

Appendix G

Frequency, sorted high to low

Competency	Frequency
07.1 Common diseases	3.16
22.3 Effectively communicate with veterinary specialists, first line practitioners, farmers, farm advisers, consumers and stakeholders from the cattle industry	3.12
21.1 Evaluate a scientific paper on quality of evidence and translate its content to field applications	3.06
01.7 Calf and youngstock health	2.98
07.5 Diseases relevant to herd health	2.91
21.3 Demonstrate knowledge of recent literature	2.87
01.5 Metabolic disorders	2.87
13.1 Knowledge of current recommendation of the prudent use of drugs	2.86
02.3 Manage and interpret data	2.85
01.4 Infectious disease	2.84
21.2 Effectively communicate results of paper	2.81
06.4 Principles of infectious disease management	2.76
01.3 Lameness	2.76
22.1 Define appropriate communication strategies for different circumstances	2.72
15.2 Select most appropriate test(s)	2.69
11.5 Interpretation of tests results (Se, SP, PPV, NPV)	2.69
15.1 Take appropriate samples	2.68
09.1 Principles of pain detection and management	2.65
14.4 Appropriate tests available for common diseases (including principles of sensitivity and specificity)	2.65
01.2 Mastitis	2.65
02.2 Obtain relevant data	2.63
03.1 Dairy	2.60
04.7 Knowledge of commonly seen diseases with nutritional causes	2.59
18.1 Understand the impact of herd health, diseases and animal welfare on farm finances, productivity and public health	2.59
15.4 Interpret routine laboratory diagnostics (haematology and clinical pathology)	2.58
18.2 Understand financial implications of intervention measures and prevention	2.56
04.2 Knowledge of basic nutritional requirements of the cow at different ages and stages of production	2.56
02.1 Define key outcomes	2.55
11.1 Frequency data, incidence and prevalence	2.54
01.1 Reproduction	2.53
12.2 Define appropriate research questions, search literature for evidence, summarize findings based on level of evidence and advise accordingly	2.51
10.3 Normal behavioural patterns and their alteration by stress, pain and disease	2.50
10.1 Legislation and codes of practice affecting cattle welfare	2.49
10.4 Welfare in relation to stockmanship, housing nutrition and breeding	2.42
13.5 Knowledge of application of drugs to minimize development of resistance	2.41
04.1 Knowledge of anatomy, physiology and principles of normal digestion	2.41
06.1 Cleaning and disinfection (including spectra of disinfectants)	2.41
09.2 Effects and side effects of NSAID, GCS, sedatives, anaesthetics	2.40
09.5 Procedures of regional and local anaesthesia	2.37
15.3 Describe tests strengths and weaknesses	2.35
15.5 Interpret routine analysis of different body fluids (peritoneal fluid, milk, synovial fluid, cerebrospinal fluid, urine, rumen fluid)	2.35
04.3 Understand common feeding concepts and principles of diet formulation	2.35
13.2 Basic knowledge of potential for residues in animal products and the environment	2.33
04.8 Knowledge of nutritional deficiencies - signs, epidemiology, diagnosis, correction and prevention	2.32
16.1 Understand imaging techniques which are typically available on farm	2.32
22.2 Knowledge of factors affecting human behaviour and strategies for influencing behaviour change	2.29
10.2 Interaction with stakeholders involved in cattle welfare	2.28
11.3 Study design	2.28
11.2 Sample size, association vs causation, confounding, bias, odds ratios, relative risk, attributable risk, sampling strategies	2.27
20.4 Drug use	2.22
05.5 Knowledge of vaccination programs for important diseases	2.19
20.1 Cattle health and welfare	2.18
16.2 Perform and interpret advanced but not specialized imaging	2.17
04.6 Collect and interpret appropriate samples related to nutrition and metabolism	2.15
20.5 Biosecurity and regulated animal diseases	2.14
13.3 Understand the basics of bacterial culturing, microbial identification and antimicrobial susceptibility testing	2.13
06.3 Purchase management and quarantine	2.13
09.3 Sedation of calves and adult cattle	2.12
11.4 Statistical tests - choosing an appropriate test	2.10
14.1 Microbiology	2.10
06.5 Transportation of samples	2.10
05.1 Knowledge of vaccine types, advantages/disadvantages	2.09
04.5 Analyze basic nutrition parameters, identify problems and improve rations	2.09
17.2 Identify gross pathologies	2.08
19.1 Knowledge of public health dangers related to cattle and their products: meat, milk, animal contact	2.06
08.1 Laparotomy	2.04
12.1 Understand the principles of and the reasons for conducting clinical audits at the farm practice level	2.03
08.2 Abomasal surgery (conventional and via laparoscopy)	2.01
04.4 Knowledge of common dietary constituents used in compounding rations and commonly used methods of conservation	1.99
19.2 Relevant legislation for zoonotic diseases	1.96
14.2 Pharmacology / pharmacokinetics	1.96
08.6 Dehorning and castration	1.92
03.2 Cow/calf/suckler herds	1.90
06.2 Control of human and animal trade/movement	1.90
10.5 Design tailored monitoring programs	1.83
05.6 Design/evaluate vaccination protocols in an evidence-based manner	1.81
17.1 Perform a protocolized field necropsy, including appropriate sampling	1.81
07.2 Novel diseases	1.80
13.8 Basic knowledge of the potential role of the cattle sector in resistance selection in humans	1.79
20.2 Rearing	1.79

13.6 Knowledge of methods of quantification of antimicrobial use (dose based vs. mass based)	1.78
09.6 Legal requirements (EU)	1.77
18.3 Perform a cost-benefit analysis, economic analysis of production results	1.73
20.3 Slaughter and euthanasia	1.72
02.4 Use of sensor technology and artificial intelligence	1.71
17.3 Understand the biohazard/public health implications of necropsies	1.69
07.4 (Re)emerging diseases	1.62
08.3 Umbilical surgery	1.62
08.9 Reproductive surgery (i.e. caesarean section)	1.60
19.3 Basic knowledge of the clinical signs of zoonotic diseases (from cattle) in humans	1.54
13.4 Understand the basics of efficacy testing of antiparasitic drugs	1.54
01.6 Toxicology	1.53
08.8 Claw and limb surgery (tenotomy, amputation, fracture repair, management of tendon and joint diseases)	1.50
07.3 Rare diseases	1.49
05.7 Knowledge of existing immunomodulative products, especially those marketed	1.46
23.1 Genetic improvement of stock	1.46
05.3 Calculate a cost-benefit analysis of implementing vaccination programmes	1.41
14.3 Biochemistry (e.g. water analysis)	1.37
23.2 Hereditary and congenital diseases	1.33
03.3 Beef fattening units	1.31
08.7 Udder and teat surgery	1.31
05.2 Basic insights in immune response depending on vaccine type used: Th1 vs Th2	1.30
09.4 General anaesthesia in calves and adult cattle	1.29
13.7 Knowledge of variations in antimicrobial use in different cattle industries and different EU countries	1.27
10.6 Impact of biotechnology on welfare	1.18
08.4 Intestinal surgery	1.17
05.4 Knowledge of EU regulation of vaccines	1.16
08.5 Enuclation	1.04
03.5 Veal	0.94
03.4 Feedlots	0.81