1 pig kill in lairage due to heat stress	2	0.20 %
1 pig rejected at ante mortem inspection due to distended abdomen and	2	0.20 %
1 pig shot on arrival due to stress	2	0.20 %
1 PROLAPSE TO BE SLAUGHTERED ASAP	2	0.20 %
1 RUPTURE SLAUGHTERED LAST	2	0.20 %
2 FOOT LESION TO BE SLAUGHTERED IN THE LAIRAGE ASAP	2	0.20 %

FINAL REPORT

8- Monthly variation of four conditions' frequency in GB sheep: Foot lesion, Foot rot, Joint lesion and Lameness.

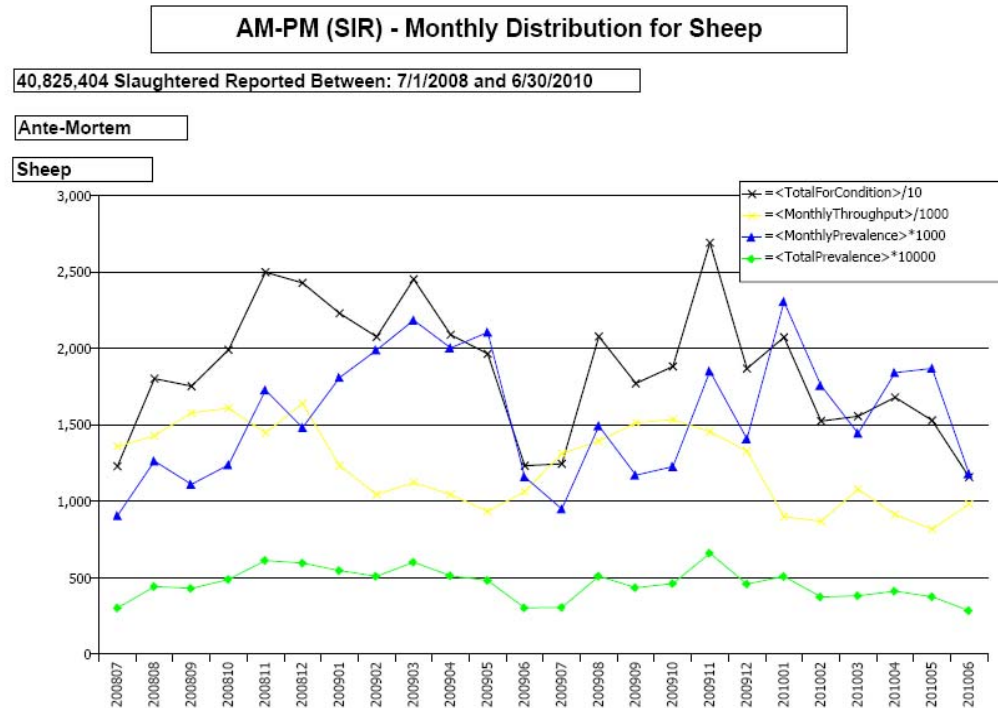
This report shows the monthly variation of four conditions related to leg and foot problems in sheep. It shows how often each condition was recorded every month between 1 July 2008 and 30 June 2010. This graph enables the viewer to compare the pattern of four similar conditions' diagnosis. For example, it appears that "joint lesion" and "lameness" are the two conditions most frequently observed; between May 2009 and July 2009, there was a drop in leg and foot problems diagnosed which appears to be repeated in May 2010. All four conditions follow a similar pattern.



FINAL REPORT

9- Monthly distribution of the total of all conditions, of the throughput and the monthly prevalence in sheep.

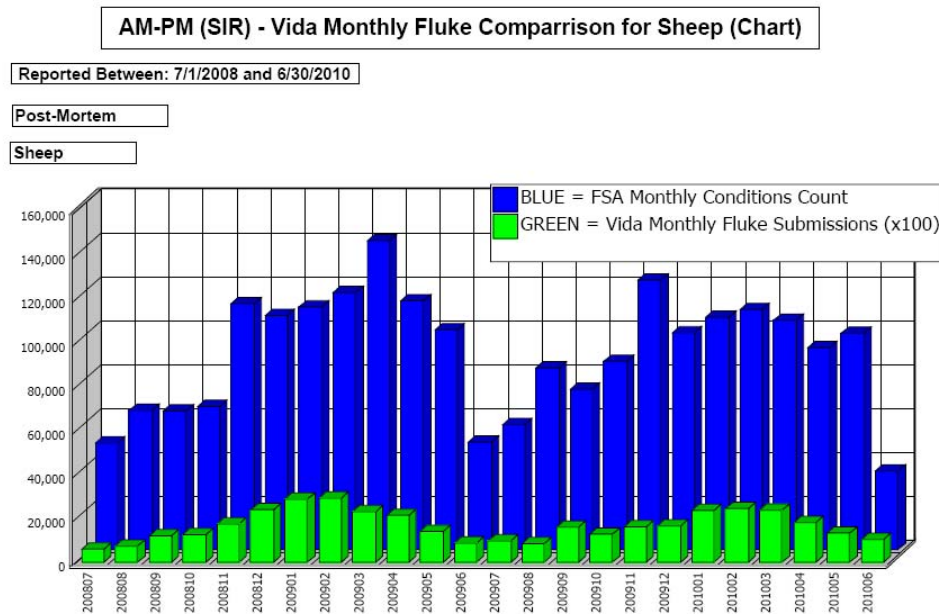
This graph shows how all conditions (grouped together) in sheep vary monthly between 1 July 2008 and 30 June 2010. It also shows how the throughput and the prevalence vary monthly and are compared to the total of conditions. This enables the viewer to observe a trend on the number of conditions recorded. The graph shows a reduced number of conditions recorded during June and July of 2008, 2009, 2010.



FINAL REPORT

10- Comparison between data from VIDA and SIR of the monthly variation of Fluke in GB Sheep.

This graph shows how the condition fluke varies monthly in sheep. Two sets of data are compared: data from the VIDA system and data from the meat hygiene inspection (FSA using SIR). It is possible to observe a similar variation of the detection of the disease.



FINAL REPORT

ANNEX D: PROPOSED LIST OF ANTE MORTEM INSPECTION CONDITIONS**LISTED CODES FOR CATTLE (INCLUDING CALVES)****Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	047	Abdominal swelling - ascites		
De	088	Abscess	Includes local and generalised abscessation.	
	059	Dehydration		
De	060	Emaciation	<i>[Agree definition, for example below condition score 2].</i>	
	062	Fever/suspect fever		
De	064	Hereditary/Developmental abnormality		
De	065	Hernia - abdominal		
De	082	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Record papilloma under skin disease – papilloma.	Record location and cause if known in comments field.
De	085	Trauma - fracture/dislocations		
De	086	Trauma - soft tissue	May include bruising and open wounds.	

