An assessment of the relationship between 'casualty' animals and meat condemnation in three Irish beef slaughterhouses.

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Introduction

In compliance with EU law all animals are subject to a documented ante-mortem examination (AME) and post-mortem examination (PME) at the slaughter house[a]. Cattle subjected to AME are categorized into 3 groups[b] (1) 'casualties' that receive a veterinary inspection on farm following injury or illness prior to salvage at the slaughterhouse accompanied with a veterinary casualty certificate (VCC) that is used to focus a more detailed AME and PME, (2) 'remarkable' animals that present without a VCC but defects are identified at AME focusing a more detailed PME and (3) 'apparently healthy animals' (AHA) are those neither presented as 'casualties' or detected as 'remarkable' at AME. The slaughter of 'casualty' and 'remarkable' animals are separated by time and space from AHA to minimise cross contamination[c].

Objectives

This study has the following aims:

1. To determine the clinical conditions requiring animals to be certified as casualties to beef plants
2. To establish the relationship between VCC, AME and PME findings
3. To establish the causes of meat condemnation not observed at AME

Methods

This study examined VCCs, AME and PME data in three Irish beef slaughterhouses over a two year period. Results were entered into Microsoft Access® database (Microsoft, Redmond, USA) tables. Filters were subsequently applied to the tables to determine relationships between VCC data and subsequent AME and PME findings.

Results

Figure 1 - Reasons to Issue Casualty Certificates (n = 216)

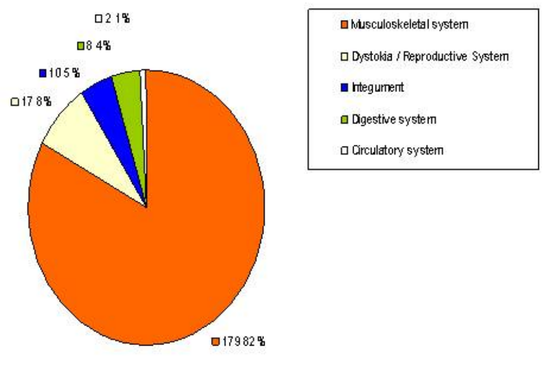


Figure 2 - Condemnations by carcass portion (n = 763)

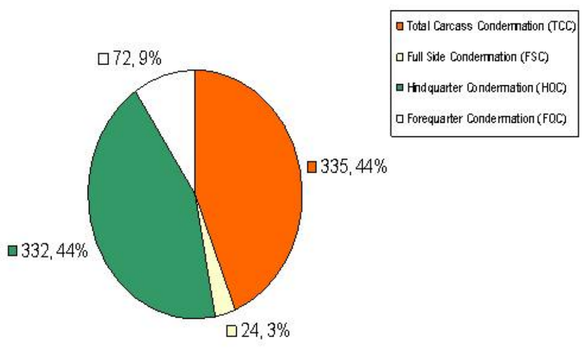


Figure 3 - Total Carcass Condemnations by animal category (n = 335)

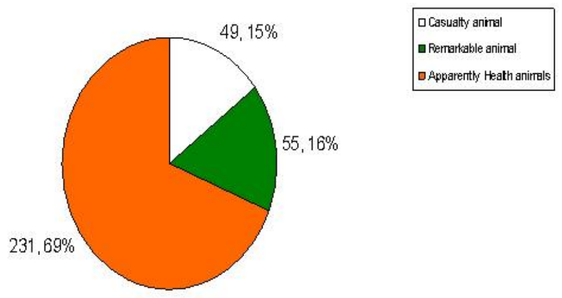
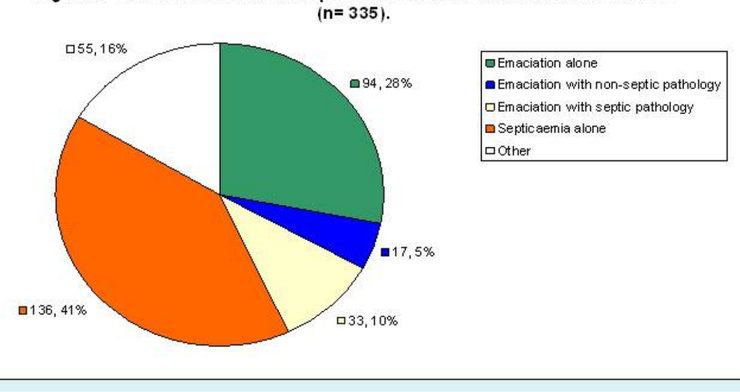


Figure 4 - Clinical conditions responsible for total carcass contamination (n= 335).



