Antimicrobial Resistance and Antimicrobial Use Initiatives in Humans and Animals in Canada

2012

NFAHW COUNCIL

This document was prepared by the National Farmed Animal Health and Welfare Council. The Council was formed in 2010 to advise governments and the animal-source food industries on all aspects of the health and welfare of farmed animals in Canada, in support of Canada's *National Farmed Animal Health and Welfare Strategy*. The Council is funded jointly by Canada's animal production sector, the federal government, and provincial-territorial governments. It consists of members drawn principally from government and the animal production sector. Members are appointed because of broad expertise in farmed animal health and welfare and related fields including public health.

The NFAHW Council recognizes the contributions of the following individuals who formed a steering committee, facilitated distribution of the survey and summarized the surveys which were returned.

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Summary

The National Farmed Animal Health and Welfare Council (NFAHWC) highlighted antimicrobial resistance (AMR) and antimicrobial use (AMU) as a potential area of focus. In order to determine who is doing what on this issue in Canada, a survey of relevant organizations was conducted and the information compiled in a database. In developing the survey it became apparent that there are likely benefits to Canada in sharing the information gathered with the various stakeholders. The potential benefits are seen as:

1. Sharing current knowledge of AMR and AMU in Canada.
2. Enabling national coordination of AMR and AMU initiatives.
3. Encouraging cooperation between organisations and sectors involved with AMR and AMU.
4. Identifying gaps.
5. Guiding future work in this area.

This report is a first attempt at gathering the information and does not represent a complete picture of all of the work that various organizations are doing on AMR and AMU in Canada. Absence of a response from an individual organization does not mean that they are not actively engaged in AMR and AMU. It may be a reflection that the information has not been included in this report. It is hoped that the list becomes more complete as it is updated in the future

Forty seven responses out of a total of 182 surveys (26% response rate) were received and have been collated in this report. The responses were analyzed and grouped by theme. The results of the survey are presented in this report through a series of tables that start with a high level summary and progressively get more detailed. In the appendices, the verbatim responses from the respondents are provided. Also, a copy of the survey questions is included at the end of the appendices.

List of Tables

Table 1: Number of Responses to Each Question by Theme

Initiative	Past Initiatives	Present Initiatives	Initiatives to benefit organizations in the future	Initiatives to be undertaken in general
Continuing Education	14	13	17	9
Collaboration (mostly between animal and human)	9	7	15	15
Public Education	7	7	9	6
Treatment alternatives	0	1	6	5
Producer Education	3	6	7	8
Stakeholder Consultation	0	0	1	1
Student Education	2	3	0	4
AMU guidelines	10	8	14	10
No initiatives	15	16	0	0
No response to question	4	4	9	14
Research – doing and/or funding	6	6	6	10
Residue detection	1	1	0	0
AMU practice standards	6	4	2	2
Committee representation	6	10	0	0
Regulation development	9	6	14	12
Infection control and prevention	4	5	7	4
Biosecurity	5	3	3	4
AMU surveillance	9	5	18	17
AMR surveillance	13	13	21	19

Table 2: Proposed lead organizations for future AMU-AMR initiatives

Proposed Organization type	Number (out of 47 per initiative) of organizations that proposed
Federal government/agency	17
Provincial government	13
Professional associations	12
Industry	8
Independent association	2
No response to question	23
National (all encompassing)	4
Academia	3

Table 3: Respondent organizations list

(see Appendix A for the actual survey responses)

Respondent ID	Organization name
1	Alberta Veterinary Medical Association
2	College Veterinarians BC
3	Canadian Veterinary Medical Association
4	Manitoba Veterinary Medical Association
5	New Brunswick Veterinary Medical Association
6	Newfoundland and Labrador College of Veterinarians
7	Nova Scotia Veterinary Medical Association
8	The College of Veterinarians of Ontario
9	Ontario Veterinary Medical Association
10	PEI Veterinary Medical Association
11	Ordre des médecins vétérinaires du Québec
12	Saskatchewan Veterinary Medical Association
13	Alberta Agriculture and Rural Development
14	BC Ministry of Agriculture
15	Manitoba Agriculture and Food
16	NL Dept of Natural Resources - Animal Health Division
17	Nova Scotia Department of Agriculture, Animal Health Laboratory
18	Veterinary Science and Policy - OMAFRA
19	PEI Department of Agriculture
20	MAPAQ - Quebec Agriculture
21	Saskatchewan Ministry of Agriculture
22	Government of Yukon, Department of Environment
23	Alberta Health
24	BCCDC and BC Do Bugs Need Drugs? Program
25	Newfoundland and Labrador Ministry of Health
26	Northwest Territories Ministry of Health
27	Nova Scotia Department of Health and Wellness
28	Nunavut Ministry of Health
29	Ontario Ministry of Health and Long-Term Care
30	Saskatchewan Ministry of Health
31	Public Health & Primary Care/CDC Manitoba Health
32	Yukon Ministry of Health
33	Animal Feed Division, CFIA
34	Food Safety Strategies Directorate, Policy & Programs Branch, CFIA
35	Canadian Animal Health Institute - CAHI
36	Canadian Pork Council
37	Professor - Dept Population Medicine, University of Guelph
38	Vancouver General Hospital, Vancouver Coastal Health
39	Health Canada Veterinary Drugs Directorate (VDD)

40	College of Physicians & Surgeons of Alberta
41	College of Physicians & Surgeons of British Columbia
42	College of Physicians & Surgeons of Manitoba
43	Collège des médecins du Québec
44	College of Physicians & Surgeons of New Brunswick
45	College of Physicians & Surgeons of Saskatchewan
46	Association of Medical Microbiology and Infectious Diseases Canada
47	Public Health Agency of Canada (PHAC or the Agency)

Table 4: Respondent organizations by Province/Territory

Province/Territory	Number	Organization Names
AB	4	Alberta Veterinary Medical Association Alberta Health College of Physicians & Surgeons of Alberta Alberta Agriculture and Rural Development
BC	5	BC Ministry of Agriculture BCCDC and BC Do Bugs Need Drugs? Program Vancouver General Hospital, Vancouver Coastal Health College of Physicians & Surgeons of British Columbia College Veterinarians BC
MB	4	Manitoba Agriculture and Food Manitoba Veterinary Medical Association College of Physicians & Surgeons of Manitoba Public Health & Primary Care/CDC Manitoba Health
NB	2	New Brunswick Veterinary Medical Association College of Physicians & Surgeons of New Brunswick
NL	3	Newfoundland and Labrador Ministry of Health NL Dept of Natural Resources - Animal Health Division Newfoundland and Labrador College of Veterinarians
NS	3	Nova Scotia Veterinary Medical Association Nova Scotia Department of Health and Wellness Nova Scotia Department of Agriculture, Animal Health Laboratory
NT	1	Northwest Territories Ministry of Health
NU	1	Nunavut Ministry of Health
National	8	Canadian Animal Health Institute (CAHI) Health Canada Veterinary Drugs Directorate (VDD) Animal Feed Division, CFIA Canadian Veterinary Medical Association Canadian Pork Council Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
ON	5	Professor - Dept Population Medicine, University of Guelph Ontario Veterinary Medical Association College of Veterinarians of Ontario Veterinary Science and Policy - OMAFRA Ontario Ministry of Health and Long-Term Care
	2	PEI Veterinary Medical Association PEI Department of Agriculture
QC	3	Collège des médecins du Québec MAPAQ - Québec Agriculture Ordre des médecins vétérinaires du Québec

SK	4	College of Physicians & Surgeons of Saskatchewan Saskatchewan Ministry of Health Saskatchewan Veterinary Medical Association Saskatchewan Ministry of Agriculture
YT	2	Government of Yukon, Department of Environment Yukon
TOTAL	**47**	

Table 5: Respondent classification according to animal or human health

Type	Number	Organization names
Animal Health	28	College of Veterinarians of Ontario Health Canada Veterinary Drugs Directorate (VDD) PEI Department of Agriculture Manitoba Veterinary Medical Association Saskatchewan Veterinary Medical Association Newfoundland and Labrador College of Veterinarians MAPAQ - Quebec Agriculture Ontario Veterinary Medical Association Manitoba Agriculture and Food Canadian Pork Council PEI Veterinary Medical Association BC Ministry of Agriculture NL Dept of Natural Resources - Animal Health Division Professor - Dept Population Medicine, University of Guelph Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) - Jean Szkotnicki Ordre des médecins vétérinaires du Québec Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Nova Scotia Veterinary Medical Association Alberta Veterinary Medical Association Animal Feed Division, CFIA New Brunswick Veterinary Medical Association College Veterinarians BC Alberta Agriculture and Rural Development
Human Health	18	College of Physicians & Surgeons of Manitoba Nunavut Ministry of Health Ontario Ministry of Health and Long-Term Care Northwest Territories Ministry of Health Public Health & Primary Care/CDC Manitoba Health College of Physicians & Surgeons of British Columbia Saskatchewan Ministry of Health Newfoundland and Labrador Ministry of Health College of Physicians & Surgeons of New Brunswick Alberta Health College of Physicians & Surgeons of Alberta College of Physicians & Surgeons of Saskatchewan BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec

		Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Yukon Association of Medical Microbiology and Infectious Diseases Canada
Both	1	Public Health Agency of Canada (PHAC or the Agency)
TOTAL	**47**	

Table 6: Respondent organization type

Organization type	Number	Organization
Federal government	4	Health Canada Veterinary Drugs Directorate (VDD) Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Animal Feed Division, CFIA Public Health Agency of Canada (PHAC or the Agency)
Provincial government	21	PEI Department of Agriculture MAPAQ - Quebec Agriculture Manitoba Agriculture and Food BC Ministry of Agriculture NL Dept of Natural Resources - Animal Health Division Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Alberta Agriculture and Rural Development Nunavut Ministry of Health Ontario Ministry of Health and Long-Term Care Northwest Territories Ministry of Health Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Newfoundland and Labrador Ministry of Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Yukon
Professional associations	18	College of Veterinarians of Ontario Manitoba Veterinary Medical Association Saskatchewan Veterinary Medical Association Newfoundland and Labrador College of Veterinarians Ontario Veterinary Medical Association PEI Veterinary Medical Association Canadian Veterinary Medical Association Ordre des médecins vétérinaires du Québec Nova Scotia Veterinary Medical Association Alberta Veterinary Medical Association New Brunswick Veterinary Medical Association College Veterinarians BC College of Physicians & Surgeons of Manitoba College of Physicians & Surgeons of British Columbia College of Physicians & Surgeons of New Brunswick

		College of Physicians & Surgeons of Alberta College of Physicians & Surgeons of Saskatchewan Collège des médecins du Québec
Industry	1	Canadian Pork Council
Independent associations	2	Canadian Animal Health Institute (CAHI) Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Academia	1	Professor - Dept Population Medicine, University of Guelph
TOTAL	**47**	

Table 7: Themes identified in the data

1.	Continuing Education
2.	Collaboration (mostly between animal and human)
3.	Public Education
4.	Antimicrobial treatment alternatives
5.	Producer Education
6.	Student Education
7.	AMU guidelines
8.	Research – doing and/or funding
9.	Residue detection
10.	AMU practice standards
11.	Committee representation (at all levels)
12.	Regulation development
13.	Stakeholder consultation
14.	Infection control and prevention
15.	Biosecurity
16.	AMU surveillance
17.	AMR surveillance

Table 8: Past Initiatives

Initiative	Number (out of 47 per initiative)	Organization names
Continuing Education	14	Health Canada Veterinary Drugs Directorate (VDD) Professor - Dept Population Medicine, University of Guelph Veterinary Science and Policy - OMAFRA Ordre des médecins vétérinaires du Québec Alberta Veterinary Medical Association New Brunswick Veterinary Medical Association Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Public Health Agency of Canada (PHAC or the Agency)
Collaboration (mostly between animal and human)	9	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Nova Scotia Department of Health and Wellness Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Public Education	7	MAPAQ - Quebec Agriculture Alberta Veterinary Medical Association Ontario Ministry of Health and Long-Term Care Saskatchewan Ministry of Health BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Treatment alternatives	0	-
Producer Education	3	MAPAQ - Quebec Agriculture Canadian Pork Council Professor - Dept Population Medicine, University of Guelph
Student Education	2	Public Health & Primary Care/CDC Manitoba Health Public Health Agency of Canada (PHAC or the Agency)
AMU guidelines	10	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Canadian Pork Council Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA

		Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Alberta Veterinary Medical Association Ontario Ministry of Health and Long-Term Care Public Health Agency of Canada (PHAC or the Agency)
No initiatives	15	College of Veterinarians of Ontario PEI Department of Agriculture Saskatchewan Veterinary Medical Association Newfoundland and Labrador College of Veterinarians Ontario Veterinary Medical Association Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Nova Scotia Veterinary Medical Association College Veterinarians BC College of Physicians & Surgeons of Manitoba College of Physicians & Surgeons of British Columbia College of Physicians & Surgeons of New Brunswick College of Physicians & Surgeons of Alberta College of Physicians & Surgeons of Saskatchewan Yukon
No response to question	4	Manitoba Veterinary Medical Association Nunavut Ministry of Health Northwest Territories Ministry of Health Newfoundland and Labrador Ministry of Health
Research – doing and/or funding	6	MAPAQ - Quebec Agriculture Canadian Pork Council Veterinary Science and Policy - OMAFRA BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Residue detection	1	Animal Feed Division, CFIA
AMU practice standards	6	PEI Veterinary Medical Association Alberta Veterinary Medical Association Alberta Health Collège des médecins du Québec Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Committee representation (at all levels)	6	Health Canada Veterinary Drugs Directorate (VDD) Canadian Veterinary Medical Association Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada
Regulation development	9	Health Canada Veterinary Drugs Directorate (VDD)

		Manitoba Agriculture and Food NL Dept of Natural Resources - Animal Health Division Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Alberta Veterinary Medical Association New Brunswick Veterinary Medical Association Association of Medical Microbiology and Infectious Diseases Canada
Infection control and prevention	4	BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Public Health Agency of Canada (PHAC or the Agency)
Biosecurity	5	MAPAQ - Quebec Agriculture Canadian Pork Council Saskatchewan Ministry of Agriculture Alberta Veterinary Medical Association Public Health Agency of Canada (PHAC or the Agency)
AMU surveillance	9	BC Ministry of Agriculture Canadian Animal Health Institute (CAHI) Alberta Agriculture and Rural Development Public Health & Primary Care/CDC Manitoba Health BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
AMR surveillance	13	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Veterinary Science and Policy - OMAFRA Animal Feed Division, CFIA Alberta Agriculture and Rural Development Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada