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
De	004	Abdominal swelling - bloat		
	005	Diarrhoea		
Ne	009	Mouth lesion(s)	May include Actinomyces (lumpy jaw) and Actinobacillosis (wooden tongue)	

FINAL REPORT**Group 3: Diseases of the Respiratory System**

	FSA No.	Description	Criteria	Notes
De	032	Abnormal respiratory signs - pneumonia	Includes altered respiratory rate/depth, nasal discharge, coughing, nasal discharge, rhinitis and other signs typical of pneumonia.	

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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NONE**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
De	013	Lameness - foot lesion(s)		Record cause if known in comments field.
De	014	Lameness - generalised musculo-skeletal		
De	015	Lameness - joint/leg lesion(s)		Record cause if known in comments field.

LISTED CODES FOR CATTLE (INCLUDING CALVES)**Group 6: Diseases of the Nervous System and Organs of Special Sense**

	FSA No.	Description	Criteria	Notes
De	017	Eye condition - specify cause if known		Record cause in comments field.
	018	Nervous signs	May include ataxia, circling, head pressing, convulsions etc.	Suspect TSE cases should be recorded in Section C.

FINAL REPORT**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	035	Skin disease - ectoparasites	May include mange, ticks, keds and lice	
De	038	Skin disease - papilloma		
	039	Skin disease - ringworm		
De	043	Skin condition(s) NOS - specify cause if known		Record cause if known in comments field.

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
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NONE

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	019	Mastitis	<i>[May exclude calves?]</i>	
	020	Orchitis	<i>[May exclude calves?]</i>	Suspect Brucella ovis, abortus cases should be recorded in Section C.
Ne	021	Reproductive - dystocia/parturition/heavily pregnant	<i>[May exclude calves?]</i>	
De	024	Uterine prolapse	<i>[May exclude calves?]</i>	

FINAL REPORT

LISTED CODES FOR CATTLE (INCLUDING CALVES)**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
De	701	Dead in Lairage (DIL) - specify cause if known	Where an animal has died in the lairage, it will not be processed for human consumption.	Record cause in comments field.
De	702	Dead on Arrival (DOA)	Where an animal has arrived dead, it will not be processed for human consumption. This does not apply to animals slaughtered on farm for welfare reasons that have received an ante-mortem inspection by a veterinarian.	
Ne	703	Emergency slaughter - specify reason	Where a carcass is accompanied by the correct certification, it can be processed for human consumption; however post-mortem inspection must be carried out by an OV.	Record cause in comments field.
De	704	Slaughtered in lairage - specify reason	To include animals presenting as moribund, recumbent or collapsed. Where an animal has to be killed in the lairage, either for animal welfare reasons or for public/animal health and it will not be processed for human consumption. Avian: includes ante-mortem rejects.	Record cause in comments field.
De	705	Slaughtered not for human consumption	Where an animal is not deemed fit for human consumption and the FBO wishes to process the animal (for example for its fleece).	

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
De	904	Bluetongue	Present	
De	905	Brucellosis (Brucella abortus)	2004	
De	908	Enzootic Bovine Leukosis	1996	
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include Contagious Bovine Pleuro-pneumonia (1898), Lumpy Skin Disease (never), Rift Valley Fever (never), Rinderpest (1877), Vesicular Stomatitis (never), Rabies (1970).	Record suspect notifiable disease in comments field.
De	913	TB like lesions	Present	
Ne	***	Transmissible Spongiform Encephalopathy (TSE)	Present	
De	918	Warble fly (Hypoderma bovis)	1990	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

FINAL REPORT**Section D: Food Business Operator**

	FSA No.	Description	Criteria	Notes
Ne	806	Dirty condition		

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	072	Other - specify		Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	047	Abdominal swelling - ascites		
De	088	Abscess	May include local and generalised abscessation.	
	059	Dehydration		
De	060	Emaciation		
	062	Fever/suspect fever		
De	064	Hereditary/Developmental abnormality		
De	065	Hernia - abdominal		
De	082	Suspect tumour/abnormal tissue mass/swelling - specify site	May include papilloma.	Record location and cause if known in comments field.
De	085	Trauma - fracture/dislocations		
De	086	Trauma - soft tissue	May include bruising and open wounds.	

FINAL REPORT**Group 2: Diseases of the Digestive System**

	FSA No.	Description	Criteria	Notes
De	004	Abdominal swelling - bloat		
	005	Diarrhoea		

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	032	Abnormal respiratory signs - pneumonia	Includes altered respiratory rate/depth, nasal discharge, coughing, nasal discharge, rhinitis and other signs typical of pneumonia.	

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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NONE

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	013	Lameness - foot lesion(s)		Record cause if known in comments field.
De	014	Lameness - generalised musculo-skeletal		
De	015	Lameness - joint/leg lesion(s)		Record cause if known in comments field.

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
De	017	Eye condition - specify cause if known		Record cause in comments field.
	018	Nervous signs	May include ataxia, circling, head pressing, convulsions etc.	Suspect TSE cases should be recorded in Section C.

FINAL REPORT**LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)****Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	037	Skin disease - maggots/fly strike		
De	040	Skin disease - suspect orf		
De	041	Skin disease - suspect sheep scab	Reportable to LA	
De	043	Skin disease not otherwise specified - specify cause if known	May include ectoparasites (excl. sheep scab).	Record cause if known in comments field.

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
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NONE

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	019	Mastitis		
	020	Orchitis		Suspect Brucella ovis, abortus cases should be recorded in Section C.
Ne	021	Reproductive - dystocia/parturition/heavily pregnant		
De	024	Uterine prolapse		

FINAL REPORT**LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)****Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
De	701	Dead in Lairage (DIL) - specify cause if known	Where an animal has died in the lairage, it will not be processed for human consumption.	Record cause in comments field.
De	702	Dead on Arrival (DOA)	Where an animal has arrived dead, it will not be processed for human consumption. This does not apply to animals slaughtered on farm for welfare reasons that have received an ante-mortem inspection by a veterinarian.	
Ne	703	Emergency slaughter - specify reason	Where a carcass is accompanied by the correct certification, it can be processed for human consumption; however post-mortem inspection must be carried out by an OV.	Record cause in comments field.
De	704	Slaughtered in lairage - specify reason	To include animals presenting as moribund, recumbent or collapsed. Where an animal has to be killed in the lairage, either for animal welfare reasons or for public/animal health and it will not be processed for human consumption. Avian: includes ante-mortem rejects.	Record cause in comments field.
De	705	Slaughtered not for human consumption	Where an animal is not deemed fit for human consumption and the FBO wishes to process the animal (for example for its fleece).	

