

TABLE OF CONTENTS

Dedication.....	iv
Acknowledgements.....	v
Table of Contents.....	vi
Figures.....	ix
Tables.....	xi
List of Abbreviations.....	xii
Chapter 1: Literature Review.....	1
1.1 Introduction.....	1
1.2 Nosocomial Infections.....	2
1.3 Hand Hygiene.....	3
1.3.1 Handwashing.....	3
1.3.2 Alcohol-Based Waterless Hand Sanitizers.....	4
1.4 Infection Control and Healthcare Worker Compliance.....	5
1.5 Biosecurity.....	6
1.6 Zoonotic Infectious Agents.....	7
1.7 Research Justification.....	8
1.8 References.....	9
Chapter 2: The Management of a Multidrug-Resistant <i>Salmonella agona</i> Outbreak at a Large Animal Teaching Hospital.....	13
2.1 Abstract.....	13
2.2 Introduction.....	14
2.3 Information Gathering.....	15
2.4 Bacteriological Methods.....	15
2.5 Large Animal Hospital Operations.....	16
2.5.1 Personnel, Facilities and Other Services.....	16
2.5.2 Generation of Patient Numbers.....	19
2.6 Outbreak Synopsis.....	19
2.7 Implemented Biosecurity Procedures.....	23
2.8 Cleaning and Disinfection.....	25
2.9 Renovations.....	25

2.10	Costs Associated with the Outbreak.....	26
2.11	Permanent Changes Made to Biosecurity.....	28
2.12	Post-Outbreak Effects.....	29
2.13	Discussion and Conclusion.....	30
2.14	References.....	32
2.15	Appendix.....	34
Chapter 3: The Impact of Waterless Hand Sanitizer in a Large Animal Teaching		
	Hospital.....	36
3.1	Abstract.....	36
3.2	Introduction.....	38
3.3	Materials and Methods.....	39
	3.3.1 Large Animal Teaching Hospital.....	39
	3.3.2 Hand Hygiene Products.....	42
	3.3.3 Hand Bacterial Counts.....	44
	3.3.4 Environmental Sampling.....	47
	3.3.5 Stall Entry Sheets and Daily Census Records.....	52
	3.3.6 Pre-study Cleansing and Disinfection Procedures.....	54
	3.3.7 Pre-study Period Timeline.....	54
	3.3.8 Study Period Timeline.....	54
	3.3.9 Waterless Hand Sanitizer Efficacy Study.....	62
	3.3.10 Personnel Questionnaire.....	62
	3.3.11 Analysis of Data.....	63
3.4	Results.....	64
	3.4.1 Hand Hygiene Products.....	64
	3.4.2 Hand Bacterial Counts.....	66
	3.4.3 Environmental Sampling.....	69
	3.4.4 Waterless Hand Sanitizer Efficacy Study.....	77
	3.4.5 Personnel Questionnaire.....	79
3.5	Discussion and Conclusions.....	80
	3.5.1 Hand Hygiene Products.....	80
	3.5.2 Hand Bacterial Counts.....	81

3.5.3	Environmental Sampling.....	81
3.5.4	Waterless Hand Sanitizer Efficacy Study.....	82
3.5.5	Personnel Questionnaire.....	83
3.5.6	Additional Observations.....	83
3.6	References.....	85
Chapter 4:	The Efficacy of Waterless Hand Sanitizer in Reducing Bacterial Load on the Hands of Children Visiting a Petting Zoo.....	87
4.1	Abstract.....	87
4.2	Introduction.....	89
4.3	Materials and Methods.....	90
4.4	Results.....	96
4.5	Discussion and Conclusions.....	100
4.6	References.....	102
Chapter 5:	The Potential Impact of Waterless Hand Sanitizers in Veterinary Settings	
5.1	General Summary.....	104
5.2	References.....	106
Vita.....		107