Table 9: Present Initiatives

Initiative	Number (out of 47 per initiative)	Organization names
Continuing Education	13	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Veterinary Science and Policy - OMAFRA Ordre des médecins vétérinaires du Québec Alberta Veterinary Medical Association New Brunswick Veterinary Medical Association Alberta Agriculture and Rural Development Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Collaboration (mostly between animal and human)	7	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association Alberta Veterinary Medical Association Animal Feed Division, CFIA Alberta Health Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Public Education	7	Alberta Veterinary Medical Association Saskatchewan Ministry of Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Treatment alternatives	1	Health Canada Veterinary Drugs Directorate (VDD)
Producer Education	6	MAPAQ - Quebec Agriculture Canadian Pork Council NL Dept of Natural Resources - Animal Health Division Veterinary Science and Policy - OMAFRA Saskatchewan Ministry of Agriculture Alberta Veterinary Medical Association
Student Education	3	Professor - Dept Population Medicine, University of Guelph Alberta Agriculture and Rural Development Public Health Agency of Canada (PHAC or the Agency)

AMU guidelines	8	MAPAQ - Quebec Agriculture Canadian Pork Council Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Ontario Ministry of Health and Long-Term Care Nova Scotia Department of Health and Wellness
No initiatives	16	College of Veterinarians of Ontario PEI Department of Agriculture Saskatchewan Veterinary Medical Association Newfoundland and Labrador College of Veterinarians Ontario Veterinary Medical Association PEI Veterinary Medical Association Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Nova Scotia Veterinary Medical Association College Veterinarians BC College of Physicians & Surgeons of Manitoba College of Physicians & Surgeons of British Columbia College of Physicians & Surgeons of New Brunswick College of Physicians & Surgeons of Alberta College of Physicians & Surgeons of Saskatchewan Yukon
No response to question	4	Nunavut Ministry of Health Northwest Territories Ministry of Health Newfoundland and Labrador Ministry of Health Collège des médecins du Québec
Research – doing and/or funding	6	Canadian Pork Council Veterinary Science and Policy - OMAFRA Animal Feed Division, CFIA Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Public Health Agency of Canada (PHAC or the Agency)
Residue detection	1	Animal Feed Division, CFIA
AMU practice standards	4	Animal Feed Division, CFIA Saskatchewan Ministry of Health Alberta Health Association of Medical Microbiology and Infectious Diseases Canada
Committee representation (at all levels)	10	Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Canadian Animal Health Institute (CAHI) Alberta Veterinary Medical Association Animal Feed Division, CFIA

		Alberta Agriculture and Rural Development BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Regulation development	6	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association Manitoba Agriculture and Food NL Dept of Natural Resources - Animal Health Division Veterinary Science and Policy - OMAFRA Food Safety Strategies Directorate, Policy & Programs Branch, CFIA
Infection control and prevention	5	Public Health & Primary Care/CDC Manitoba Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Biosecurity	3	Canadian Pork Council Veterinary Science and Policy - OMAFRA Public Health Agency of Canada (PHAC or the Agency)
AMU surveillance	5	MAPAQ - Quebec Agriculture BC Ministry of Agriculture Canadian Animal Health Institute (CAHI) BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada
AMR surveillance	13	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Animal Feed Division, CFIA Alberta Agriculture and Rural Development Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)

Table 10: Initiatives to benefit organizations in the future

Initiative	Number (out of 47 per initiative)	Organization names
Continuing Education	17	Newfoundland and Labrador College of Veterinarians Canadian Pork Council Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Saskatchewan Ministry of Agriculture Nova Scotia Veterinary Medical Association College of Physicians & Surgeons of Manitoba Ontario Ministry of Health and Long-Term Care Saskatchewan Ministry of Health Alberta Health College of Physicians & Surgeons of Alberta College of Physicians & Surgeons of Saskatchewan Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada
Collaboration (mostly between animal and human)	15	Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture Manitoba Agriculture and Food Canadian Pork Council BC Ministry of Agriculture Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Alberta Agriculture and Rural Development Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Association of Medical Microbiology and Infectious Diseases Canada
Public Education	9	Saskatchewan Veterinary Medical Association Canadian Pork Council Government of Yukon, Department of Environment College of Physicians & Surgeons of Manitoba Ontario Ministry of Health and Long-Term Care Alberta Health College of Physicians & Surgeons of Alberta Collège des médecins du Québec Nova Scotia Department of Health and Wellness
Antimicrobial treatment	6	Health Canada Veterinary Drugs Directorate (VDD)

alternatives		Saskatchewan Veterinary Medical Association MAPAQ - Quebec Agriculture Canadian Animal Health Institute (CAHI) Alberta Health BCCDC and BC Do Bugs Need Drugs? Program
Producer Education	7	Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture Canadian Pork Council Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Saskatchewan Ministry of Agriculture Alberta Veterinary Medical Association
Stakeholder consultation	1	Health Canada Veterinary Drugs Directorate (VDD)
Student Education	0	-
AMU guidelines	14	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Canadian Pork Council PEI Veterinary Medical Association Canadian Veterinary Medical Association Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec College Veterinarians BC College of Physicians & Surgeons of Manitoba Public Health & Primary Care/CDC Manitoba Health College of Physicians & Surgeons of Alberta BCCDC and BC Do Bugs Need Drugs? Program Nova Scotia Department of Health and Wellness
No initiatives	0	-
No response to question	9	College of Veterinarians of Ontario PEI Department of Agriculture Ontario Veterinary Medical Association Nunavut Ministry of Health Northwest Territories Ministry of Health College of Physicians & Surgeons of British Columbia Newfoundland and Labrador Ministry of Health College of Physicians & Surgeons of New Brunswick Yukon
Research – doing and/or funding	6	Canadian Pork Council Professor - Dept Population Medicine, University of Guelph Saskatchewan Ministry of Agriculture College of Physicians & Surgeons of Manitoba Alberta Health Association of Medical Microbiology and Infectious Diseases Canada
Residue detection	0	-
AMU practice standards	2	Saskatchewan Veterinary Medical Association Animal Feed Division, CFIA

Committee representation (at all levels)	0	-
Regulation development	14	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture NL Dept of Natural Resources - Animal Health Division Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Canadian Animal Health Institute (CAHI) Alberta Veterinary Medical Association Animal Feed Division, CFIA New Brunswick Veterinary Medical Association College Veterinarians BC Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health
Infection control and prevention	7	Health Canada Veterinary Drugs Directorate (VDD) Government of Yukon, Department of Environment Alberta Agriculture and Rural Development College of Physicians & Surgeons of Manitoba College of Physicians & Surgeons of Alberta Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada
Biosecurity	3	Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Alberta Agriculture and Rural Development
AMU surveillance	18	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture Manitoba Agriculture and Food Canadian Pork Council BC Ministry of Agriculture Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Saskatchewan Ministry of Agriculture Alberta Veterinary Medical Association Alberta Agriculture and Rural Development College of Physicians & Surgeons of Manitoba Ontario Ministry of Health and Long-Term Care College of Physicians & Surgeons of Alberta BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec
AMR surveillance	21	Health Canada Veterinary Drugs Directorate (VDD)

		Manitoba Veterinary Medical Association Saskatchewan Veterinary Medical Association Manitoba Agriculture and Food Canadian Pork Council BC Ministry of Agriculture Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture College Veterinarians BC Alberta Agriculture and Rural Development College of Physicians & Surgeons of Manitoba Saskatchewan Ministry of Health Alberta Health College of Physicians & Surgeons of Alberta Nova Scotia Department of Health and Wellness Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada

Table 11: Initiatives to be undertaken in general

Initiative	Number (out of 47 per initiative)	Organization
Continuing Education	9	Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Saskatchewan Ministry of Health Collège des médecins du Québec Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada
Collaboration (mostly between animal and human)	15	Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture BC Ministry of Agriculture Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Government of Yukon, Department of Environment Canadian Animal Health Institute (CAHI) Saskatchewan Ministry of Agriculture Alberta Agriculture and Rural Development Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Alberta Health College of Physicians & Surgeons of Alberta Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
Public Education	6	Saskatchewan Veterinary Medical Association Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Collège des médecins du Québec
Antimicrobial treatment alternatives	5	Health Canada Veterinary Drugs Directorate (VDD) Canadian Animal Health Institute (CAHI) Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture BCCDC and BC Do Bugs Need Drugs? Program
Producer Education	8	Manitoba Veterinary Medical Association Canadian Veterinary Medical Association

		Veterinary Science and Policy - OMAFRA Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Nova Scotia Veterinary Medical Association Ontario Ministry of Health and Long-Term Care BCCDC and BC Do Bugs Need Drugs? Program
Stakeholder consultation	1	Health Canada Veterinary Drugs Directorate (VDD)
Student Education	4	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Canadian Veterinary Medical Association Vancouver General Hospital, Vancouver Coastal Health
AMU guidelines	10	Health Canada Veterinary Drugs Directorate (VDD) MAPAQ - Quebec Agriculture Manitoba Agriculture and Food Canadian Veterinary Medical Association Canadian Animal Health Institute (CAHI) Nova Scotia Department of Agriculture, Animal Health Laboratory Alberta Agriculture and Rural Development Alberta Health College of Physicians & Surgeons of Alberta BCCDC and BC Do Bugs Need Drugs? Program
No initiatives	0	-
No response to question	14	College Veterinarians BC College of Veterinarians of Ontario PEI Department of Agriculture Newfoundland and Labrador College of Veterinarians Ontario Veterinary Medical Association PEI Veterinary Medical Association NL Dept of Natural Resources - Animal Health Division College of Physicians & Surgeons of Manitoba Nunavut Ministry of Health Northwest Territories Ministry of Health Newfoundland and Labrador Ministry of Health College of Physicians & Surgeons of New Brunswick Nova Scotia Department of Health and Wellness Yukon
Research – doing and/or funding	10	MAPAQ - Quebec Agriculture Canadian Pork Council Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Government of Yukon, Department of Environment Saskatchewan Ministry of Agriculture Ontario Ministry of Health and Long-Term Care Saskatchewan Ministry of Health College of Physicians & Surgeons of Saskatchewan Collège des médecins du Québec

		Association of Medical Microbiology and Infectious Diseases Canada
Residue detection	0	-
AMU practice standards	2	Animal Feed Division, CFIA Ontario Ministry of Health and Long-Term Care
Committee representation (at all levels)	0	-
Regulation development	12	Manitoba Veterinary Medical Association Canadian Veterinary Medical Association Veterinary Science and Policy - OMAFRA Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Nova Scotia Department of Agriculture, Animal Health Laboratory Alberta Veterinary Medical Association Animal Feed Division, CFIA New Brunswick Veterinary Medical Association Ontario Ministry of Health and Long-Term Care Public Health & Primary Care/CDC Manitoba Health College of Physicians & Surgeons of British Columbia
Infection control and prevention	4	Health Canada Veterinary Drugs Directorate (VDD) Saskatchewan Veterinary Medical Association Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada
Biosecurity	4	Saskatchewan Veterinary Medical Association Canadian Pork Council Canadian Animal Health Institute (CAHI) - Jean Szkotnicki BCCDC and BC Do Bugs Need Drugs? Program
AMU surveillance	17	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association MAPAQ - Quebec Agriculture Manitoba Agriculture and Food Canadian Pork Council BC Ministry of Agriculture Canadian Veterinary Medical Association Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Canadian Animal Health Institute (CAHI) Ordre des médecins vétérinaires du Québec Nova Scotia Department of Agriculture, Animal Health Laboratory Saskatchewan Ministry of Agriculture Alberta Agriculture and Rural Development Public Health & Primary Care/CDC Manitoba Health Alberta Health BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec

AMR surveillance	19	Health Canada Veterinary Drugs Directorate (VDD) Manitoba Veterinary Medical Association Saskatchewan Veterinary Medical Association MAPAQ - Quebec Agriculture Manitoba Agriculture and Food BC Ministry of Agriculture Paula Menzies - Dept Population Medicine, University of Guelph Veterinary Science and Policy - OMAFRA Canadian Animal Health Institute (CAHI) Nova Scotia Department of Agriculture, Animal Health Laboratory Alberta Agriculture and Rural Development Public Health & Primary Care/CDC Manitoba Health Saskatchewan Ministry of Health Alberta Health College of Physicians & Surgeons of Alberta BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec Vancouver General Hospital, Vancouver Coastal Health Association of Medical Microbiology and Infectious Diseases Canada

Table 12: Proposed lead organizations for future AMU-AMR initiatives

Proposed Organization type	Number (out of 47 per initiative) of organizations that proposed	Organization IDs that proposed
Federal government/agency	17	Health Canada Veterinary Drugs Directorate (VDD) Saskatchewan Veterinary Medical Association MAPAQ - Quebec Agriculture Manitoba Agriculture and Food PEI Veterinary Medical Association BC Ministry of Agriculture Paula Menzies - Dept Population Medicine, University of Guelph Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Ordre des médecins vétérinaires du Québec Nova Scotia Department of Agriculture, Animal Health Laboratory Alberta Veterinary Medical Association Animal Feed Division, CFIA Alberta Agriculture and Rural Development Ontario Ministry of Health and Long-Term Care BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec
Provincial government	13	Health Canada Veterinary Drugs Directorate (VDD) Newfoundland and Labrador College of Veterinarians Manitoba Agriculture and Food PEI Veterinary Medical Association BC Ministry of Agriculture Veterinary Science and Policy - OMAFRA Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Alberta Veterinary Medical Association Ontario Ministry of Health and Long-Term Care BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec Vancouver General Hospital, Vancouver Coastal Health
Professional associations	12	Health Canada Veterinary Drugs Directorate (VDD) Saskatchewan Veterinary Medical Association PEI Veterinary Medical Association BC Ministry of Agriculture Government of Yukon, Department of Environment Ordre des médecins vétérinaires du Québec Nova Scotia Department of Agriculture, Animal Health Laboratory