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
De	904	Bluetongue	Present	
De	906	Brucellosis (Brucella melitensis)		
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include Brucellosis (Brucella melitensis (never)), Contagious agalactiae (never), Contagious Epididymitis (Brucella ovis (never)), Pest des Petits Ruminants (never), Rift Valley Fever (never), Sheep pox (1866), Rabies (1970), Goat pox (never).	Record suspect notifiable disease in comments field.
De	913	TB like lesions		
Ne	***	Transmissible Spongiform Encephalopathy (TSE)	Present	

FINAL REPORT**Section D: Food Business Operator**

	FSA No.	Description	Criteria	Notes
Ne	806	Dirty condition		

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	072	Other - specify		Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR PIGS**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	065	Abdominal hernia/rupture		
De	088	Abscess	May include local and generalised abscessation.	
De	060	Emaciation		
	062	Fever/suspect fever		
De	064	Hereditary/Developmental abnormality		
De	082	Suspect tumour/abnormal tissue mass/swelling - specify site	Includes haematoma.	Record location and cause if known in comments field.
De	084	Trauma – fight/bite wounds		
De	085	Trauma - fracture/dislocations		
De	086	Trauma – open wounds		

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Ne	***	Trauma – soft tissue	Includes bruising.	
De	087	Trauma - tail lesions	May include short tail docking and tail bite wounds.	

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
	005	Diarrhoea		
Ne	***	Intestinal prolapse		

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	032	Abnormal respiratory signs - pneumonia	Includes altered respiratory rate/depth, nasal discharge, coughing, nasal discharge, rhinitis and other signs typical of pneumonia.	

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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NONE

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	013	Lameness - foot lesion(s)		Record cause if known in comments field.
De	014	Lameness - generalised musculo-skeletal		
De	015	Lameness - joint/leg lesion(s)		Record cause if known in comments field.

FINAL REPORT**Group 6: Diseases of the Nervous System and Organs of Special Sense**

	FSA No.	Description	Criteria	Notes
De	017	Eye condition - specify cause if known		Record cause in comments field.
	018	Nervous signs	May include ataxia, circling, head pressing, convulsions etc.	Suspect TSE cases should be recorded in Section C.

LISTED CODES FOR PIGS**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	035	Skin disease - dermatitis	May include parasitic dermatitis (e.g. mange, ticks, keds and lice) and bacterial dermatitis. Lesions may be localised or generalised. Includes ear necrosis.	
Ne	044	Skin lesions(s) - Erysipelas like		
De	043	Skin disease not otherwise specified - specify cause if known		Record cause if known in comments field.

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
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NONE**Group 9: Diseases of the Reproductive and Mammary System**

	FSA No.	Description	Criteria	Notes
	019	Mastitis		
	020	Orchitis		Suspect Brucella ovis, abortus cases should be recorded in Section C.
Ne	021	Reproductive - dystocia/parturition/heavily pregnant		
De	024	Uterine prolapse		

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LISTED CODES FOR PIGS**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
De	701	Dead in Lairage (DIL) - specify cause if known	Where an animal has died in the lairage, it will not be processed for human consumption.	Record cause in comments field.
De	702	Dead on Arrival (DOA)	Where an animal has arrived dead, it will not be processed for human consumption. This does not apply to animals slaughtered on farm for welfare reasons that have received an ante-mortem inspection by a veterinarian.	
Ne	703	Emergency slaughter - specify reason	Where a carcass is accompanied by the correct certification, it can be processed for human consumption; however post-mortem inspection must be carried out by an OV.	Record cause in comments field.
De	704	Slaughtered in lairage - specify reason	To include animals presenting as moribund, recumbent or collapsed. Where an animal has to be killed in the lairage, either for animal welfare reasons or for public/animal health and it will not be processed for human consumption.	Record cause in comments field.
De	705	Slaughtered not for human consumption	Where an animal is not deemed fit for human consumption and the FBO wishes to process the animal (for example for its fleece).	

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
Ne	***	Aujeszky's Disease	1989	
De	907	Classical Swine Fever	2000	
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include; African Swine Fever (never), Teschen Disease (never), Vesicular Stomatitis (never), Rabies (1970)	Record suspect notifiable disease in comments field.
De	912	Swine Vesicular disease	1982	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

FINAL REPORT**Section D: Food Business Operator**

	FSA No.	Description	Criteria	Notes
Ne	806	Dirty condition		

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	072	Other - specify		Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR AVIAN**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
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NONE**Group 2: Diseases of the Digestive System**

	FSA No.	Description	Criteria	Notes
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NONE**Group 3: Diseases of the Respiratory System**

	FSA No.	Description	Criteria	Notes
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NONE

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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NONE

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
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NONE

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE

Group 7: Diseases of the Skin

	FSA No.	Description	Criteria	Notes
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NONE

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
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NONE

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Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
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NONE

LISTED CODES FOR AVIAN**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
De	702	Dead on Arrival (DOA)	Where an animal has arrived dead, it will not be processed for human consumption. This does not apply to animals slaughtered on farm for welfare reasons that have received an ante-mortem inspection by a veterinarian.	
De	704	Slaughtered in lairage - specify reason	Where an animal has to be killed in the lairage, either for animal welfare reasons or for public/animal health and it will not be processed for human consumption. Avian: includes ante-mortem rejects.	Record cause in comments field.
De	706	Unnecessary stress - specify	May include thermal stress (heat/cold)	Record cause in comments field.

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
Ne	***	Avian Influenza (Bird flu)	2008	
Ne	***	Newcastle Disease	2006	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

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	FSA No.	Description	Criteria	Notes
Ne	806	Dirty condition		

FINAL REPORT**Section E: Special diagnosis codes common to all classes**

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	072	Other - specify	Includes non-specific signs of disease.	Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR FARMED DEER**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	088	Abscess	May include local and generalised abscessation.	
	059	Dehydration		
De	060	Emaciation		
	062	Fever/suspect fever		
De	065	Hernia - abdominal		
De	082	Suspect tumour/abnormal tissue mass/swelling NOS - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Record location and cause if known in comments field.
De	085	Trauma - fracture/dislocations		
De	086	Trauma - soft tissue	May include bruising and open wounds.	

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
	005	Diarrhoea		

FINAL REPORT**Group 3: Diseases of the Respiratory System**

	FSA No.	Description	Criteria	Notes
De	032	Abnormal respiratory signs - pneumonia	Includes altered respiratory rate/depth, nasal discharge, coughing, nasal discharge, rhinitis and other signs typical of pneumonia.	Rhinitis?

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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NONE

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	013	Lameness - foot lesion(s)		Record cause if known in comments field.
De	014	Lameness - generalised musculo-skeletal		
De	015	Lameness - joint/leg lesion(s)		Record cause if known in comments field.

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
De	017	Eye condition - specify cause if known		Record cause in comments field.
	018	Nervous signs	May include ataxia, circling, head pressing, convulsions etc.	Suspect TSE cases should be recorded in Section C.

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LISTED CODES FOR FARMED DEER**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	035	Skin disease - ectoparasites	May include mange, ticks, keds and lice	
De	043	Skin disease – other - specify cause if known		Record cause if known in comments field.