	Casualty	Remarkable	AHA	Totals
Emaciated alone	1	28	65	94
Emaciated with non-septic pathology	4	12	1	17
Emaciated with septic pathology	1	16	16	33
Totals with emaciation	6	56	82	144
Septic conditions alone	19	11	103	136

Table 2 – Major cause of Total carcass condemnation

		Casualty	Remarkable	AHA	Totals
FSC	Fractures	2	0	0	2
	Other Injuries	2	1	4	7
	Abscesses	0	2	11	13
	Totals	4	3	15	22
HQC	Fractures	47	9	7	63
	Other Injuries	31	25	93	149
	Abscesses	2	12	138	152
	Totals	80	46	238	364
FQC	Fractures	7	5	3	15
	Other Injuries	0	7	20	27
	Abscesses	2	3	31	36
	Totals	9	15	54	78

Table 1 – Analysis of partial carcass condemnations (PCC)

216 VCCs were examined. Figure 1 indicates musculoskeletal disorders are the primary reason for VCC issue. PME records indicate that meat from 763 animals was condemned. Figure 2 outlines condemnations by carcass portion where TCC (335/763) account for 44% of all condemnations. 69% (231/335) of total carcass condemnations are derived from apparently healthy animals whereas just 15% of TCC are from animals issued with a VCC (Figure 3). Table 1 indicates that 2 out of every 3 carcasses with PCC were derived from animals that went undetected at AME. 59% (180/307) of AHA with subsequent PCC present with abscessation. Injury or trauma accounts for 96% (89/93) of PCC in animals issued with a VCC. Figure 4 indicates that emaciation and septic conditions account for 84% (280/335) of total carcass condemnations from all 3 categories of animal. Table 2 shows that emaciation and toxaemia account for 80% (185/231) of total carcass contaminations from AHA. Table 2 indicates that 69% (65/94) of carcasses condemned for emaciation alone and 76% (103/136) for septicaemia alone were from apparently healthy animals and so went undetected at AME. AHA with septic conditions represent 31% (103/335) of all total carcass contaminations.

Conclusion

The PME condemnation of meat is regarded as the ultimate definition that an animal or part of is unfit for human consumption[d]. The system of VCC plays the minor role in this regard accounting for only 15% of TCC and 20% of PCC. The legally mandated demands of PME concentrate considerable resources on it at the expense of AME. Close to 70% of TCC and PCC are derived from AHA and therefore go undetected at AME. Septic or wasting conditions account for 84% of undetected defects that result in TCC whereas abscessation accounts for 59% of undetected defects resulting in PCC. These high risk animals are slaughtered amongst truly healthy animals and are a source of contamination for surrounding carcasses and the abattoir.

Significance of Study

The need for enhanced AME detection of these conditions is critical in the development of a risk based meat inspection system. Research into the practical application of body condition scoring and the development of rapid serological and microbiological detection methods at single animal and herd level e.g. acute phase proteins and serum albumen levels to aid AME is prompted by this study[e].

References

[a] Commission of the European Communities. (2004). Regulation (EC) 854/2004. *O.J.* L226, pp. 83 – 137.
[b] Department of Agriculture and Food, Ireland (2005) Standard Operating Procedure for Ante-mortem Inspection of Bovines. Department of Agriculture and Food, Dublin, Ireland.
[c] Codex Alimentarius Commission (2005) Available: www.codexalimentarius.net/download/standards/10196/CXP_058e.pdf
[d] Collins and Wall (2004) *Rev. sci. tech. Off. Int. Epiz.*, 23(2), pp. 685 – 700.
[e] O.I.E. (2009) Available: www.oie.int/RR-Europe/eng/events/FS-WP-AMPMinspection.pdf