		Nova Scotia Veterinary Medical Association Alberta Veterinary Medical Association Alberta Agriculture and Rural Development College of Physicians & Surgeons of Alberta Vancouver General Hospital, Vancouver Coastal Health
Industry	8	Health Canada Veterinary Drugs Directorate (VDD) Saskatchewan Veterinary Medical Association Government of Yukon, Department of Environment Nova Scotia Department of Agriculture, Animal Health Laboratory Nova Scotia Veterinary Medical Association Ontario Ministry of Health and Long-Term Care BCCDC and BC Do Bugs Need Drugs? Program Collège des médecins du Québec
Independent association	2	Nova Scotia Veterinary Medical Association Vancouver General Hospital, Vancouver Coastal Health
No response to question	23	College of Veterinarians of Ontario PEI Department of Agriculture Ontario Veterinary Medical Association NL Dept of Natural Resources - Animal Health Division Food Safety Strategies Directorate, Policy & Programs Branch, CFIA Saskatchewan Ministry of Agriculture College Veterinarians BC College of Physicians & Surgeons of Manitoba Nunavut Ministry of Health Northwest Territories Ministry of Health Public Health & Primary Care/CDC Manitoba Health College of Physicians & Surgeons of British Columbia Saskatchewan Ministry of Health Newfoundland and Labrador Ministry of Health College of Physicians & Surgeons of New Brunswick Alberta Health College of Physicians & Surgeons of Saskatchewan Nova Scotia Department of Health and Wellness Yukon - Chief MHO Association of Medical Microbiology and Infectious Diseases Canada Public Health Agency of Canada (PHAC or the Agency)
National (all encompassing)	4	Manitoba Veterinary Medical Association Canadian Pork Council Canadian Animal Health Institute (CAHI) New Brunswick Veterinary Medical Association
Academia	3	Health Canada Veterinary Drugs Directorate (VDD) Saskatchewan Veterinary Medical Association Government of Yukon, Department of Environment

Appendix A

Antimicrobial Use and Antimicrobial Resistance Survey – Responses from participants
(To review the blank English survey see Appendix B)

Respondent organizations list

Alberta Veterinary Medical Association
Question No. 2 Past initiatives
• regional informational meetings with veterinarians • Alberta Platform for Responsible Use of Medicines in Animals (shared with industry) • amended bylaws and policy regarding prescribing and dispensing by veterinarians • establish criteria for "Dispensing Only " practices • published Council Guidelines re Prescribing and Dispensing • included CVMA "Prudent Use Guidelines" as a requirement for practice in Alberta • Veterinary Profession Act amended 2003 to clearly define prescribing, dispensing, compounding and selling drugs as within the scope of veterinary activity but each being distinct from the other i.e. unbundling of prescribing and dispensing • developed and distributed Biosecurity Manual for Veterinary Practices • developed and distributed species specific biosecurity manuals and products for various industries
Question No. 3 Current initiatives
• communication with members regarding antimicrobial Stewardship • facilitate John Waters Zoonotic Workshop regarding AMR • maintenance of APRUMA web site www.apruma.ca for information regarding drug use • participation in National Ad hoc Committee on Antimicrobial stewardship • participation in Alberta Animal Health and Welfare Steering Committee priority action group on AMU
Question No. 4a) Initiatives to benefit your organization.
• integrated and accurate mechanism for reporting antimicrobial use • better producer education regarding use and risk • consistent legislation and policy between provinces and nation regarding practices involving prescribing and dispensing
Question No. 4b) Initiatives to be undertaken in general.
• consistent legislation and policy between provinces and nation regarding practices involving prescribing and dispensing • legislative amendments regarding specifically feed additive medications
Question No. 4c) Proposed leads for general initiatives.
• all initiatives need to be at a national level supported by provincial authorities. • legislation needs to be Health Canada, CVMA can provide leadership in standardized definitions and policies. Again, these need to be in collaboration with and supported by provinces

College Veterinarians BC
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• Current initiatives
Question No. 4a) Initiatives to benefit your organization.
• Receipt of surveillance data from BC MAL, BCCDC • Receipt of recommended prudent use guidelines • Inspection Committee should lead • Manual in accordance with Occupational Health and Safety Regulations required
Question No. 4b) Initiatives to be undertaken in general.
• No
Question No. 4c) Proposed leads for general initiatives.
• The CVBC needs information from studies conducted by BCCDC, BC MAL or other qualified providers which can then be used to provide continuing education and resource manuals to registrant practice facilities. To-date, the CVBC enforces the Bylaws, Facility Practice Standards which have minimal requirements to control infection and prevent resistance in practice facilities. However, practice Bylaws has not been enacted.

Canadian Veterinary Medical Association

Question No. 2 Past initiatives

- CVMA was part of the planning committee for the Antimicrobial Stewardship Conference in Toronto (Fall 2011). CVMA chaired the companion animal concurrent session,
- Species-Specific Antimicrobial Prudent Use Guidelines for Beef, Dairy, Poultry and Swine Antimicrobial decision-making tool for veterinarians. Distributed to all large and mixed animal veterinary practices in Canada. PDF versions of guidelines are available for CVMA members on the CVMA website.
- CVMA has recently developed a Position Statement on importation of veterinary products (Own Use Importation - OUI) to address the regulatory loophole that exists that allows for importation of unapproved veterinary products, including antimicrobials.
- The CVMA has other Position Statements that address antimicrobial use in veterinary medicine and extra-label drug use.
- CVMA reviewed and endorsed the Infection Prevention and Control Best Practices for Veterinary Practices brochure (2009).

Question No. 3 Current initiatives

- CVMA is a member of the Ad Hoc Antimicrobial Stewardship committee that is furthering the actions coming out of the 2011 Antimicrobial Stewardship conference.
- CVMA is currently developing a Position Statement on the importation of active pharmaceutical ingredients (APIs) to address the regulatory gap that exists allowing the direct use of raw bulk chemicals to treat animals.

Question No. 4a) Initiatives to benefit your organization.

- CVMA is currently developing a Position Statement on the importation of active pharmaceutical ingredients (APIs) to address the regulatory gap that exists allowing the direct use of raw bulk chemicals to treat animals.
- Need a full complement of antimicrobial prudent use guidelines for all species - including equine and 'minor species' (sheep, goats, veal calves, etc).
- Canadian regulatory authorities need to effectively address the recommendations from the 2002 Report of the Advisory Committee on Animal Uses of Antimicrobials and Impact on Resistance and Human Health. This report clearly identifies and prioritizes the relevant issues surrounding AMU and AMR. There are 38 recommendations, 6 of which are deemed priority actions. To date, very little has been done to address these recommendations (other than CIPARS formation for the recommendation on national surveillance)
- Continue to bring awareness and promote that Infection Prevention And Control Best Practices for Veterinary Clinics education tool.
- CIPARS has done excellent AMR research and must be fully funded so that this can continue.

Question No. 4b) Initiatives to be undertaken in general.

- AMU data - 1.Rx and non-Rx use, 2.therapeutic vs non-therapeutic (growth promotion)
  3. Feed use
- Producer education about the importance of preserving AM effectiveness, AMR, judicious use. Veterinary education (students) - decision making, cascade, AMR Prudent use guidelines for all species - equine, MUMS
- Act on 2002 Advisory Committee of Animal Uses of Antimicrobials Report. priority recommendations must be addressed appropriately:
    - 1. Review Canada's scheduling of Rx vs non-Rx antimicrobials

- 2. Effective ELDU policy, label restrictions for critically important AMs
- 3. Close regulatory gap that allows direct use of APIs to treat animals.
- 4. Close regulatory gap that allows 'own use importation'.
- 5. Phase out growth promotion claims for AMs based on sound risk analysis.

- Consider embedding infection control / biosecurity programs in on-farm food safety / QA programs

Question No. 4c) Proposed leads for general initiatives.

- 1. Surveillance - CIPARS
- 2. Education - CAHC, Livestock Commodity Associations, Veterinary Colleges, CVMA
- 3. Prudent Use GLs - CVMA
- 4. Regulatory Leadership - CVMA - Health Canada - CAHC, Provincial CCVOs
- 5. Infection Control - CAHC/Commodity Assoc, CVMA

Manitoba Veterinary Medical Association

Question No. 2 Past initiatives

- Respondent Did Not Answer

Question No. 3 Current initiatives

- Lobbying provincial government for to regulation for use (through prescription) and sale/distribution (through licensing) of veterinary pharmaceuticals including antimicrobials. To date, there have been no regulatory changes.

Question No. 4a) Initiatives to benefit your organization.

- Important to understand true use of all antimicrobials to support the need for regulation.
  - 1. Producer
  - 2. Public
  - 3. Health Care Providers
- Regulations of use and sale/distribution
- Involvement in stakeholder discussions
- Producer education
- Understanding of surveillance data

Question No. 4b) Initiatives to be undertaken in general.

- **See 4a) all sections*** - initiatives that would be beneficial for our organization should all be undertaken generally as well

Question No. 4c) Proposed leads for general initiatives.

- Should be done be a national, collaborative group. Either they take on specific items or support smaller groups (i.e. groups lobbying provincial governments) on their initiatives.

New Brunswick Veterinary Medical Association
Question No. 2 Past initiatives
• articles in NBVMA newsletter regarding proper use and dispensation • developed position on the sale of Schedule F part 2 which are currently available without a VCPR in NB
Question No. 3 Current initiatives
• ongoing articles to sensitize members as to the proper dispensation/dispensation issues
Question No. 4a) Initiatives to benefit your organization.
• More restrictive interpretation of "own use" importation of pharmaceuticals/biologicals • Better control on the importation of counterfeit pharmaceuticals and "on line" pharmacies • National position on the sale of Schedule F part 2 pharmaceuticals without a VCPR • ELDU in small ruminants • Sales of biologicals without a valid VCPR
Question No. 4b) Initiatives to be undertaken in general.
• 1. Importation of pharmaceuticals and biologicals for "own use" current language is too broad and should be revisited • Better controls should be established to insure that the medications purchased, whether being from a compounding or online pharmacy, are, indeed, what are on the label. • ELDU in small ruminants - no "on label" instructions as to withdrawal times. Members have to consult FARAD for guidelines • Need national policy regarding Schedule F part 2 which includes such antimicrobials as penicillin and tetracycline
Question No. 4c) Proposed leads for general initiatives.
• The CVMA is uniquely positioned to lobby for such issues such as the responsible sale of pharmaceuticals (schedule F par t2) and" on label" withdrawal times. The provinces can't go it alone- Québec and Manitoba have legislation, but unless the policy becomes national, smaller provinces can't gain control on the sale of these pharmaceuticals which are antimicrobial, create resistance and oftentimes impact on patient outcome.

Newfoundland and Labrador College of Veterinarians
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Providing information to the membership of antimicrobial use
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• All of the above are important, but with a small organization like ours we cannot be involved much in this type of work. Government has done all of this work in our province

Nova Scotia Veterinary Medical Association
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Education of members is fundamental
Question No. 4b) Initiatives to be undertaken in general.
• Education for the end user, i.e. farmers, etc..
Question No. 4c) Proposed leads for general initiatives.
• NSVMA • Kennel clubs • LA producer groups

The College of Veterinarians of Ontario
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Ontario Veterinary Medical Association
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

PEI Veterinary Medical Association
Question No. 2 Past initiatives
• Record keeping for equine species. • Changes to Bylaws re: clinic records to include Canadian Quality Milk protocols for large animal practice
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• continue support of gFARAD database (Saskatoon) for drug residue withdrawal times, particularly for extra-label usage.
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• CFIA, CVMA, PEI Department of Agriculture, Atlantic Veterinary College

Ordre des médecins vétérinaires du Québec
Question No. 2 Past initiatives
• Implementing the correct use of the mandatory prescription by our practicing members • Occasional continuing education opportunities • Mandatory program of continuing education on antimicrobial resistance (6 hours for all members) • Various articles in our magazine (Le Veterinarius) • Participation on different task force and committee that address prudent • use and antimicrobial resistance
Question No. 3 Current initiatives
• A resolution was sustained by our council to had a mandatory program of continuing education on antimicrobial resistance. The program is of 6 hours divided in 3 hours of mainstream course and 3 hours of species specific formation. The mainstream part will be available at our November 2012 convention • OMVQ will obtain the authorization to use the CVMA Guidelines on prudent use of antimicrobials and will distribute it to all its members
Question No. 4a) Initiatives to benefit your organization.
• Additional information added to the prescription script regarding the use of the antibiotic (curative, preventive, growth factor). This could be used in a surveillance program to specify the nature on how antibiotics are used and the quantity • Maintain mandatory continuing education on antimicrobial resistance • Improve exchange of information especially with the human health representatives allowing a better understanding of antibiotic usage in animals and its impact on general antibioresistance
Question No. 4b) Initiatives to be undertaken in general.
• Country wide surveillance program of the usage of antibiotics • Urgent modification of the O.U.I. legislation • Mandatory veterinary prescription throughout the country
Question No. 4c) Proposed leads for general initiatives.
• 1) Health Canada and Canada Border Services Agency • 2) CVMA and all provincial statutory bodies • 3) Health Canada and VDD, all statutory bodies

Saskatchewan Veterinary Medical Association
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Random sampling of carcasses with tracing back to the producer and the attending veterinarian. Accountability needs to be demonstrated. • Public education regarding consequences of inappropriate use of antimicrobials in humans AND animals done by scientists. • Veterinarians should be leading. We should be deciding which medications are used and when. Leaving this to pharmaceutical companies who 'bundle' drug sales should not be allowed. • This does not always require antimicrobials. Vaccines could potentially be developed as well as protocols for exclusion of specific pathogens by testing and quarantine. • Development of vaccines or protocols for SPF facilities for finishing animals. We have eradicated diseases in the past, this may the way to control food borne disease rather than use of antimicrobials.
Question No. 4b) Initiatives to be undertaken in general.
• Surveillance with trace back and accountability built into the system. Surveillance without consequences to follow up is not productive. • Public education is key but also education of other health professions regarding the role of veterinarians in this area. It is much too simple and easy to blame microbial resistance on antibiotic use in animals alone. • These decisions should be made by veterinarians. • The veterinary profession needs to step up. Livestock producers should be involved as well. • Use results of surveillance and research to set up protocols for prevention, control and biosecurity. • Research into alternative ways to prevent and control infection.
Question No. 4c) Proposed leads for general initiatives.
• Veterinary profession - CVMA and other VMA's • Research and teaching facilities • Livestock producers • CFIA • Other health professions - public health, pharmacologists