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
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NONE

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
Ne	021	Reproductive - dystocia/parturition/heavily pregnant		
De	024	Uterine prolapse		

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LISTED CODES FOR FARMED DEER**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
De	701	Dead in Lairage (DIL) - specify cause if known	Where an animal has died in the lairage, it will not be processed for human consumption.	Record cause in comments field.
De	702	Dead on Arrival (DOA)	Where an animal has arrived dead, it will not be processed for human consumption. This does not apply to animals slaughtered on farm for welfare reasons that have received an ante-mortem inspection by a veterinarian.	
Ne	703	Emergency slaughter - specify reason	Where a carcase is accompanied by the correct certification, it can be processed for human consumption; however post-mortem inspection must be carried out by an OV.	Record cause in comments field.
De	704	Slaughtered in lairage - specify reason	To include animals presenting as moribund, recumbent or collapsed. Where an animal has to be killed in the lairage, either for animal welfare reasons or for public/animal health and it will not be processed for human consumption. Avian: includes ante-mortem rejects.	Record cause in comments field.
De	705	Slaughtered not for human consumption	Where an animal is not deemed fit for human consumption and the FBO wishes to process the animal (for example for its fleece).	

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB	Notes
De	902	Anthrax	2006	
De	904	Bluetongue	Present	
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include; Epizootic Haemorrhagic Virus Disease (never)	Record suspect notifiable disease in comments field.
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	918	Warble fly (Hypoderma bovis)	1990	

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	FSA No.	Description	Criteria	Notes
Ne	806	Dirty condition		

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	072	Other - specify	Includes non-specific signs of disease.	Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

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ANNEX E: PROPOSED LIST OF POST MORTEM INSPECTION CONDITIONS**LISTED CODES FOR CATTLE (INCLUDING CALVES)****Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	048	Abnormal colour - anaemia	Abnormally pale carcase.	Calves < 8 months: Indicator of low iron diets.
De	049	Abnormal colour - jaundice		Total carcase rejection. Consider copper toxicity and record as suspect residues if appropriate.
De	051	Abnormal colour - septicaemia/toxaemia/pyaemia	May include petechial haemorrhages	Total carcase rejection.
De	052	Abnormal colour - xanthosis		Offal rejection. This condition should be recorded with the appropriate body part(s).
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Total carcase rejection. Record as Suspect residues if appropriate.
De	088	Abscess	May include localised and generalised abscessation.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	058	Cysticercosis	Cysticercosis is the presence of the metacestode stages of several species of Taenia (Multiceps) within the muscles or internal organs.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	060	Emaciation		Total carcase rejection.
	066	Hydatidosis	Hydatidosis is the presence of hydatid cysts of the tapeworm Echinococcus granulosus within internal organs more commonly in the liver and lungs. Echinococcosis is an important zoonotic condition.	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	067	Liver lesion(s) - hepatopathy	May include cirrhosis, telangiectasis and hepatitis. NB record fluke as fasciolosis.	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	069	Navel ill/Joint ill		Total carcase rejection.
De	071	Oedema - generalised		Total carcase rejection.
	074	Peritonitis		Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).

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Ne	***	Sarcocysts		Part carcase rejection. This condition should be recorded with the appropriate body part(s).
De	081	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause if known in comments field.
De	085	Trauma – soft tissue/dislocations/fracture	May include bruising and open wounds.	Part carcase rejection. This condition should be recorded with the appropriate body part(s).

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
Ne	***	Actinobacillosis	Actinobacillosis (wooden tongue) may affect other organs including oesophagus and stomachs.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Actinomycosis	Lumpy jaw.	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	007	Fluke damage		Offal rejection. This condition should be recorded with the appropriate body part(s).
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	Offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Traumatic reticuloperitonitis	'Tyre wire disease'.	Offal rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR CATTLE (INCLUDING CALVES)**Group 3: Diseases of the Respiratory System**

	FSA No.	Description	Criteria	Notes
De	026	Lung lesion(s) - pneumonia & pleurisy	May include generalised and localised lesion(s).	Part carcase rejection. This condition should be recorded with the appropriate body part(s).
Ne	027	Lungworm		

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	Offal rejection. This condition should be recorded with the appropriate body part(s).

FINAL REPORT**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	Part carcase rejection. This condition should be recorded with the appropriate body part(s).
De	016	Myositis	May include Blackleg / Gangrene lesions.	Part carcase rejection. This condition should be recorded with the appropriate body part(s).

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
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NONE**Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System**

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	Offal rejection. This condition should be recorded with the appropriate body part(s).

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	019	Mastitis		Offal rejection. This condition should be recorded with the appropriate body part(s).

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Ne	021	Reproductive – dystocia/heavily pregnant		
De	022	Reproductive tract disease	May include metritis	Offal rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR CATTLE (INCLUDING CALVES)**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
Ne	***	Immaturity	Less than 7 days of age.	Total carcase rejection.

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
De	904	Bluetongue	Present	
De	905	Brucellosis (Brucella abortus)	2004	
De	908	Enzootic Bovine Leukosis	1996	
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include Contagious Bovine Pleuro-pneumonia (1898), Lumpy Skin Disease (never), Rift Valley Fever (never), Rinderpest (1877), Vesicular Stomatitis (never), Rabies (1970).	Record suspect notifiable disease in comments field.
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Transmissible Spongiform Encephalopathy (TSE)	Present	
De	918	Warble fly (Hypoderma bovis)	1990	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

Section D: Food Business Operator

	FSA No.	Description	Criteria	Notes
De	801	Contamination - Bile		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.

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De	802	Contamination - Faeces/gastrointestinal		Part carcass, offal and total carcass rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	803	Contamination - Hair		Part carcass rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	804	Contamination - Other		Part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
Ne	805	Blood splash		Offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Other – Processing fault	May include machine damage.	Part carcass rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

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LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	048	Abnormal colour - anaemia	Abnormally pale carcase. But can't be confirmed without blood test?	
De	049	Abnormal colour - jaundice	Consider copper toxicity (particularly sheep and cattle) and record as suspect residues if appropriate.	Total carcase rejection.
Ne	050	Abnormal colour - poorly bled		
De	051	Abnormal colour - septicaemia/toxaemia/pyaemia	May include petechial haemorrhages	Total carcase rejection.
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Total carcase rejection. Record as Suspect residues if appropriate.
De	088	Abscess	May include localised and generalised abscessation.	Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Sheep: If suspect CLA, record as abscessation - suspect CLA.
De	058	Cysticercosis	To include Cysticercus ovis and Cysticercus tenuicollis. Cysticercosis is the presence of the metacestode stages of several species of Taenia (Multiceps) within the muscles or internal organs.	Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s).
De	060	Emaciation		Total carcase rejection. In ante-mortem?
	066	Hydatidosis	Hydatidosis is the presence of hydatid cysts of the tapeworm Echinococcus granulosus within internal organs more commonly in the liver and lungs. Echinococcosis is an important zoonotic condition.	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	067	Liver lesion(s) - hepatopathy	May include cirrhosis, telangiectasis and hepatitis. NB record fluke as fasciolosis.	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	071	Oedema - generalised		Total carcase rejection.
	074	Peritonitis		Part carcase and offal rejection. This condition should be recorded with the

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				appropriate body part(s).
De	077	Pigmentation / melanosis		Part carcass rejection and offal rejection. This condition should be recorded with the appropriate body part(s).
De	054	Suspect Caseous Lymphadenitis (CLA)		Total carcass rejection.
De	081	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Record location and cause if known in comments field. Part carcass and offal rejection. This condition should be recorded with the appropriate body part(s).
De	085	Trauma – soft tissue/dislocations/fracture	May include bruising and open wounds.	Part carcass rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)**Group 2: Diseases of the Digestive System**

	FSA No.	Description	Criteria	Notes
De	007	Fluke damage		Offal rejection. This condition should be recorded with the appropriate body part(s).
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	Offal rejection. This condition should be recorded with the appropriate body part(s).