Food Safety and Animal Health Division of Alberta Agriculture and Rural Development
Question No. 2 Past initiatives
• Salmonella Heidelberg and antimicrobial resistance in poultry [in Alberta]. • Evaluation of antimicrobial resistance profiles on Salmonella and generic Escherichia coli isolates of broilers at slaughter in Alberta. • Prevalence of genetic determinants of antimicrobial resistance in E. coli, Enterococci, and Salmonella isolated from retail meat [in Alberta]. • Antimicrobial resistance in Salmonella spp. isolated from pigs and pork carcasses in Alberta abattoirs, related to antimicrobial usage. • Antimicrobial resistance and antimicrobial use in Alberta feedlots. • Baseline prevalence of antimicrobial resistant foodborne and indicator bacteria in Alberta feedlots. • Antimicrobial resistance in fecal E. coli isolates from Alberta finisher pigs and its potential association with on-farm antimicrobial use. • Antimicrobial resistance patterns in fecal isolates of Campylobacter, E. coli and Salmonella and antimicrobial usage in swine. • Surveillance of Selected Antimicrobial Residues in Swine Slaughtered in • Provincially Inspected Abattoirs in Alberta. • Surveillance of Antibiotic Residues in Alberta Milk. • Stability of three antibiotics in honey.
Question No. 3 Current initiatives
• Alberta's support and enhancements to the Canadian Integrated Program for Antimicrobial Resistance Surveillance on-farm program in swine. • Lectures on antimicrobial resistance and surveillance in the University of Alberta One Health Course. • Alberta Farmed Animal Health and Welfare Steering Committee – Address Pharmaceutical Issues Priority Action Team. AARD provides technical expertise to this group, made up of representatives from the agricultural industry, the Alberta Veterinary Medical Association, Health Canada, Public Health Agency of Canada, Alberta Health and Wellness. They are specifically tackling issues surrounding antimicrobial use and resistance in agriculture. • Presentation about the transition from prudent use to antimicrobial stewardship at the John Waters Zoonotic Diseases Workshop on Oct. 16, 2012. • Representation on and leadership of the Canadian Council of Chief Veterinary Officers Committee for Antimicrobial Use in Animal Agriculture. • Presentation about provincial and national efforts to address antimicrobial resistance at the John Waters Zoonotic Diseases Workshop on Oct. 16, 2012.
Question No. 4a) Initiatives to benefit your organization.
• Alberta's Support to the Canadian Integrated Program for Antimicrobial Resistance: Broiler Farm Surveillance of Antimicrobial Use and Resistance. (AARD's support for this project has been approved and is awaiting final approval and role out of the national program by CIPARS.) • Development of a collaborative Government of Alberta strategy and action plan to address antimicrobial resistance (co-lead by AARD, Alberta Health, Alberta Health Services). This would encompass surveillance, stewardship, infection prevention and control / biosecurity.
Question No. 4b) Initiatives to be undertaken in general.
• The Canadian Integrated Program for Antimicrobial Resistance: Broiler Farm Surveillance of Antimicrobial Use and Resistance. • Comprehensive, national antimicrobial use surveillance in humans, agriculture and veterinary

medicine.
- An inclusive, collaborative working group to address antimicrobial stewardship and surrounding issues in agriculture, human and veterinary medicine.
- Development of a collaborative national strategy and action plan to address antimicrobial resistance.
- Development of programs and interventions to limit the spread of resistant foodborne pathogens from animals to people via the food chain.

Question No. 4c) Proposed leads for general initiatives.

- 1. CIPARS (PHAC)
- 2. CIPARS (PHAC)
- 3. Health Canada, PHAC, Canadian Medical Association, Canadian Veterinary Medical Association
- 4. Health Canada, PHAC, CFIA, AAFC
- 5. AAFC, CFIA, Health Canada

BC Ministry of Agriculture

Question No. 2 Past initiatives

- Compile and publicly provide information on antibiotic usage by the BC aquaculture industry.

Question No. 3 Current initiatives

- Compile annual OTC antibiotic sales data from non-professional outlets (feed mills, feed stores, farm supply stores).
- Collect on farm antibiotic usage from BC poultry farms spanning all commercial sectors (breeder, hatchery, broiler, layer).

Question No. 4a) Initiatives to benefit your organization.

- More data on antimicrobial usage in agriculture.
- Collaborative discussion with physicians about the issue of antibiotic use in agriculture and its effect on human health.
- For the various policy options being considered by Health Canada to manage the use of antibiotics in agriculture, evaluate the evidence of their effect on resistance among human pathogens and animal associated bacteria.
- Research on the impact of antibiotic use in small animals on resistance among human pathogens.

Question No. 4b) Initiatives to be undertaken in general.

- More data on antimicrobial usage in agriculture.
- Collaborative discussion with physicians about the issue of antibiotic use in agriculture and its effect on human health.
- For the various policy options being considered by Health Canada to manage the use of antibiotics in agriculture, evaluate the evidence of their effect on resistance among human pathogens and animal associated bacteria.
- Research on the impact of antibiotic use in small animals on resistance among human pathogens.

Question No. 4c) Proposed leads for general initiatives.

- 1) Health Canada
- 2) Provincial governments, provincial veterinary associations.
- 3) CVMA & CMA. CCVOs & CHOs.
- 4) Canadian Veterinary Colleges

Manitoba Agriculture and Food
Question No. 2 Past initiatives
• No but Sheridan Heuser & Provis did some swine monitoring for CIPARS about 5 years ago the province was not directly involved. • Minister of agriculture has the mandate to regulated OTC drug sales and distribution in Manitoba currently no regulations in place.
Question No. 3 Current initiatives
• Currently working with the MVMA on regulations related to the distribution and direct sales of OTC animal products. province in a cash crunch, very little stomach for new programs. Not much from the province pretty well swallowing the "industry led" dogma of national agriculture regulators.
Question No. 4a) Initiatives to benefit your organization.
• national reference center for typing salmonellae from live animal sources. • Better sharing of food safety activities with human health • Some pathogen surveillance in food, currently none and no food safety lab resources. • Better control of OTC sales and an ability to track ELDU that is currently occurring through unlicensed (all) OTC livestock Medicine outlets.
Question No. 4b) Initiatives to be undertaken in general.
• better characterization os salmonellas causing disease in animals • better estimate of Overall drug use in livestock production • better uptake of preconditioning of feedlot calves to decrease the pandemic of metaphalactic drug use on arrival. • revision of the culture and appropriateness of the CPS which allows so much chemical to enter the human food chain where there is increasing less evidence that it is necessary
Question No. 4c) Proposed leads for general initiatives.
• Sub-national veterinary governments have to step up to the place and start carrying some of the load that CFIA is divesting itself of.

NL Dept of Natural Resources - Animal Health Division
Question No. 2 Past initiatives
• We have passed provincial legislation (Animal Health and Protection Act, Animal Health Regulations) that forbid the sale of antibiotics for use in animals unless there has been a veterinary prescription. The exception is the federal Feeds Act.
Question No. 3 Current initiatives
• We hope to look at resistance patterns in this province. No project yet formalized. • Advising animal use groups about the legislation. • The legislative ban provides leadership in the direction that antibiotic use is heading in western countries.
Question No. 4a) Initiatives to benefit your organization.
• Federal legislative amendments to restrict antibiotic use in animals to prescription only.
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Nova Scotia Department of Agriculture, Animal Health Laboratory
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Not applicable. Our diagnostic laboratory does not prescribe or administer antimicrobials. Perhaps, culture and sensitivity results from tissue/swab/milk product submissions may be of value in surveillance programs. • Not applicable.
Question No. 4b) Initiatives to be undertaken in general.
• Investment of funds and the development of a program to monitor antimicrobial resistance in veterinary species in the province of Nova Scotia. • Data from the research can be used to educate governing bodies, veterinarians, farmers and consumers regarding the role that antimicrobial use in livestock production serves in the development of antimicrobial resistance. • Clarity of legislation governing the use of antimicrobials in veterinary medicine in this province. • Governments (provincial and federal), veterinarians and farmers must be involved in bringing about change in antimicrobial use in livestock production, if the research indicates that such measures should be taken. • Implement changes in production systems that improvement the overall health and productivity of livestock species while reducing the necessity of antimicrobial use. • More research is needed to better evaluate the role of antimicrobial use in livestock and veterinary species in the development of antimicrobial resistance. • Studies are necessary to determine where resistance is developing and how production systems may be altered to reduce development of microbial diseases in veterinary species while still allowing for economic feasibility.
Question No. 4c) Proposed leads for general initiatives.
• Governments (provincial and federal), veterinarians and farmers

Veterinary Science and Policy - OMAFRA
Question No. 2 Past initiatives
• provide data to PHAC from (1) our hatchery program regarding typing and resistance patterns of Salmonella isolates and (2) Animal Health Laboratory for PHAC AMR surveillance • awareness and education articles in CEPTOR our scientific extension bulletin to all vets in the province. Help with CVMA prudent use guidelines • OMAFRA and Uof G have led two AMR conferences in the last 10 years to examine the topic and focus national awareness. • fund AMR research • begin policy work to review provincial Livestock Medicines legislation
Question No. 3 Current initiatives
• ongoing education through veterinary extension work to producers, organizations and veterinarians. • CCVO subcommittee on AMR • Growing Forward biosecurity standards and food safety education that include some prudent use information on medicines • ongoing funding of research in AMR through Uof G. • ongoing policy review of Livestock Medicines legislation
Question No. 4a) Initiatives to benefit your organization.
• national co-ordination, funding and leadership of AMR surveillance by PHAC • funding in Growing Forward 2 for national and provincial education and national policy work • Health Canada to lead national legislative review and change to bring legislation in step with AMR science • FPT policy work that leads to improved veterinary oversight of ALL • medicines use (terrestrial and non-terrestrial)
Question No. 4b) Initiatives to be undertaken in general.
• PHAC funded so as to lead surveillance and FPT policy nationally • more provincial funding for education - GF2 policy direction perhaps • PHAC leads on health and agriculture files • FPT policy work that leads to improved veterinary oversight of ALL medicines use (terrestrial and non-terrestrial)
Question No. 4c) Proposed leads for general initiatives.
• Federal leadership, co-funding, FPT policy leadership, with regional-provincial delivery

PEI Department of Agriculture
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer referred to VMA
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer referred to VMA
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer referred to VMA

MAPAQ - Quebec Agriculture

Question No. 2 Past initiatives

- AMR surveillance program for pathogenic isolates since 1993 (www.mapaq.gouv.qc.ca/antibioresistance). When MAPAQ is inspecting a farm, verification of the prescriptions required for antibiotics that are presents is made; it is the mandate of Ordre des médecins vétérinaires du Québec (OMVQ) to make sure that sales of drugs requiring prescription (mandatory since 1985 for all antibiotics) is respected.
- The annual report on AMR surveillance is publicly available on our website; many oral presentations and publications for practitioners and users on the subject of AMR and judicious use of antibiotics (and others prescriptions drugs).
- We organized a multistakehloders group (Groupe de travail sur l'antibiorésistance,2002-2007) that made recommandations, and a following group (Groupe de travail sur la prévention de l'antibiorésistance et l'itilisation judicieuse des antibiotiques, 2008-2010) for a detailled action plan based on those recommandations: the action plan was submitted to MAPAQ in January 2011.
- We did organized those working groups on AMR and we do act as leader for a broad Animal Health and Welfare Animal Strategy (Stratégie québécoise de santé et de bien-être des animaux) intented for a collaborative implementation of the One Health concept, in which judicious use of antibiotics is one of the main objectives.
- We do manage a program (Programme d'amélioration de la santé animale, ASAQ) to help provide access to veterinary services for farm animal and also manage diagnostic lab in support of the practitioners work and also for specific surveillance activities related to our animal health sentinel networks. We also promote biosecurity and manage a program to help the integration of those new Canadian standards at the farm level.
- We make sure in our funding research program that AMR is one of the criteria listed for evaluation and indeed there has been projects approved (details on demand)
- We are engage with the Québec Health Authorities (MSSS and DSP)on a permanent basis (since many years) with a formal agreement of collaboration for the management of zoonotic diseases and AMR is a main concern for them.

Question No. 3 Current initiatives

- One of the main items of the action plan submitted is the establishment of a monitoring system on the veterinary use of antibiotics (bovines, swine, poultry, horses and also dogs and cats) and we are working on it. Of course, our AMR surveillance program is still on-going.
- In collaboration with the OMVQ, we are finalizing an agreement with CVMA for the distribution of their existing guidelines on use to all practitioners and also the adoption of a requirement for a few mandatory hours of continuous formation on the subject of AMR and judicious antibiotic use.
- We are working with many stakeholders to produce documentation on judicious use for the users (animal owners) to be use in a communication plan. We also want to increase surveillance at the farm level by MAPAQ inspectors for the proper management of antibiotics.
- The promotion of judicious use of antibiotics is one of the request made to all the partners organizations (around 70 now!) of the Stratégie québécoise de santé et de bien-être des animaux, an initiative lead by the MAPAQ.
- We are actually in the process of reviewing all our programs, including ASAQ, for improvement where possible.

Question No. 4a) Initiatives to benefit your organization.

- Monitoring of the veterinary and human use of antibiotics in every provinces and territories. A national communication plan targeting animal owners so they do understand the importance of

using first line of antibiotics first so to use the broad spectrum ones only when necessary. In fact we should be considering forbidding some actual publicity suggesting to use those first! Veterinarians are under pressure for it.

- Mandatory prescription for all use antibiotics in Canada (priority #1)
- That we (Gov. and Industry) ask for a reduction of as much as possible on the use of the antibiotics of the category 1 (very high importance for human health) and that we as soon as possible replace the use of antibiotics as growth factors by better management.
- Promoting the use of veterinary services with support for proper access to lab services.
- (OIE recommendations : no use without veterinary supervision, and no sale without proper knowledge of the situation)
- Work on the search of new antibiotics and of course on any good alternatives to it, keeping in mind that everything that promote health reduce the need of antibiotics... and per se of AMR.
- In fact they are all #1 priorities (I wasn't sure if you want the classification in each section or between them!) : we need a global approach for it... including the same kind of activities for the human use also

Question No. 4b) Initiatives to be undertaken in general.

- A national agency for it? - Surveillance
- Asking for inclusion in the curriculum of biology teaching at the high school level of AMR and the importance of following doctor/pharmacist advices on the use of medication as a moral responsibility for public health and environmental health?
- Forbidding the use of antibiotics as growth factors... at minimum to address public concern!
- Having a North America common policy on the matter? - Leadership
- Improve/promote immunization plans
- More money I guess... - Research

Question No. 4c) Proposed leads for general initiatives.

- The Federal Government (Health Canada and...)