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	026	Lung lesion(s) - pneumonia & pleurisy	May include generalised and localised lesion(s).	Part carcass rejection and offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	027	Lungworm		

FINAL REPORT**Group 4: Diseases of the Urinary System**

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	
Ne	092	Urolithiasis	Includes uroliths in bladder and urethra.	Do they examine this? Human health issue?

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	Part carcass rejection. This condition should be recorded with the appropriate body part(s).
De	016	Myositis	May include Blackleg	

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE

Group 7: Diseases of the Skin

	FSA No.	Description	Criteria	Notes
De	037	Skin disease - maggots/fly strike		

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	Offal rejection. This condition should be recorded with the appropriate body part(s).

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	019	Mastitis		
Ne	021	Reproductive - dystocia/heavily		

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		pregnant		
De	022	Reproductive tract disease	May include metritis	Offal rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR SMALL RUMINANTS (SHEEP & GOATS)**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
De	904	Bluetongue	Present	
De	906	Brucellosis (Brucella melitensis)		
Ne	***	Foot and Mouth Disease	2007	
De	910	Other notifiable - specify	To include Brucellosis (Brucella melitensis (never)), Contagious agalactiae (never), Contagious Epididymitis (Brucella ovis (never)), Pest des Petits Ruminants (never), Rift Valley Fever (never) and Sheep pox (1866), Rabies (1970).	Record suspect notifiable disease in comments field.
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Transmissible Spongiform Encephalopathy (TSE)	Present	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.**Section D: FBO**

	FSA No.	Description	Criteria	Notes
De	801	Contamination - Bile		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	802	Contamination - Faeces/gastrointestinal		Part carcase , offal and total carcase rejection. This condition should be recorded with the appropriate body part(s).

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De	803	Contamination - Hair		Part carcass rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	804	Contamination - Other		Part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
Ne	805	Blood splash		Offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Other – Processing fault	May include machine damage.	Part carcass rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

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LISTED CODES FOR PIGS**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	048	Abnormal colour - anaemia	Abnormally pale carcase.	Total carcase rejection.
De	049	Abnormal colour - jaundice		Total carcase rejection. Record as suspect residues if appropriate.
Ne	050	Abnormal colour - poorly bled		Total carcase rejection.
De	051	Abnormal colour - septicaemia/toxaemia/pyaemia	May include petechial haemorrhages	Total carcase rejection.
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Total carcase rejection. Record as Suspect residues if appropriate.
De	060	Emaciation		Total carcase rejection.
	061	Erysipelas like lesions		Total and part carcase rejection. This condition should be recorded with the appropriate body part(s).
De	067	Liver lesion(s) - hepatopathy	May include cirrhosis, telangiectasis and hepatitis. NB record ascariasis as milk spot like lesions (group 2).	Offal rejection. This condition should be recorded with the appropriate body part(s).
De	071	Oedema - generalised		Total carcase rejection.
	076	Peritonitis	Abscessation may or may not be present.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	081	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Total and part carcase rejection. This condition should be recorded with the appropriate body part(s). Record cause if known in comments field.
	083	Tail bite lesion(s)	To include tail bite spinal abscess	Part carcase rejection. This condition should be recorded with the appropriate body part(s).
De	085	Trauma - fracture/dislocations		Part carcase rejection. This condition should be recorded with the appropriate body part(s).
De	086	Trauma - soft tissue	May include bruising and fight/bite wounds.	Part carcase rejection. This condition

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				should be recorded with the appropriate body part(s).
De	088	Abscess	May include localised and generalised abscessation.	Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s).

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
De	008	Milk spot like lesion(s)		Offal rejection. This condition should be recorded with the appropriate body part(s).
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	Offal rejection. This condition should be recorded with the appropriate body part(s).

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
Ne	025	Atrophic rhinitis		
De	029	Pneumonia & pleurisy - generalised	To include generalised and localised lesions.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR PIGS**Group 4: Diseases of the Urinary System**

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	Offal rejection. This condition should be recorded with the appropriate body part(s).

FINAL REPORT**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	Total and part carcase rejection. This condition should be recorded with the appropriate body part(s).

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
	033	Dermatitis	May include insect bites	
	045	Transit erythema		

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	Offal rejection. This condition should be recorded with the appropriate body part(s).

FINAL REPORT**Group 9: Diseases of the Reproductive and Mammary System**

	FSA No.	Description	Criteria	Notes
	019	Mastitis		Part carcase rejection. This condition should be recorded with the appropriate body part(s).
Ne	021	Reproductive - dystocia/heavily pregnant		
De	022	Reproductive tract disease	To include metritis	Part carcase rejection. This condition should be recorded with the appropriate body part(s).

LISTED CODES FOR PIGS**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE**Section C: Suspect notifiable**

	FSA No.	Description	Occurred last in GB (1)	Notes
De	902	Anthrax	2006	
De	907	Classical Swine Fever	2000	
De	912	Swine Vesicular disease	1982	
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	915	Trichinosis	There is no evidence that trichinella exists in pigs in the UK.	Reportable disease.
De	910	Other notifiable - specify	To include; African Swine Fever (never), Teschen Disease (never), Vesicular Stomatitis (never), Rabies (1970)	Record suspect notifiable disease in comments field.
Ne	***	Aujeszky's Disease	1989	
Ne	***	Foot and Mouth Disease	2007	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

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	FSA No.	Description	Criteria	Notes
De	801	Contamination - Bile		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	802	Contamination - Faeces		Part carcase, offal and total carcase rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	803	Contamination - Hair		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	***	Contamination - Grease		Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
Ne	805	Blood splash		Offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Other processing fault		Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	808	Machine damage		Total and part carcase rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Overscald		Total and part carcase rejection. This condition should be recorded with the appropriate body part(s).

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

FINAL REPORT**LISTED CODES FOR AVIAN****Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
Ne	***	Abnormal colour – Oregon muscle disease	Condition of turkeys and other poultry resulting in green discolouration of affected tissue (commonly pectoral muscle).	Record whole, partial bird or offal rejection.
De	051	Abnormal colour - septicaemia/toxaemia/jaundice	May include petechial haemorrhages	Record whole, partial bird or offal rejection.
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Record as Suspect residues if appropriate.
De	055	Ascites		Record whole, partial bird or offal rejection.
De	060	Emaciation		Record whole, partial bird or offal rejection.
De	073	Hepatitis, perihepatitis & peritonitis		Record whole, partial bird or offal rejection.
Ne	079	Splenitis		
De	081	Suspect tumour/abnormal tissue mass/swelling		Record whole, partial bird or offal rejection. Record cause if known in comments field.
De	085	Trauma – soft tissue/fracture/dislocations	May include bruising and open wounds.	Record whole, partial bird or offal rejection.