Saskatchewan Ministry of Agriculture
Question No. 2 Past initiatives
• No - Not to address AMU/AMR, but have carried out on-farm biosecurity initiatives.
Question No. 3 Current initiatives
• Communications planned for near future (AgriView - Ministry newsletter to producers, others as identified)
Question No. 4a) Initiatives to benefit your organization.
• Information on AMU and correlated AMR risks is needed to inform policy. • Info to producers and vets on prudent use is required - CVMA position statement? • CFS-CFC activities and position show leadership - need similar from other industries • Increased awareness among producers needed - need to develop communications materials to target producers and their veterinarians • Need to identify knowledge gaps and develop research projects that help fill these gaps e.g. literature reviews, surveys - Research
Question No. 4b) Initiatives to be undertaken in general.
• Broader dissemination of CIPARS data - e.g. at conferences need surveillance on animal related usage - perhaps as per HC data on pharmacy-level AMU; for animal AMU, would need to include retail level also. • More content at industry (vet and producer) conferences on infection control, isolation practices, and prudent use guidelines also continue/increase education in public health - patients, doctors, public in general activities in this area directed at both vets and producers also activities directed at patients and healthcare providers • activities directed at hospitals and vet clinics - get the message to the healthcare providers. Also focus on areas of congregation e.g. a 40,000 head feedlot has as much - or more - impact than 400 farms. More emphasis on vaccination instead of antibiotics. • new human antibiotic development; new vaccine development and research into use of feed additives as alternatives for livestock (large field trials in particular are needed) e.g. acidifiers, competitive inhibition for enteric pathogens.
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Government of Yukon, Department of Environment
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Develop a monitoring program for antimicrobial use (AMU) in Yukon livestock by species (collaboration with private clinicians, producers, Agriculture Branch), and monitor compliance, withdrawal times, and extra-label use of antimicrobials by producers. Risk to human health is virtually unknown in territory since there is currently no monitoring of AMU or AMR, and most Yukon livestock are sold through farm-gate sales. • Implement surveillance program for antimicrobial resistance (AMR) in Yukon livestock. • Implement surveillance program for antimicrobial resistance in wildlife species to examine baseline levels of AMR in species with no direct antimicrobial exposure. • Collaborate with public health officials to develop monitoring program for AMR in Yukon residents. • Provide training and educational resources for producers and clinicians on AMU and AMR in livestock such as presentations, meetings, and written materials (eg. website updates, pamphlets). • Provide results of surveillance and monitoring programs to clinicians, producers, general public on an ongoing basis. • Work with veterinarians to encourage judicious use of antimicrobials, and follow up with producers to examine compliance and understanding of prudent and judicious use of antimicrobials. • Include AMU and AMR information in livestock health surveillance program and educational resources, and inform and work with producers to improve biosecurity, disease prevention, and animal husbandry. • Collaborate with researchers and laboratories to provide AMR surveillance data in Yukon livestock and wildlife, use data to further inform and educate veterinarians, producers and public health officials on current and future AMU and AMR issues in Yukon.
Question No. 4b) Initiatives to be undertaken in general.
• Development of standardized data collection and surveillance methods for AMU and AMR in livestock in Canadian jurisdictions, and mechanisms to share information and resources. • More accessible educational resources on AMU and AMR in Canadian livestock and the connection between human and agriculture AMU and AMR for producers and veterinarians. • Better information for human patients on use of antimicrobials and prevention or reduction of AMR in human infections. • Availability of continuing education for veterinarians on development and prevention of AMR in domestic animals, and judicious and prudent use of antimicrobials, as new research and information becomes available. • Continued research into mechanisms of AMR in livestock and human pathogens, and relationships between AMR in animals and effects on human health.
Question No. 4c) Proposed leads for general initiatives.
• Lead organizations for these initiatives would include Public Health Agency of Canada, Health Canada, provincial and territorial governments, CFIA, CVMA and provincial veterinary medical associations, Agriculture Canada, academic institutions, and the pharmaceutical industry.

Alberta Health

Question No. 2 Past initiatives

- Surveillance of Clinical infections
- MRSA Community Surveillance Project - Monitoring community transmission and prevalence of MRSA.
- Gonococcal Infections Monitoring - Surveillance for Gonococcal resistant strains.
- Review of reports of hospital surveillance of MRSA, VRE and Clostridium difficile infections
- Bugs and Drugs Handbook - Funding to develop an antibiotic empirical prescribing guide that is geographically relevant.
- Do Bugs Need Drugs - Public and Health professional education program for appropriate antibiotic prescribing and infection control.
- Alberta Public Health Notifiable Disease Guidelines - guidelines for case definition, lab identification, reporting, treatment and prevention of certain communicable diseases.
- Sexually Transmitted Infections provincial formulary - maintains approved funded drugs for STIs in Alberta.
- Influenza Antiviral Funding Policy - targeted policy to provide antivirals to control outbreaks in congregate living facilities.
- Albert Health sets performance measures for AHS
- MRSA-BSI
- CDI
- CVC BSI

Question No. 3 Current initiatives

- Developing formal data sharing with AHS for CDI, VRE, MRSA and ESBLs
- Carbapenem Resistant Organism (CRO) Surveillance program
- Developing public health guidelines for managing and responding to CRO
- Maintaining current/up to date notifiable disease guidelines.
- Bugs and Drugs Handbook revision
- Working with the CPSA on potential surveillance of prescribing patterns
- Participation in AMR Awareness week - internal and external communication and promotion.
- Provide direction and collaborate with Alberta Health Services IPC.
- Participation on FPT discussions on AMR: PHN-C Communicable and Infectious Disease Steering Committee (CIDSC); FPT TAsk Group on AMR development;
- 2008 Infection Prevention and Control provincial standards development.
- Alberta Hand Hygiene Strategy - Demonstrates Alberta's commitment to hand hygiene promotion in the public, in health care settings and other occupations.
- Implemented performance indicators for AMR for facilities - MRSA Blood Stream Infections (BSI); Central Venous Catheter BSI; CDI.
- MRSA Guidelines
- Revised Cleaning and Disinfection Standards for health care facilities (2012).
- CRO outbreak management and learnings.
- Alberta Health Services IPC Education Project - Grant funding to address hand hygiene in health care facilities
- Collaboration in research - data sharing through formalized process.
- Immunization programs for prevention - e.g. pneumococcal 19A.

Question No. 4a) Initiatives to benefit your organization.

- Projects to standardize surveillance practices e.g.. screening, testing in both acute and long-term care facilities.

- Enhancing AMR surveillance in community setting.
- Collaborative comprehensive cross-sectoral (e.g. human and animal health, horticulture) surveillance of antimicrobial use
- Physician continuing education programs for prescribing practices and IPC initiatives, including hand hygiene.
- Broader public awareness campaigns for public to reduce prescribing pressures.
- Consensus conference on AMR Stewardship.
- Surveillance and active feedback to physicians and others prescribers about prescribing patterns
- Re-establish antimicrobials as a social commodity.
- National collaboration mechanisms for AMR strategy and actions - local, regional, provincial and pan-Canadian.
- Support research on AMR ecology, development and management.
- Support and encourage the development of new drugs by academia and pharmaceutical industry.
- Support and encourage research to expand alternate technologies such as Non-antimicrobial approaches - gene therapy, phage therapies, passive or active immunization, research plasmid replication inhibition techniques, peptide toxins, nanoparticle delivery etc
- Encourage development of rapid diagnostics to reduce prescribing pressures by diagnosing viral infections at point of care and to better inform treatment (faster resistance profiles).
- Better understanding of the need for antibiograms geographically to better allow for regional variations in empirical therapy.

Question No. 4b) Initiatives to be undertaken in general.

- Pan-Canadian Surveillance of use of antibiotics.
- Pan-Canadian Surveillance of AROs.
- Cross-pollination of antimicrobial use between human and animal medicine.
- Consistent stewardship guidelines for AMR.
- Provincial and federal leadership and accountability structures

Question No. 4c) Proposed leads for general initiatives.

- Respondent Did Not Answer

BCCDC and BC Do Bugs Need Drugs? Program

Question No. 2 Past initiatives

- We produce annual reports on population level antibiotic consumption in BC and also a compendium of relevant antibiotic resistance trends.
- Do Bugs Need Drugs? Program targets children at pre-school, grade 2, general population and prescribers with education aimed at reducing antibiotic misuse.
- As above. We have recorded reductions in utilization associated with our programs. Hospital programs are further behind.
- We sit on national committees (AMMI Canada) and study groups focusing on resistance and stewardship. (Your survey should also be answered by AMMI Canada which is engaged in a large national study funded by NCCID to assess completeness of surveillance for AROs and utilization.
- BC has hospital based IC units and Provincial Infection Control Networks (PICNET).
- We conduct research on the impact of population based programming on antibiotic utilization and resistance and on better ways to summarize antibiotic resistance trends through indices.

Question No. 3 Current initiatives

- All sections as above are ongoing activities. These are focused on the human population but we wish to see similar data available for animals.

Question No. 4a) Initiatives to benefit your organization.

- We need reliable data on utilization in agriculture so that producers can assess their progress in reducing use. We need comprehensive hospital utilization and stewardship efforts. These are currently spotty. This must include long term care facilities.
- We need regular interaction with producers and vets to talk about interspecies implications of resistance and growing evidence for links between utilization of antibiotics in agriculture and human health issues.
- Full programs in agriculture and hospitals needed. This includes long term care where resistance problems have become serious.
- We are seeing leadership by Min of Ag with producers and hope this continues to point of producing meaningful data.
- We could see more interface with LTC facilities and food producers.
- Cleaner operations may reduce need for antibiotics.
- Alternatives to antimicrobial growth promoters.

Question No. 4b) Initiatives to be undertaken in general.

- Ongoing production of data on resistance and utlization in agriculture and hospital sectors (including long term care).
- Bring food producers in touch with risks of R organisms in food.
- Remove loopholes in agricultural use so that all use may be measured.
- Separate veterinary prescribing from dispensing.
- Producer groups need to take ownership. Health authorities need to put forward resources for facility utilization and stewardship efforts.
- On farm infection control is a priority as will help producers reduce antibiotic use.
- Alternatives to antibiotic growth promoters.
- Note that your API and Own Use categories below do not apply to human use.

Question No. 4c) Proposed leads for general initiatives.

- Community utilization - BCCDC
- Hospital and LTC utilization - Health authorities
- Agricultural utilization - BC Min of Ag / Producer groups / PHAC-CFIA
- Once again: Please connect with AMMI Canada about its work toward a comprehensive overview of surveillance in this area sponsored by NCCID.

Newfoundland and Labrador Ministry of Health
Question No. 2 Past initiatives
• Respondent Did Not Answer
Question No. 3 Current initiatives
• Respondent Did Not Answer
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Northwest Territories Ministry of Health
Question No. 2 Past initiatives
• Respondent Did Not Answer
Question No. 3 Current initiatives
• Respondent Did Not Answer
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Nova Scotia Department of Health and Wellness
Question No. 2 Past initiatives
• District hospitals undertake surveillance and data is pooled at provincial level • Academic detailing to physicians has been delivered using materials developed in the province • Chief Medical Officer convened a meeting of interested parties. Deputy CMO is providing provincial oversight • Infection control processes are managed at district level • None - Research
Question No. 3 Current initiatives
• Continuation of data collection and reporting at district and provincial level • Ongoing physician education. Begin communication to public about antimicrobial prescribing • Further development of hospital and primary care prescribing formularies • Engagement of chief pharmacists and hospital chiefs of staff is planned • Briefing note is in preparation to inform the system of need to accelerate action • Process for pooling of resources will be discussed with chief executives
Question No. 4a) Initiatives to benefit your organization.
• Continuation of the above - surveillance • Social Marketing campaign would be appropriate if it can be resourced
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Nunavut Ministry of Health
Question No. 2 Past initiatives
• Respondent Did Not Answer
Question No. 3 Current initiatives
• Respondent Did Not Answer
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Ontario Ministry of Health and Long-Term Care

Question No. 2 Past initiatives

- Public Health Ontario has undertaken a prevalence study of antimicrobial resistant organisms in long-term care homes that is to be repeated this year. Public Health Ontario compiles a quarterly surveillance report on CRE.
- Public Health Ontario through its Regional Infection Control Networks receives approximately 200 requests for assistance/information regarding ARO management and control per year, and conducts approximately 20 education sessions per year with health care facilities across Ontario.
- Public Health Ontario has launched an antimicrobial stewardship program to support the implementation of ASPs in community hospitals across Ontario. More information can be found on www.oahpp.ca.
- There have been multiple updates to Provincial Infectious Diseases Advisory Committee's (PIDAC) best practice guidelines on management of MRSA, VRE and ESBLs.

Question No. 3 Current initiatives

- Public Health Ontario is currently developing a plan to evaluate VRE screening and control in Ontario.
- There is ongoing education to healthcare settings across the province as requested by the Regional Infection Control Networks.
- Public Health Ontario will continue to develop its antimicrobial stewardship program to support hospitals and other health care settings.

Question No. 4a) Initiatives to benefit your organization.

- Identification and consistent collection of key data elements related to antibiotic utilization in humans and animals in Canada
- Development of educational program(s), sharing successful initiatives between provinces
- Review and changes to applicable regulations governing access to and use of antibiotics in animals
- Coordinated national, multi-sectoral leadership to set a common agenda and work plan provinces could harmonize their initiatives with

Question No. 4b) Initiatives to be undertaken in general.

- Surveillance of Antibiotic Resistant Infections in Animals
- Surveillance of Antimicrobial Importation and use in all Animals
- Industry awareness of importance of having veterinary guidance for appropriate antimicrobial use in livestock
- Elimination or restrictions of own use importation for veterinary drugs, including antimicrobials
- Development of consistent and enforceable professional codes of conduct around the sale, dispensing and use of antimicrobials by all veterinarians across Canada
- Elimination of over the counter availability of livestock antimicrobials in feed stores in Ontario
- Restrictions of prophylactic use of antimicrobials (including growth promotion)
- Investigation of relationship between development of antimicrobial resistance in human populations and animals
- Mechanisms of development of AMR - Research
- Regulation of pharmaceutical industry marketing, sale and distribution of veterinary drugs, including antimicrobials, especially to non-veterinarians (e.g., bulk discounts, drug bundlings, etc.)

Question No. 4c) Proposed leads for general initiatives.
• Considerations as leads for initiatives provided in 4b: o #1 -- Health Canada o #2 - Health Canada (veterinary regulatory bodies) o #3 - Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) o #4 - OMAFRA and Health Canada Veterinary Drugs Directorate o #5 - OMAFRA and Canadian Food Inspection Agency (CFIA) o #6 - OMAFRA, CFIA, Health Canada (veterinary regulatory bodies) o #7 - OMAFRA and Agricultural Industry groups/associations o #8 - no recommendation at this time o #9 - no recommendation at this time o #10 - Health Canada

Saskatchewan Ministry of Health

Question No. 2 Past initiatives

- Selected AROs and outbreaks are provincially notifiable in SKNorthern Antimicrobial Resistance Partnership (NARP)- http://www.narp.ca/index.htm . Partnership involving northern Sask Health Regions, First Nations, Sask Disease Control Lab, National Micro Lab, PHAC and Manitoba representatives. Various educational approaches were implemented to address AMR (school education, community education, and physician education)
- NARP developed materials for health care providers for appropriate use of antimicrobials. Rx Files also provides guidance to physicians regarding judicious antibiotic use
- Materials developed by NARP have been and are being used in other jurisdictions in Canada SK Infection Prevention and Control Program is a collaboration among the Ministry of Health, Regional Health Authorities, and other stakeholders.
- NARP project did research regarding community prevalence and impact of community education.