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
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NONE

FINAL REPORT**Group 3: Diseases of the Respiratory System**

	FSA No.	Description	Criteria	Notes
De	031	Respiratory lesion(s)	To include airsacculitis	Record whole, partial bird or offal rejection.

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	

LISTED CODES FOR AVIAN**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
Ne	011	Foot pad dermatitis		Ante-mortem?
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	Record whole, partial bird or offal rejection.

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE

FINAL REPORT**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	057	Cellulitis & dermatitis	May include ulceration, breast blisters and dermal necrosis	Record whole, partial bird or offal rejection.

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	Record whole, partial bird or offal rejection.

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	023	Salpingitis		Record whole, partial bird or offal rejection.

LISTED CODES FOR AVIAN**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
Ne	***	Ante mortem rejects (culls/runts)		Record whole, partial bird or offal rejection.

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB (1)	Notes
Ne	***	Avian Influenza (Bird flu)	2008	

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Ne	***	Newcastle Disease	2006	
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(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

Section D: FBO

	FSA No.	Description	Criteria	Notes
Ne	***	Contamination		Record whole, partial bird or offal rejection.
De	808	Machine damage		Record whole, partial bird or offal rejection.
	809	Overscald		Record whole, partial bird or offal rejection.
De	810	Factory – other	To include poor plucking	Record whole, partial bird or offal rejection.
De	811	Uncut/badly bled	Includes death other than slaughter	Record whole, partial bird or offal rejection.

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

FINAL REPORT**LISTED CODES FOR FARMED DEER****Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	048	Abnormal colour - anaemia	Abnormally pale carcass.	
De	049	Abnormal colour - jaundice		
De	051	Abnormal colour - septicaemia/toxaemia	May include petechial haemorrhages	
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Record as Suspect residues if appropriate.
De	088	Abscess	May include localised and generalised abscessation.	Part carcass and offal rejection. This condition should be recorded with the appropriate body part(s).
De	060	Emaciation		
De	063	Hereditary/Developmental abnormality		
	066	Hydatidosis		Hydatidosis is the presence of hydatid cysts of the tapeworm <i>Echinococcus granulosus</i> within internal organs more commonly in the liver and lungs. Echinococcosis is an important zoonotic condition.
De	067	Liver lesion(s) - hepatopathy	May include cirrhosis, telangiectasis and hepatitis. NB record fluke as fasciolosis.	
	074	Peritonitis		
De	081	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Record location and cause if known in comments field.
De	085	Trauma - fracture/dislocations		
De	086	Trauma - soft tissue	May include bruising and open wounds.	

Group 2: Diseases of the Digestive System

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	FSA No.	Description	Criteria	Notes
De	007	Fluke damage		
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	026	Lung lesion(s) - pneumonia & pleurisy	May include generalised and localised lesion(s).	
Ne	027	Lungworm		

LISTED CODES FOR FARMED DEER**Group 4: Diseases of the Urinary System**

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	
De	016	Myositis	May include Blackleg	

FINAL REPORT**Group 6: Diseases of the Nervous System and Organs of Special Sense**

	FSA No.	Description	Criteria	Notes
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NONE**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
	046	Warble fly (<i>Hypoderma diana</i>)		

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
	019	Mastitis		
De	022	Reproductive tract disease	May include metritis	

LISTED CODES FOR FARMED DEER**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE

FINAL REPORT**Section C: Suspect notifiable**

	FSA No.	Description	Occurred last in GB	Notes
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	918	Warble fly (<i>Hypoderma bovis</i>)	1990	
De	902	Anthrax	2006	
De	910	Other notifiable - specify	To include; Epizootic Haemorrhagic Virus Disease (never)	Record suspect notifiable disease in comments field.
De	904	Bluetongue	Present	
Ne	***	Foot and Mouth Disease	2007	

(1) Information for this table has been taken from the Defra web site. <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.

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	FSA No.	Description	Criteria	Notes
De	801	Contamination - Bile		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	802	Contamination - Faeces/gastrointestinal		Part carcase, offal and total carcase rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	803	Contamination - Hair		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	804	Contamination - Other		Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
Ne	805	Blood splash		Offal rejection. This condition should be recorded with the appropriate body part(s).

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Ne	***	Other – Processing fault	May include machine damage.	Part carcase rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
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Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR WILD GAME - AVIAN**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
Ne	***	Abnormal colour – Oregon muscle disease	Condition of turkeys and other poultry resulting in green discolouration of affected tissue (commonly pectoral muscle).	Record whole, partial bird or offal rejection.
De	051	Abnormal colour - septicaemia/toxaemia/jaundice	May include petechial haemorrhages	Record whole, partial bird or offal rejection.
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Record as Suspect residues if appropriate.

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De	055	Ascites		Record whole, partial bird or offal rejection.
De	060	Emaciation		Record whole, partial bird or offal rejection.
De	073	Hepatitis, perihepatitis & peritonitis		Record whole, partial bird or offal rejection.
Ne	079	Splenitis		
De	081	Suspect tumour/abnormal tissue mass/swelling		Record whole, partial bird or offal rejection. Record cause if known in comments field.
De	085	Trauma – soft tissue/fracture/dislocations	May include bruising and open wounds.	Record whole, partial bird or offal rejection.

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
De	006	Endoparasitic disease		
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	031	Respiratory lesion(s)	May include airsacculitis	

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
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De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	
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LISTED CODES FOR WILD GAME - AVIAN**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE**Group 7: Diseases of the Skin**

	FSA No.	Description	Criteria	Notes
De	034	Ectoparasitic disease		

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	

FINAL REPORT**Group 9: Diseases of the Reproductive and Mammary System**

	FSA No.	Description	Criteria	Notes
	023	Salpingitis		

LISTED CODES FOR WILD GAME - AVIAN**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE**Section C: Suspect notifiable**

	FSA No.	Description	Occurred last in GB (1)	Notes
Ne	***	Avian Influenza (Bird flu)	2008	
Ne	***	Newcastle Disease	2006	

Section D: Food Business Operator

	FSA No.	Description	Criteria	Notes
Ne	***	Contamination		Record whole, partial bird or offal rejection.
De	808	Machine damage		Record whole, partial bird or offal rejection.
	809	Overscald		Record whole, partial bird or offal rejection.

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De	810	Factory – other	To include poor plucking	Record whole, partial bird or offal rejection.
	807	Missing viscera		

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR WILD GAME – RABBIT & HARE**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	051	Abnormal colour - septicaemia/toxaemia/jaundice	May include petechial haemorrhages	Record whole, partial bird or offal rejection.
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Record as Suspect residues if appropriate.
De	060	Emaciation		Record whole, partial bird or offal rejection.
De	073	Hepatitis, perihepatitis & peritonitis		Record whole, partial bird or offal rejection.
De	081	Suspect tumour/abnormal tissue mass/swelling		Record whole, partial bird or offal rejection. Record cause if known in comments field.