Question No. 3 Current initiatives

- MRSA Working Group formed under Saskatchewan Population Health Council (SPHC). One of the task groups is working on enhancing the lab surveillance system that will assist public health in conducting population/community level surveillance of MRSA in health regions/first nations jurisdictions. Developing standards for public health surveillance of invasive disease.
- MRSA Working Group has Education Task Group that is developing materials for public education that can be used for case education, outbreak situations as well as general information that can be used in various circumstances. Also working with the Ministry of Education to try to provide recommended resources for use in schools pertaining to hand hygiene.
- MRSA Working Group has a Task Group working on Primary Care Treatment Algorithms and supporting materials and recommendations for managing various levels of MRSA infections from skin and soft tissue infections to moderate infections in community settings. To be disseminated to primary care providers.
- Antimicrobial Resistance is a priority within the Ministry of Health.
- The Saskatchewan Disease Control Laboratory is involved in doing strain surveillance.
- The NARP program has disseminated learnings

Question No. 4a) Initiatives to benefit your organization.

- National standards for ARO surveillance in community and health care facilities.
- Education for professionals and the public.

Question No. 4b) Initiatives to be undertaken in general.

- Need to know the level of ARO's in the environment (i.e. shedding from livestock in intensive livestock operations, waste management facilities or activities such as manure spreading, and other land uses that are impacted by large numbers of animals)
- Need to know the levels of AROs that are in people's backyards, compounds where companion animals (dogs, cats) or other animals (i.e. backyard chicken flocks) are kept
- Need to do a risk assessment
- Antibiotic use in agriculture and effect on humans. Veterinary schools could lead education on this.
- Need research into the modes and transmissibility of AROs from companion animals to humans and vice versa. Also which species are most susceptible or would present the most problem to humans

Question No. 4c) Proposed leads for general initiatives.

- Respondent Did Not Answer

Public Health & Primary Care/CDC Manitoba Health
Question No. 2 Past initiatives
• Limited surveillance data have shown that off-label use of veterinary antimicrobial drugs is a driver for the emergence of resistance to critically important human antimicrobial drugs in foodborne pathogens. This is data collected through a federal surveillance project (CIPARS) and not specific to Manitoba. • There has been a long-standing educational aspect built into CME and medical school curriculum that highlights the importance of appropriate use of antibiotics and encourages physicians to be more careful with prescription habits. This is not directed through the department of Health. • Federal/Provincial/Territorial jurisdictions have begun scoping out areas for potential federal-provincial-territorial collaboration on antimicrobial resistance through the Pan-Canadian Public Health Network's Communicable and Infectious Disease Steering Committee. • Currently updating recommendations for AROs in relation to screening, surveillance, prevention and control for the province of Manitoba.
Question No. 3 Current initiatives
• Currently updating recommendations for AROs in relation to screening, surveillance, prevention and control for the province of Manitoba.
Question No. 4a) Initiatives to benefit your organization.
• Health Canada intends to review the current situation with regards to oversight on importance of some veterinary health products as it develops a specific regulatory framework for veterinary drugs under the Health Product and Food Branch's Roadmap for Modernization. Consultations with stakeholders are planned for Fall 2012. • The Public Health Agency of Canada, Health Canada and the Canadian Food Inspection Agency encourage the prudent use of antimicrobials by healthcare professionals, pharmacists, and patients, as well as by farmers, veterinarians and food producers. • The Public Health Agency of Canada, Health Canada and the Canadian Food Inspection Agency work closely with international, federal, provincial and territorial partners and with the professional and industry stakeholders to help reduce, limit and control the emergence and spread of AMR in Canada. Key aspects of regulatory reform include creating proportional (risk based) oversight for veterinary drugs and international harmonization, while fostering industry's innovation and competitiveness. • Federal/Provincial/Territorial jurisdictions have begun scoping out areas for potential federal-provincial-territorial collaboration on antimicrobial resistance through the Pan-Canadian Public Health Network's Communicable and Infectious Disease Steering Committee.
Question No. 4b) Initiatives to be undertaken in general.
• Collaborative programs between agricultural surveillance and health surveillance systems to track resistant bacterial outbreaks, using additional laboratory testing, such as DNA fingerprinting, to close the associative gap. At this point research shows temporal and geographic associations but does not always indicate a direct link between agricultural use of antibiotics and AROs within human health. This surveillance is needed to highlight areas where greater stewardship is required. • Legislative control within both agricultural and human health realms to "incentivise" better stewardship. This may need to be aimed at Big Pharma to improve responsible distribution and advertising. • This is considered an important item on high level committees, e.g. CVO/CCMOH, CID-SC. However, the pharmaceutical industry does not seem to be part of leadership initiatives to encourage the reduction and appropriate use of these medications.
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Yukon - Chief MHO
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Animal Feed Division, CFIA
Question No. 2 Past initiatives
• Medicated feeds are sampled to verify labeled drug guarantees are met within regulatory tolerances. Feeds are monitored to verify the absence of drug residues (through cross-contamination). Feeds are monitored for salmonella and positives are serotyped and tested for AMR by PHAC • Provide guidance on the use of antimicrobials in fuel ethanol production where by-products are destined for use in animal Feeds (http://tinyurl.com/AFD-RG6) • Provided speaking points towards Agency presentation as part of AMR stewardship conference in October 2011 Government -Industry Bilateral outreach on AMR with HC and PHAC. • Provided feedback to PHAC related to their SP Integration Pilot Survey. Working as part of the Interdepartmental Science Policy Team on Food-borne AMR at the director, working group, and as part of the ad hoc Tri-departmental AMR team (CFIA/HC/PHAC). • Working with the VDD on assessing the risks associated with cross-contamination concentration of drugs in feed including antimicrobials (only category 2 and 3 drugs). Worked with CFIA Feed Lab (OLC) to develop new residue monitoring analytical methods (LC/MS/MS) for feeds-Research. • Provide comments associated with the OIE Terrestrial Animal Health Codex • Participate in International collaboration with the development of Codex • Guidelines for Risk Analysis of Food-borne AMR.
Question No. 3 Current initiatives
• Monitoring programs listed above are ongoing • Supporting the VDD in their actions related to future changes on the OTC status and AGP claims associated with some drugs. The CFIA AFD and the VDD share responsibility for the Compendium of Medicating Ingredient Brochures (http://tinyurl.com/AFD-CMIB) • Continued participation in the Interdepartmental Science Policy Team on Food-borne AMR at the director, working group, and as part of the ad hoc Tri-departmental AMR team (CFIA/HC/PHAC). • Participation in the CCVO Anitmicrobial Use in Animal Agriculture Committee • Cross-contamination feed risk assessments and the research and development of feed residue monitoring analytical methods continues.-Research
Question No. 4a) Initiatives to benefit your organization.
• Closing regulatory loopholes and developing authorities to deal with challenges such as own use importation and extra-label drug use. • Address the OTC status of any Category 1, 2, and 3 drugs • Development of risk-based regulatory policy and standards for Food-borne AMR
Question No. 4b) Initiatives to be undertaken in general.
• See above - stewardship • See above -Leadership
Question No. 4c) Proposed leads for general initiatives.
• Health Canada

Food Safety Strategies Directorate, Policy & Programs Branch, CFIA
Question No. 2 Past initiatives
• Food Safety Strategies Directorate, Policy & Programs Branch, CFIAOversight of On-Farm Food Safety Programs towards official government recognition. • Contributions to global leadership at the Codex Alimentarius Commission.
Question No. 3 Current initiatives
• Contributions to policy discussions, government-industry disease control committees and interdepartmental food safety committees..
Question No. 4a) Initiatives to benefit your organization.
• Good surveillance data on on-label and extra-label animal drug use for therapeutic reasons under veterinary supervision, outside of veterinary supervision and for growth promotion would be useful. • More comprehensive integration of antimicrobial drug use and record-keeping in on-farm food safety programs. • Stronger leadership by provincial veterinary licensing bodies to oversee professional misconduct in the prudent use and distribution of antimicrobial drugs.
Question No. 4b) Initiatives to be undertaken in general.
• as above - surveillance • More research to determine the proportional influence of antimicrobial use in human medicine and veterinary medicine and animal husbandry on resistance development to medically important human drugs.
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Canadian Animal Health Institute (CAHI)

Question No. 2 Past initiatives

- Kg of active distributed by CAHI members by family of drugs. Information is submitted to the Public Health Agency of Canada annually.
- On the steering committees for the 1999, 2005 and 2011 antimicrobial resistance as it relates to use of antimicrobials in agriculture and veterinary medicine conferences.
- Provided support and input to the development of CVMA PUGS Guidelines
- On the steering committees for the 1999, 2005 and 2011 antimicrobial resistance as it relates to use of antimicrobials in agriculture and veterinary medicine conferences. Currently Co-Chair of the adhoc steering committee along with Dr. John Prescott that is acting on recommendations from the 2011 meeting. Submitted an Environmental Petition to the auditor general's office.
- Member companies are looking to develop alternatives to antimicrobials and vaccines to prevent disease.
- Work with Regulators to define new technical requirements for premarket assessment of antimicrobials. Also serve on the steering committee of the VICH, which has dealt with technical guidelines involving AMR.
- Currently working with VDD to develop a format for Veterinary Feed Directive (VFD)

Question No. 3 Current initiatives

- See above...work is ongoing. (All)

Question No. 4a) Initiatives to benefit your organization.

- Continue work of CIPARS relative to resistance monitoring and product use. Product use data needs to be improved greatly. Human, animal drug use comparisons must be done with consideration of products not a part of the resistance discussion e.g. ionophores and other products not important in human medicine
- Biosecurity and proper drug use programs through the producer quality assurance programs. veterinary drug teaching programs teach the prescribing cascade.
- PUGs Guidelines and regulatory controls on own use importation and active pharmaceutical use. Regulatory incorporation of the prescribing cascade into the practice of pharmacy and veterinary medicine.
- Coordination of broad-base interests, including human medicine, to discuss risk assessment and management approaches to antimicrobial resistance.
- Regulation to meet the innovation needs of the future.
    - alternatives to antimicrobials
    - bug/drug interactions
- Health Canada Veterinary Drug Regulation to manage the risk to Canadians from the importation and use of unauthorized drugs. This includes both own-use importation and use of API's by pharmacists and veterinarians in animal medicine.
- Greater harmonization or recognition of equivalency of regulatory standards used by other competent agencies e.g.. FDA and EMA.
- Product Regulation Programs that meet the needs of the 21st century as it relates to innovation for Canadian agriculture and veterinary medicine.

Question No. 4b) Initiatives to be undertaken in general.

- Continue work of CIPARS relative to resistance monitoring and product use. Product use data needs to be improved greatly. Human, animal drug use comparisons must be done with consideration of products not a part of the resistance discussion e.g. ionophores and other products not important in human medicine
- Biosecurity and proper drug use programs through the producer quality assurance programs.

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- Greater harmonization or recognition of equivalency of regulatory standards used by other competent agencies e.g.. FDA and EMA.
- Product Regulation Programs that meet the needs of the 21st century as it relates to innovation for Canadian agriculture and veterinary medicine.

Question No. 4c) Proposed leads for general initiatives.

- Ad hoc steering committee on antimicrobial resistance due to the scope of those involved and the number of years some have been working together. As well there is transparency with this group.

Canadian Pork Council

Question No. 2 Past initiatives

- The CPC does not carry out surveillance, but participates in CIPARS.
- Through the Canadian Quality Assurance program, there are educational elements about antimicrobial use and resistance. This ensures producer understanding of the issue. On a regular basis, the group that maintains the CQA program will receive updates on use and resistance issues. Where needed, the program will be updated to reflect this information. CPC staff participate in forums on antimicrobial use and resistance.
- Through the Canadian Quality Assurance program, there are program requirements regarding proper use of veterinary products. This is a core component of the program.
- The development and implementation of the CQA program demonstrates the CPC's leadership in this and other food safety related issues.
- A new national biosecurity program through the Canadian Swine Health Board was launched and is currently being implemented across the country. The target is disease prevention - minimization.
- Through national funding, work through the Research Chair on Meat Safety is being conducted on AMR. Other work has also been supported on MRSA. Also, many provincial hog producer association would fund research, some of which may be targeted to AMR.

Question No. 3 Current initiatives

- Look to continued work through CIPARS
- Continued work through the CQA program.
- CPC staff participate in forums on antimicrobial use and resistance.
- Continued work through the CQA program.
- The Biosecurity program will continue to be implemented.
- Continued research - ongoing- through the Research Chair on Meat Safety plus provincially funded activities.
- A new initiative is being started through the National Pork Value Chain
- Roundtable. This will include examining the current knowledge on antimicrobial use and resistance, controls in place, and recommendations for the future.

Question No. 4a) Initiatives to benefit your organization.

- The CIPARS surveillance program should be used as the base. Consideration given to whether this is sufficient.
- More information is needed on actual use of antimicrobials by species - including humans and companion animals.
- More information is needed on the role of antimicrobial use in animals and AMR in humans. Are animals the cause?
- Very little information is available on extra-label use.
- There exist already tremendous educational aspects from all on-farm programs. More is needed on a broader base - encompassing use across animals, humans, companion animals and understanding what role does each play, rather than simply blaming animal agriculture.
- On-farm programs already provide a good deal of information on prudent use to producers. This is the vehicle for any new information that comes along.
- Full support of CgFarad - to ensure proper dosage and withdrawal levels for products used off-label.
- National producer groups can play a key leadership role in AMR.
- The current biosecurity program for the pork industry is very robust.
- There is room for research on the contribution of animal agriculture to human resistance.

- What are the sources of resistance - not just animal agriculture.

Question No. 4b) Initiatives to be undertaken in general.

- The CIPARS surveillance program should be used as the base. Consideration given to whether this is sufficient.
- More information is needed on actual use of antimicrobials by species - including humans and companion animals.
- More information is needed on the role of antimicrobial use in animals and AMR in humans. Are animals the cause?
- Very little information is available on extra-label use.
- There exists already tremendous educational aspects from all on-farm programs. More is needed on a broader base - encompassing use across animals, humans, companion animals and understanding what role does each play, rather than simply blaming animal agriculture.
- On-farm programs already provide a good deal of information on prudent use to producers. This is the vehicle for any new information that comes along.
- Full support of CgFarad - to ensure proper dosage and withdrawal levels for products used off-label.
- National producer groups can play a key leadership role in AMR.
- The current biosecurity program for the pork industry is very robust.
- There is room for research on the contribution of animal agriculture to
- human resistance.
- What are the sources of resistance - not just animal agriculture.

Question No. 4c) Proposed leads for general initiatives.

- It would be helpful to have a multi-commodity approach to antimicrobial use and resistance. Currently, we are addressing the issue on a species by species basis, and do not have the resources to examine the broader picture - including humans and companion animals. Perhaps this is something the Canadian Farmed Animal Health and Welfare Council could take on - there are really no other already existing groups that could do this.

Paula Menzies - Dept Population Medicine, University of Guelph
Question No. 2 Past initiatives
• Include information from research in presentations given to veterinarians and producers. • Participated in the 2011 Antimicrobial Stewardship meeting in Toronto. • Ran the Small Ruminant workshop. • Member of Medications Working Group - part of the Canadian Sheep Federation Round Table • Publications from research conducted in 2009. • 1: Scott L, Menzies P, Reid-Smith RJ, Avery BP, McEwen SA, Moon CS, Berke O. Antimicrobial resistance in fecal generic Escherichia coli and Salmonella spp. obtained from Ontario sheep flocks and associations between antimicrobial use and resistance. Can J Vet Res. 2012 Apr;76(2):109-19. PubMed PMID: 23024453; PubMed Central PMCID: PMC3314433. • • 2: Scott L, Menzies P, Reid-Smith RJ, Avery BP, McEwen SA, Moon CS, Berke O. Antimicrobial resistance in Campylobacter spp. isolated from Ontario sheep flocks and associations between antimicrobial use and antimicrobial resistance. Zoonoses Public Health. 2012 Jun;59(4):294-301. doi: 10.1111/j.1863-2378.2011.01450.x.Epub 2012 Jan 24. PubMed PMID: 22273455. • 3: Moon CS, Berke O, Avery BP, McEwen SA, Reid-Smith RJ, Scott L, Menzies P. Rates and determinants of antimicrobial use, including extra-label, on Ontario sheep farms. Can J Vet Res. 2011 Jan;75(1):1-10. PubMed PMID: 21461189; PubMed Central PMCID: PMC3003556. • 4: Moon CS, Berke O, Avery BP, McEwen SA, Reid-Smith RJ, Scott L, Menzies P. Characteristics of drug use on sheep farms in Ontario, Canada. Can Vet J. 2010 Dec;51(12):1373-8. PubMed PMID: 21358930; PubMed Central PMCID: PMC2978990.
Question No. 3 Current initiatives
• Lectures to 3rd year DVM students • Ongoing work with the VDD in trying to obtain label claims for small ruminants - currently > 905 of AMU is extra- label in those species.
Question No. 4a) Initiatives to benefit your organization.
• There is no routine surveillance for sheep or goats - and no research on AMU and AMR in goats either at the farm or retail level. • Better funded MUMS program. • There has been no research on AMU AMR in goats and nothing is labeled for use in that species.
Question No. 4b) Initiatives to be undertaken in general.
• Initiate and maintain surveillance for small ruminant products. • More licensed antimicrobials for sheep and goats.
Question No. 4c) Proposed leads for general initiatives.
• PHAC for surveillance • VDD and supporting organizations for licensing of drugs. Federal government to increase funding for such initiatives.

Vancouver General Hospital, Vancouver Coastal Health
Question No. 2 Past initiatives
• Canadian Nosocomial Infection Surveillance Program (CNISP) - Our Medical Microbiology and Infection Control group provides antimicrobial consumption and resistance data to CNISP on a regular basis. Antibiogram - Our Medical Microbiology and Pharmacy groups creates antibiograms for our hospital sites on an annual basis. • Antimicrobial Stewardship Program - We have given presentations on antimicrobial stewardship to various medical specialties ranging from ICU to medicine. • C.diff Infection Initiative Involving Pharmacy and Infection Control. - All CDI positive patients are followed by pharmacists to ensure they are on appropriate treatment. Complications and length of stay have decreased in CDI positive patients. Pharmacy performs numerous drug use evaluation projects and develops usage guidelines to ensure antibiotics are used appropriately in the hospital. • Our infection control group is actively involved in infection control prevention at our hospital sites. Our hand hygiene initiative has been very successful at our hospitals. • Our CDI initiative is being presented at the Infectious Diseases Week Conference in San Diego.
Question No. 3 Current initiatives
• Bloodstream Infections - We are currently reviewing the pathogens involved in blood stream infections over the past 10 years. • Antimicrobial Stewardship Program - We are planning to develop education modules to improve antibiotic use in the hospital. • Antimicrobial Stewardship Program - We recently obtained funding from our Senior Executive to hire a 0.4FTE Medical microbiologist/infectious diseases physician, 1.0FTE Pharmacist, and 1.0FTE Data analyst for the program. • Patient Safety Council is supportive of the Antimicrobial Stewardship Program. • Our infection control group has a business plan to fund a centralized sterilization facility.
Question No. 4a) Initiatives to benefit your organization.
• Active surveillance of resistant patterns by ward and medical service to be provided on a quarterly or real-time basis. • Antibiograms to be posted online. • Education to all health care members regarding appropriate antibiotic use. • Funding for additional antimicrobial stewardship pharmacists at each facility to optimize antibiotic use. • Support and additional funding for antimicrobial stewardship activities. • More infection control practitioners.
Question No. 4b) Initiatives to be undertaken in general.
• Clinicians should be aware of susceptibility patterns in order to know what empiric treatments are ideal. • Antimicrobial stewardship principles should be taught early on in school and during the training process. • All hospitals should have a funded antimicrobial stewardship program. • Leadership needs to provide funding and support for antimicrobial stewardship programs. • The number of infection control practitioners need to be increased. • Initiatives to study the impact of antimicrobial stewardship programs on outcomes and resistance.
Question No. 4c) Proposed leads for general initiatives.
• AMMI Canada, Canadian Society of Hospital Pharmacists, CNISP, Vancouver Coastal Health (or each health authority), National Collaborating Centre for Infectious Diseases

Health Canada Veterinary Drugs Directorate (VDD)

Question No. 2 Past initiatives

- Participated in analyzing the surveillance data generated from the CIPARS.
- Provided financial sources annually to support certain components of the CIPARS.
- Involved in outreach activities to address the prudent use of veterinary antimicrobials and the impact of foodborne antimicrobial resistance on human health through bilateral meetings with veterinarian associations, drug industry, producer groups, etc.
- Developed the document "Policy on extra-label drug use in food producing animals". Updated the document "Categorization of antimicrobial drugs on Importance in human medicine". Included antimicrobial resistance warning statements on veterinary antimicrobial product labels.
- At federal level as one major player as well as a federal drug regulator in addressing prudent use of veterinary antimicrobials and foodborne antimicrobial resistance; Involved in Codex Intergovernmental Task Force on Antimicrobial Resistance and played a leadership role to develop Guideline for risk analysis of foodborne antimicrobial resistance; Co-lead (with Public Health Agency of Canada) the Interdepartmental Science Policy Team on Foodborne Antimicrobial Resistance.
- Infection control - Not applicable.
- Research - Not applicable.
- Collaboration with international regulatory agencies, particularly the US Center for Veterinary Medicine on veterinary drug regulation and European Medicines Agency - veterinary medicines sector.

Question No. 3 Current initiatives

- Participate in analyzing the surveillance data generated from the CIPARS.
- Provide financial sources annually to support certain components of the CIPARS.
- Continue to have outreach activities to address the prudent use of veterinary antimicrobials and the impact of foodborne antimicrobial resistance on human health through bilateral meetings with veterinarian associations, drug industry, producer groups, etc.
- Develop strategies to deal with the growth promotion claims of medically-important antimicrobial agents,and the professional oversight of the use of antimicrobials and extra-label drug use.
- A federal regulator to address veterinary antimicrobial use and foodborne antimicrobial resistance: Phasing out growth promotion claims of medically-important antimicrobial agents, increasing professional oversight of antimicrobial use and restricting extra-label drug use of critical important antimicrobials
- Infection control - Not applicable.
- Research - Not applicable.
- Continue in collaboration with international regulatory agencies, particularly the US Center for Veterinary Medicine on veterinary drug regulation and European Medicines Agency - veterinary medicines sector.

Question No. 4a) Initiatives to benefit your organization.

- To strengthen the capacity of CIPARS in collecting antimicrobial use data including more detailed information on individual drugs/classes. To strengthen the molecular epidemiological characterization of the emerging resistant isolates by CIPARS.
- Initiatives from provincial/territorial authorities, Producer groups, CVMA, provincial veterinarian associations and veterinary collages
- Initiatives from provincial/territorial authorities (e.g., to implement Health Canada's

recommendation on restricting extra-label use of very high important antimicrobials in food animals as a mass medication), producer associations not allowing the use of unapproved products. CVMA and provincial veterinarians associations embracing antimicrobial stewardship

- From federal/provincial/territorial authorities to collaborate and coordinate efforts to tackle risks associated with AMR.
- CVMA, provincial veterinarian associations to embrace stewardship and prudent use principles
- producer groups to embrace stewardship and embrace using of only authorized products.
- Focus on infection prevention/control in animal husbandry rather than prophylactic use of antimicrobials. Infection prevention control by promoting good standards of hygiene.
- Molecular and epidemiological studies to track development and spread of antimicrobial resistance associated with the use of medically important antimicrobials; Infection prevention control by improving animal husbandry; Alternatives products to antimicrobials.
- Eradicate economic incentives to prescribe/use antimicrobials.

Question No. 4b) Initiatives to be undertaken in general.

- To strength the CIPARS to include more representative retail as well as on-farm surveillance. Also provide support for collecting antimicrobial use information.
- Active participation from professional veterinary associations, producer groups and drug industry to be aware of antimicrobial stewardship. Target AMR stewardship courses in veterinary colleges.
- Initiatives from provincial/territorial authorities to prohibit extra-label use of category I antimicrobials in mass medication situations.
- CVMA and provincial veterinarian associations to embrace AMR stewardship as their code Producer associations/groups to embrace AMR stewardship and refrain from using unauthorized products in food animals
- Federal/provincial/territorial authorities to coordinate and collaborate on efforts in tackling AMR in agri-food.
- Focus on infection prevention/control in animal husbandry rather than prophylactic use of antimicrobials Infection prevention control by promoting good standards of hygiene.
- Develop novel antimicrobials and alternatives to antimicrobials; infection prevention control on farms through good animal husbandry management.

Question No. 4c) Proposed leads for general initiatives.

- Surveillance: CIPARS and provincial monitoring programs
- Education: Vet colleges, Licensing Bodies, Provincial govt and federal govt
- Antimicrobial stewardship: Provincial authorities, veterinarians,
- producers and antimicrobial industry.
- Leadership: F/P/T authorities and veterinarians
- Infection prevention and control: Veterinarian associations, and producers
- Research: Academia, and CIPARS

College of Physicians & Surgeons of Alberta
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Surveillance • Education • Stewardship/Prudent Use • Infection Prevention and Control
Question No. 4b) Initiatives to be undertaken in general.
• seeking information as to antimicrobial resistance, trends, locations • Feedback to prescribers about their prescribing choices • Feedback about prescribing against clinical standards • Infection control measures in MD offices
Question No. 4c) Proposed leads for general initiatives.
• Unsure for some (initiatives)- who has the tools and information access to do surveillance? • Infection prevention and control (IP&C) should be done by medical regulator

College of Physicians & Surgeons of British Columbia
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Not a regulatory issue
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

College of Physicians & Surgeons of Manitoba
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Surveillance • Education • Antimicrobial stewardship / prudent or judicious use • Leadership • Infection prevention and control and / or biosecurity • Research
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Collège des médecins du Québec
Question No. 2 Past initiatives
• Review of antimicrobial use in private clinics for flu-like illnesses in pediatric population • Participation with the Drugs office of the ministry of health in developing practice guidelines use of antimicrobials for physicians
Question No. 3 Current initiatives
• Respondent Did Not Answer
Question No. 4a) Initiatives to benefit your organization.
• Surveillance of antimicrobial use in hospitals settings and in the community • Public awareness campaigns to enhance caution on the use of antimicrobials
Question No. 4b) Initiatives to be undertaken in general.
• Monitor the use of antimicrobials with sales and prescription data and clinical use. Also monitoring of resistance patterns in bacteria. • Education of both public and prescribers • Research - Identify topics that would help to monitor the use and the outcome of use of antimicrobials
Question No. 4c) Proposed leads for general initiatives.
• Canadian public health agency, provincial labs, provincial ministries, and the pharmaceutical industry for funding (the initiatives)

College of Physicians & Surgeons of New Brunswick
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Respondent Did Not Answer
Question No. 4b) Initiatives to be undertaken in general.
• Respondent Did Not Answer
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

College of Physicians & Surgeons of Saskatchewan
Question No. 2 Past initiatives
• No
Question No. 3 Current initiatives
• No
Question No. 4a) Initiatives to benefit your organization.
• Education - We could provide the results of the surveillance and other education to our members
Question No. 4b) Initiatives to be undertaken in general.
• Research in any of the above areas
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Association of Medical Microbiology and Infectious Diseases Canada

Question No. 2 Past initiatives

- Members of AMMI sit on CHEC, which works with PHAC on CNISP related surveillance projects.
- We are a key partner in the NCCID Antibiotic Awareness Week initiative, which is ongoing, in its 3rd year now.
- We have been consulted in developing the Accreditation Canada Required Organizational Practices for Antimicrobial Stewardship in acute care settings.
- As a professional association our mandate includes advocacy - We advocate for surveillance at a national level, and work with the CDDIC and CIPARS as consultants and stakeholders. We also are allied with the Canadian Foundation for Infectious Diseases and members participated in National Infectious Diseases Day on Parliament Hill on October 18, 2007 .AMMI Canada has been a stakeholder and advocate in a number of endeavors regarding antimicrobials including: Canadian Consensus Conference 1997 Stewardship Recommendations Canadian "National Action Plan to Address Antibiotic Resistance" published in 2004 by the Canadian Committee on Antibiotic Resistance Pan-Canadian Stakeholder Consultations on Antimicrobial Resistance 2009
- CHEC Committee members are consultants to PHAC in this regard and play a key role in developing national policy documents..
- Individual AMMI members are academics and community practitioners who may have research projects on molecular biology through epidemiology, and the organization does support some grant awards for specific areas of research. The CHEC-CNISP collaboration is a ongoing source of data for AMR surveillance, and the start of some antimicrobial utilization surveillance via the CNISP hospital network..