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De	085	Trauma – soft tissue/fracture/dislocations	May include bruising and open wounds.	Record whole, partial bird or offal rejection.
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Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
De	006	Endoparasitic disease		
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
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NONE

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	

Group 5: Diseases of the Musculo-Skeletal System

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE

Group 7: Diseases of the Skin

	FSA No.	Description	Criteria	Notes
De	034	Ectoparasitic disease		

FINAL REPORT**Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System**

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	

Group 9: Diseases of the Reproductive and Mammary System

	FSA No.	Description	Criteria	Notes
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NONE

LISTED CODES FOR WILD GAME – RABBIT & HARE**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE

Section C: Suspect notifiable

	FSA No.	Description	Criteria	Notes
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NONE

Section D: Food Business Operator

	FSA No.	Description	Criteria	Notes
Ne	***	Contamination		Record whole, partial bird or offal rejection.
De	808	Machine damage		Record whole, partial bird or offal rejection.
De	810	Factory – other	To include poor plucking	Record whole, partial bird or offal rejection.
	807	Missing viscera		

FINAL REPORT**Section E: Special diagnosis codes common to all classes**

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

LISTED CODES FOR WILD GAME - DEER**Section A: Specific conditions****Group1: Systemic disease and those not readily classified**

	FSA No.	Description	Criteria	Notes
De	048	Abnormal colour - anaemia	Abnormally pale carcase.	
De	049	Abnormal colour - jaundice		
De	051	Abnormal colour - septicaemia/toxaemia	May include petechial haemorrhages	
De	053	Abnormal smell	May include uraemia. NB Consider suspect residues.	Record as Suspect residues if appropriate.
De	088	Abscess	May include localised and generalised abscessation.	Part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	060	Emaciation		
De	063	Hereditary/Developmental abnormality		
	066	Hydatidosis		Hydatidosis is the presence of hydatid cysts

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				of the tapeworm <i>Echinococcus granulosus</i> within internal organs more commonly in the liver and lungs. Echinococcosis is an important zoonotic condition.
De	067	Liver lesion(s) - hepatopathy	May include cirrhosis, telangiectasis and hepatitis. NB record fluke as fasciolosis.	
	074	Peritonitis		
De	081	Suspect tumour/abnormal tissue mass/swelling - specify site	Excludes EBL suspects - record under suspect notifiable (EBL). Pigs: includes haematoma.	Record location and cause if known in comments field.
De	085	Trauma - fracture/dislocations		
De	086	Trauma - soft tissue	May include bruising and open wounds.	

Group 2: Diseases of the Digestive System

	FSA No.	Description	Criteria	Notes
De	007	Fluke damage		
	010	Non-specific gastrointestinal disease	May include gastritis, enteritis and colitis	

Group 3: Diseases of the Respiratory System

	FSA No.	Description	Criteria	Notes
De	026	Lung lesion(s) - pneumonia & pleurisy	May include generalised and localised lesion(s).	
Ne	027	Lungworm		

Group 4: Diseases of the Urinary System

	FSA No.	Description	Criteria	Notes
De	091	Kidney lesion(s)	May include nephritis, pyelonephritis, nephrosis, hydronephrosis and urates.	

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LISTED CODES FOR WILD GAME - DEER**Group 5: Diseases of the Musculo-Skeletal System**

	FSA No.	Description	Criteria	Notes
De	012	Joint/leg lesion(s)	May include acute arthritis, chronic arthritis and tenosynovitis.	
De	016	Myositis	May include Blackleg	

Group 6: Diseases of the Nervous System and Organs of Special Sense

	FSA No.	Description	Criteria	Notes
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NONE

Group 7: Diseases of the Skin

	FSA No.	Description	Criteria	Notes
	046	Warble fly (Hypoderma diana)		

Group 8: Diseases of the Blood and Lymph Circulatory and Poietic System

	FSA No.	Description	Criteria	Notes
De	001	Heart lesion(s)	May include pericarditis, endocarditis and valve lesions.	

FINAL REPORT**Group 9: Diseases of the Reproductive and Mammary System**

	FSA No.	Description	Criteria	Notes
	019	Mastitis		
De	022	Reproductive tract disease	May include metritis	

LISTED CODES FOR WILD GAME - DEER**Section B: Emergency or not slaughtered for human consumption**

	FSA No.	Description	Criteria	Notes
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NONE

Section C: Suspect notifiable

	FSA No.	Description	Occurred last in GB	Notes
De	913	TB like lesions	Present	Total, part carcase and offal rejection. This condition should be recorded with the appropriate body part(s).
De	918	Warble fly (Hypoderma bovis)	1990	
De	902	Anthrax	2006	
De	910	Other notifiable - specify	To include; Epizootic Haemorrhagic Virus Disease (never)	Record suspect notifiable disease in comments field.
De	904	Bluetongue	Present	
Ne	***	Foot and Mouth Disease	2007	

(1) Information for this table has been taken from the Defra web site: <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm> Last accessed 14 Dec 2010.**Section D: Food Business Operator**

	FSA No.	Description	Criteria	Notes
De	801	Contamination - Bile		Part carcase rejection and offal rejection. This condition should be recorded with the appropriate body part(s).

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				Possible HACCP failure.
De	802	Contamination - Faeces/gastrointestinal		Part carcass, offal and total carcass rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	803	Contamination - Hair		Part carcass rejection and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
De	804	Contamination - Other		Part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.
Ne	805	Blood splash		Offal rejection. This condition should be recorded with the appropriate body part(s).
Ne	***	Other – Processing fault	May include machine damage.	Part carcass rejection. This condition should be recorded with the appropriate body part(s). Possible HACCP failure.

Section E: Special diagnosis codes common to all classes

	FSA No.	Description	Criteria	Notes
Ne	601	No abnormality detected (NAD)		
De	602	Pathology of unknown aetiology - describe briefly		Offal rejection. This condition should be recorded with the appropriate body part(s). Record description in comments field.
De	072	Other - specify		Total, part carcass and offal rejection. This condition should be recorded with the appropriate body part(s). Record cause in comments field.
De	080	Suspect residues - specify cause if known		Record cause if known in comments field.

ANNEX F: A SHORT HISTORY OF MEAT INSPECTION IN GREAT BRITAIN

The concept of meat inspection is not new. Rules were put in place in the mid 19th century to tackle contagious diseases in carcasses and ultimately to protect the public from foodborne diseases (Willeberg 1997). Following the discovery of tubercle bacillus in 1882, more efforts to restrict sales of diseased meat rose (Waddington 2002).

Ante mortem and post mortem meat inspection as we know it today was developed to detect diseases such as trichinellosis, tuberculosis and taeniasis, which were endemic in Europe in the late 19th century (Edwards 1997, citing Blackmore 1986; Willeberg 1997). However, many now argue that meat inspection as it is today doesn't target the real threats to human health and is no longer adequate to protect public health (Mousing 1997 citing Blackmore 1983).

Whilst meat inspection is still in place to produce safe food, it now fulfils many other purposes such as animal welfare, animal health surveillance, testing for residues and checking meat quality (Soul 1994). The concept of "safe food" is often discussed with reference to risk based approaches to current threats such as specific zoonotic agents (for example E. coli and Salmonella) and cost-effectiveness (Edwards 1997).

Meat inspection is currently done under the new EU regulations, which came into effect in 2006 – The Food Hygiene Package.

- **Towns Improvement Clauses Act (1847)** – authorised the seizure of unfit meat by any officer appointed for this purpose by the council.
- Registration controls on slaughterhouses (1848).
- **Contagious Diseases (Animals) Act (1869)** – compulsory slaughter measures to tackle rinderpest, foot and mouth and pleuropneumonia. List of diseases amended in (1869-1894), but TB was still excluded. Following the identification of tubercle bacillus (1882), efforts to restrict sales of diseased meat rise. A successful prosecution in Glasgow (1889) of a meat trader sending diseased cattle to slaughter brought the issue to the media. But the question of how much of a carcass should be destroyed remained unclear.
- **The Public Health Act (1875)** – gave an inspector the power to inspect any animal, carcase or meat exposed for sale.
- **The Public Health (Meat) Regulations (1924)** – local councils gained the power to licence slaughterhouses. They could apply restrictions on the removal of un-inspected meat.
- The Meat Inspectors Association of Scotland (MIAS) was established (1947). The Association of Meat Inspectors (AMI) was founded in Manchester (1964). The AMI, the MIAS and the Federation of Poultry Meat Inspectors (FPMI) agreed to create one association: The Association of Meat Inspectors in GB Ltd (1980).
- **The Food and Drugs Act (1955) + The Slaughterhouse Act (1974)** – gave the Minister of Agriculture, Fisheries and Food the power to make further regulations concerning food hygiene. The most current regulations derive from these acts, notably the **Authorised Officers (Meat Inspection) Regulations (1978)**, which lay down the qualifications required to be authorised by a council to inspect

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meat. The Act (1955) also gives the Inspectors powers under the Slaughterhouse Regulations (1977).

- **The Meat Inspection Regulations (1963) and Amendments** – control the inspection procedures, indications of unfitness for human consumption and health marking for meat not intended for export. The procedure for the examination of a carcass and offal is laid down in Schedule 1 of the regulations. And the Amendment (1966) gives further instructions on abscess (following tuberculosis issues).
- In the 60's, a computerised condemnation statistic system was introduced to aid standardisation of meat inspection and to provide a disease databank.
- The UK joined the EEC (European Economic Community) in 1973. Introduction of the EC poultry meat Inspection Standards. Late 70s: Residue sampling and testing became an increasing part of the work.
- **The Fresh Meat Export (Hygiene and Inspection) (Scotland) Regulations (1981)**—SI1981/1034 – give detailed requirements as to slaughter, dressing, cutting practices ante and post-mortem inspection, hygiene, health control of cut meat, health, marking, certification, storage, wrapping, packing and transport of all fresh meat for intra-community trade.
- **The Food Safety Act (1990)** – replaced the 1984 Act and was amended in 2004. It provides the framework for all food legislation in Great Britain. It regulates the statutory obligation to treat food intended for human consumption in a controlled and managed way. It is an important Act in Great Britain, which updated previous law on food safety and consumer protection.
- Single European Market in 1993. Meat processed for the national (UK) market now had to meet the single (EC export) standard.
- 1st April 1995 – Meat Hygiene Service (MHS) is created as part of MAFF (one of the six agencies at the time). 1996 – The UK beef export ban (BSE outbreak). The Over Thirty Month Scheme (OTMS) was introduced. All bovines > 30 months were slaughtered under tightly regulated systems. In 1997 the Hygiene Assessment System (HAS) was introduced. The Food Standard Agency became operational following the Food Standards Act in 1999 and took over the responsibilities from agriculture Departments within the UK in relation to meat hygiene and food safety. MHS became part of the FSA in 2010.
- **The Fresh Meat (Hygiene and Inspection) Regulations (1995²²)**—SI 1995/539 – applies various sections of the Food and Safety Act 1990.
- Lift of the ban of slaughtering cattle older than 30 months (November 2005).
- The Beef Ban is lifted (May 2006) – the UK can trade beef to the EU or export to Third Countries.
- **Food Hygiene Package** (published 2004) – Adopted by the European Parliament and the Council and applied in all Member States from 1 January 2006. Repealed most of the hygiene regulations since 1996 (including the Fresh Meat (Hygiene and Inspection) Regulations 1995); introduction of food's traceability, and more. The EU food hygiene legislation comprise of three regulations:

1. EC 853/2004: Hygiene and Foodstuffs

²² The Fresh Meat (Hygiene and Inspection) Regulations 1995
<http://www.legislation.gov.uk/ukSI/1995/539/contents/made>

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2. EC 853/2004: Specific Hygiene Requirements for Food of Animal Origin. Regulation set out to ensure all animals accepted onto an abattoir are; properly identified, accompanied by Food Chain Information, clean, healthy as far as can judge, and in satisfactory state as regards welfare.
 3. EC 854/2004²³: Organisation of official controls on products or animal origin intended for human consumption. This regulation shall apply in addition to Regulation (EC) No 882/2004. Inspection must identify if welfare compromised or if an animal presents with any condition that might adversely affect human or animal health.
 4. EC 882/2004²⁴: Official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. The aim of the (EC) 882/2004 is to improve the consistency and effectiveness of official controls and provide safeguards to consumers.
- The EU regulations are applied in the UK by a Statutory Instrument (SI):
 - a) The Food Hygiene Regulations 2006:
 - England—(SI2006/14²⁵)—came into force 11 January 2006
 - Scotland—(SSI 2006/3)
 - Wales—(SI2007/373 (W.33))
 - Northern Ireland—(SR 2006/3)
 - b) The Official Feed and Food Controls Regulations (OFFC) regulation 2006:
 - England—(SI2006/15²⁶) and Amendment (**SI2009/3255**²⁷)—came into force 25 January 2010
 - **The EU Official Feed and Food Controls Regulation (OFFC)** (applied from 11 Jan 06) sets out general requirements for the competent authorities responsible for checking that businesses comply with feed and food legislation (and animal health and welfare rules) + role of the Commission's Food and Veterinary Office. The OFFC Regulation is also given effect by a Statutory Instrument in England (and equivalents in Scotland, Wales and Northern Ireland).

²³ Regulation (EC) 854/2004: Organisation of official controls

<http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2004/R/02004R0854-20070101-en.pdf>

²⁴ Regulation (EC) 882/2004: Official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0882:20080410:EN:PDF>

²⁵ SI 2006/14 : The Food Hygiene (England) Regulations 2006

<http://www.legislation.gov.uk/uk/si/2006/14/contents/made>

²⁶ SI 2006/15 : The Official Feed and Food Controls (England) Regulations 2006

<http://www.legislation.gov.uk/uk/si/2006/15/contents/made>

²⁷ SI 2009/3255 : The Official Feed and Food Controls (England) Regulations 2009

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