Question No. 3 Current initiatives

- The ASRC Committee of AMMI is developing Antimicrobial Stewardship education modules for health professionals (ongoing project, early stages). This also falls under stewardship. We are a key partner in the NCCID Antibiotic Awareness Week initiative, which is ongoing.
- see above. Also, our members are frequently involved - as individuals- at hospital or health region levels in formulary decisions or stewardship programs, and we are developing a community of practice network to allow exchange of ideas and practices. This also falls under education.
- Infection Control: Ongoing CHEC-CNISP work.
- ONGOING - Antimicrobial Use Monitoring and Antimicrobial Resistance Surveillance project. a comprehensive review of current initiatives, and to outline how we would proceed to define the core elements of an optimal antimicrobial utilization and resistance surveillance program for Canada.
- Team consists of members from across Canada and within the disciplines of Microbiology, Infectious Diseases, Infection Control, Public Health, Veterinary Medicine and Pharmacy. We are a working group of the Antimicrobial Stewardship and Resistance Committee of the Association of Medical Microbiologists and Infectious Disease (AMMI) Canada. AMMI's network represents the majority of practicing professionals in infectious diseases and medical microbiology, as well as affiliated professionals in public health from community, hospital, and public health practices. Our stewardship group also has representation from the Canadian Society of Hospital Pharmacists and has access to a network of infectious diseases hospital pharmacists across the country.

Question No. 4a) Initiatives to benefit your organization.
• There is a huge gap in AMR surveillance in human pathogens that are not zoonotic, while data is collected daily in clinical microbiology labs across the country. We have proposed a "national Antibiogram Warehousing" project (attached) - this is under review federally as individuals in PHAC- CCDIC and CIPARS have brought it forward in their organizations. • A conference or other forum for animal-human health specialists to exchange AMR data, concepts, and direction on an annual or biannual basis would be one way to ensure appropriate coordination in these domains. • Health care systems now recognize the need to address stewardship formally but little resources or infrastructure exists to guide development: as the need is across Canada, a centralized community of practice infrastructure is required. We are trying to develop this but organizations/government health dollars should help support it. • Leadership - The CFIA and PHAC both have important roles but cross cutting projects are difficult to envision under current federal structures: some funding should go towards integrated projects in AMR. In fact, I think the AMR portfolio should lie jointly under these structures. • IP and C funding and support is currently threatened, when in fact reinvestment is needed with new serious antimicrobial resistant organisms with clonal spread circulating worldwide. • Research - See integrated projects under leadership above.
Question No. 4b) Initiatives to be undertaken in general.
• I will refer to the list above (Q.4a) as I was addressing "needed projects" . I did not distinguish between projects that would benefit our organization and be towards the general good, as our organization is a professional society with altruistic aims.
Question No. 4c) Proposed leads for general initiatives.
• Respondent Did Not Answer

Public Health Agency of Canada (PHAC or the Agency)

Question No. 2 Past initiatives

- PHAC's Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) is a national program dedicated to the collection, integration, analysis, and communication of trends in antimicrobial use and antimicrobial resistance, in bacteria from humans, animals, and animal-derived food sources across Canada. CIPARS provides this information and analysis to its partners across federal, provincial and territorial governments, as well as stakeholders, such as veterinarians and farming organizations, to support the development of sound policies on the use of antimicrobials in Canada intended to limit the impact of antimicrobial resistance arising from food on human health.
- Agency representatives give AMR presentations at national/international meetings and conferences. In addition, Agency representatives give lectures to Canadian Universities (e.g. University of Saskatchewan, University of Guelph) on AMR/AMU.
- The Agency develops national infection and control guidelines and with Health Canada, the Canadian Food Inspection Agency and provincial/territorial (P/T) authorities, encourages the prudent use of antimicrobials by human and animal healthcare professionals, as well as patients, farmers, and food producers.
- The Agency works closely with international, federal, provincial and territorial partners and with professional and industry stakeholders to help reduce, limit and control the emergence and spread of AMR in Canada.
- The Agency offers guidance on biosafety and biocontainment issues to laboratories working with antimicrobial resistant organisms. It also provides guidance on infection prevention and control practices for use by PTs, health care facilities and health care personnel across Canada. These guidelines are designed to limit the spread of hospital acquired infections, including those that are resistant to antimicrobials.
- Agency staff have conducted peer reviewed research on AM use and have also participated in a large number of research projects regarding antimicrobial use and antimicrobial resistance across many animal species (livestock, horses, companion animals, wildlife), various food and environmental samples and participated in molecular studies on antimicrobial resistant organisms and systematic reviews.
- Since 2004, the Agency's CIPARS data has been regularly used in Health Canada's safety evaluations for pre-market human safety assessment of all new antimicrobial drugs intended for use in animals. CIPARS data has also been used in post-market safety assessments of certain antimicrobials, as well as in antimicrobial resistance risk assessment of veterinary antimicrobials (both pre- and post-market).

Question No. 3 Current initiatives

- The Agency's Canadian Nosocomial Infection Surveillance Program (CNISP) collaborates with infectious disease specialists and the infection control community to collect surveillance data on antimicrobial resistant organisms that cause infections in health care facilities. CNISP is a nationwide surveillance system involving more than 50 hospitals in 10 provinces. The Agency coordinates the animal, food and environment components of CIPARS. The Agency also works with the Canadian Animal Health Institute to improve data on national quantities of antimicrobials distributed.
- Agency representatives give AMR presentations at national/international meetings and conferences. In addition, Agency representatives give lectures to Canadian Universities, hosts student practicums and co-op students at the undergraduate level.
- The Agency co-chairs a subcommittee created by Chief Veterinary Officers that will provide recommendations to the Council of Chief Veterinary Officers in Canada regarding antimicrobial

stewardship in agriculture and veterinary medicine. PHAC, Health Canada, the Canadian Food Inspection Agency and P/T authorities encourage the prudent use of antimicrobials by human and animal healthcare professionals, as well as patients, farmers, and food producers.

- The Public Health Agency of Canada, Health Canada and the Canadian Food Inspection Agency work closely with international, federal, provincial and territorial partners and with professional and industry stakeholders to help reduce, limit and control the emergence and spread of AMR in Canada. Federal/provincial/territorial (FPT) jurisdictions have begun scoping out areas for potential FPT collaboration on AMR through the Pan-Canadian Public Health Network's (PHN) Communicable and Infectious Disease Steering Committee (CIDSC).
- The Agency offers guidance on biosafety and biocontainment issues to laboratories working with antimicrobial resistant organisms. It also provides guidance on infection prevention and control practices for use by PTs, health care facilities and health care personnel across Canada. These guidelines are designed to limit the spread of hospital acquired infections, including those that are resistant to antimicrobials.
- The Agency is participating in on-going research regarding antimicrobial use/resistance across several additional animal species (livestock, wild animal species) as well as various other food and environmental sources; and molecular studies on antimicrobial resistant organisms. Current research also includes: trends in antimicrobials dispensed by pharmacies for human use in Canada; diagnosis related to antimicrobial prescriptions provided by physicians; trends in antimicrobials purchased by hospitals in Canada; risk model of the burden of Illness from ceftiofur-resistant Salmonella enterica serovar Heidelberg in Canada.
- The Agency's CIPARS data continues to be used regularly in Health Canada's safety evaluations for pre-market human safety assessment of all new antimicrobial drugs intended for use in animals. CIPARS data is also used in post-market safety assessments of certain antimicrobials, as well as in antimicrobial resistance risk assessment of veterinary antimicrobials (both pre- and post-market).

Question No. 4a) Initiatives to benefit your organization.

- The Public Health Agency of Canada, Health Canada and the Canadian Food Inspection Agency work closely with international, federal, provincial and territorial partners and with professional and industry stakeholders to help reduce, limit and control the emergence and spread of AMR in Canada. Federal/Provincial/Territorial jurisdictions have begun scoping out areas for potential federal-provincial-territorial collaboration on antimicrobial resistance through the Pan-Canadian Public Health Network's Communicable and Infectious Disease Steering Committee.

Question No. 4b) Initiatives to be undertaken in general.

- Prevention and control of AMR is complex and requires active multi-sector collaboration between human health care, public health, food safety, food production, and environmental protection sectors. A multi-sectoral approach needs to be promoted by all stakeholders, supported by a common understanding of the complexity of the issue. Exploratory discussions are being initiated within federal, provincial and territorial jurisdictions to identify potential areas for collaboration.

Question No. 4c) Proposed leads for general initiatives.

- Respondent Did Not Answer

Organizations that collect data on antimicrobial use

Question No. 5 Do you have information about the amount of approved antimicrobial drugs that are used in:

i. Food animals (livestock, poultry or aquaculture)
ii. Small animals (dogs, cats, other pets)
iii. Horses
iv. Humans

- Food animals:
  - New Brunswick Veterinary Medical Association
  - Paula Menzies – Ontario Vet College
  - BC Ministry of Agriculture
- Horses:
  - BC Ministry of Agriculture
- Humans:
  - BCCDC and BC Do Bugs Need Drugs? Program
  - Saskatchewan Ministry of Health
  - Vancouver General Hospital, Vancouver Coastal Health
  - PHAC
- Small animals - No organizations reported.

Question No. 6 Do you have information about the amount of extra-label or unapproved drugs that are used in:

v. Food animals (livestock, poultry or aquaculture)
vi. Small animals (dogs, cats, other pets)
vii. Horses
viii. Humans

- Food animals:
  - Paula Menzies – Ontario Vet College
  - BC Ministry of Agriculture
- Humans
  - BCCDC and BC Do Bugs Need Drugs? Program
- Horses and small animals – No organizations reported.

Question No. 7 Do you have information about the amount of antimicrobials imported under the own use importations provisions of Health Canada in:

i. Food animals (livestock, poultry or aquaculture)
ii. Small animals (dogs, cats, other pets)
iii. Horses
iv. Humans

- Food animals:
  - Canadian Animal Health Institute (CAHI)
- Small animals:
  - Canadian Animal Health Institute (CAHI)
- Horses:
  - Canadian Animal Health Institute (CAHI)
- Humans
  - Canadian Animal Health Institute (CAHI)

Question No. 8 Do you have information about the amount of active pharmaceutical ingredient importation of antimicrobials in:

v. Food animals (livestock, poultry or aquaculture)
vi. Small animals (dogs, cats, other pets)
vii. Horses
viii. Humans

- Food animals:
  - Canadian Animal Health Institute (CAHI)
- Small animals:
  - Canadian Animal Health Institute (CAHI)
- Horses:
  - Canadian Animal Health Institute (CAHI)
- Humans
  - Canadian Animal Health Institute (CAHI)

Appendix B

Blank English survey

Past and Current Antimicrobial Use and Antimicrobial Resistance Initiatives in Canada

1. What organization do you represent? ☐

   Region or Province if applicable ☐

2. a) Has your organization completed initiatives related to antimicrobial use and/or resistance in the **past** (approximately the past 5 years)? Yes ☐ No ☐ I don't know ☐

   b) If yes, please provide the name of the initiative under the appropriate category below and give a brief description of no more than 3 sentences for each.

   1. Surveillance

      ☐

   2. Education

      ☐

   3. Antimicrobial stewardship/prudent or judicious use

      ☐

4. Leadership

5. Infection Prevention and control and/or biosecurity

6. Research

7. Other (please specify)

3. a) Is your organization **currently** undertaking initiatives related to antimicrobial use and/or resistance

Yes ☐ No ☐ I don't know ☐

b) If yes, please provide the name of the initiative under the appropriate category below and give a brief description of no more than 3 sentences for each.

1. Surveillance

2. Education

3. Antimicrobial stewardship/prudent or judicious use

4. Leadership

5. Infection prevention and control and/or biosecurity

6. Research

7. Other (please specify)

4. a) What initiatives should be undertaken that would be of benefit to your organization in the future, related to antimicrobial use and resistance? Please list the initiative under the appropriate category below and prioritize the initiatives by putting a number beside each initiative (1 being the highest in priority).

1. Surveillance

2. Education

3. Antimicrobial stewardship/prudent or judicious use

4. Leadership

5. Infection prevention and control and/or biosecurity

6. Research

7. Other (please specify)

b) What initiatives do you feel should be undertaken, **in general**, in the future related to antimicrobial use and resistance? Please list the initiative under the appropriate category below and prioritize the initiatives by putting a number beside each initiative (1 being the highest in priority).

1. Surveillance

2. Education

3. Antimicrobial stewardship/prudent or judicious use

4. Leadership

5. Infection prevention and control and/or biosecurity

6. Research

7. Other (please specify)

c) Indicate the proposed lead organization(s) for the initiatives you provided in 4b) above.

5. Do you have information about the amount of approved antimicrobial drugs* that are used in:

i. Food animals (livestock, poultry or aquaculture)	Yes ☐	No ☐	I don't know ☐
ii. Small animals (dogs, cats, other pets)	Yes ☐	No ☐	I don't know ☐
iii. Horses	Yes ☐	No ☐	I don't know ☐
iv. Humans	Yes ☐	No ☐	I don't know ☐

*as appears on the label and/or product insert information

6. Do you have information about the amount of extra-label or unapproved drugs that are used in:

i. Food animals (livestock, poultry or aquaculture) Yes ☐ No ☐ I don't know ☐

ii. Small animals (dogs, cats, other pets) Yes ☐ No ☐ I don't know ☐

ii. Horses Yes ☐ No ☐ I don't know ☐

iii. iv. Humans Yes ☐ No ☐ I don't know ☐

7. Do you have information about the amount of antimicrobials imported under the own use importations provisions of Health Canada in:

i. Food animals (livestock, poultry or aquaculture) Yes ☐ No ☐ I don't know ☐

ii. Small animals (dogs, cats, other pets) Yes ☐ No ☐ I don't know ☐

iii. Horses Yes ☐ No ☐ I don't know ☐

iv. Humans Yes ☐ No ☐ I don't know ☐

8. Do you have information about the amount of active pharmaceutical ingredient importation of antimicrobials in:

i. Food animals (livestock, poultry or aquaculture) Yes ☐ No ☐ I don't know ☐

ii. Small animals (dogs, cats, other pets) Yes ☐ No ☐ I don't know ☐

iii. Horses Yes ☐ No ☐ I don't know ☐

iv. Humans Yes ☐ No ☐ I don't know ☐