

# Appendix I: Terms of Reference

## Advisory Committee on Animal Uses of Antimicrobials and Impact on Resistance and Human Health

### Purpose

In conjunction with the Canadian Food Inspection Agency (CFIA) and other stakeholder groups, Health Canada - Veterinary Drugs Directorate will develop comprehensive overarching policies aimed at identifying and managing the impact on resistance and human health associated with the animal uses of antimicrobial agents.

### Scope

The primary focus of the advisory committee will be to provide information relevant to reducing the potential resistance and human health and safety impacts associated with animal uses of antimicrobial agents. This will include the identification and prioritization of relevant issues surrounding antimicrobial uses and their contribution to resistance as well as the development of strategies to track usage of antimicrobials.

### Role and Mandate of the Advisory Committee

The role of the advisory committee will be to provide advice and assistance to the Director General, Veterinary Drugs Directorate, in the development of policy options related to the animal uses of antimicrobial agents by:

- Identifying and prioritizing issues relevant to a broad range of stakeholders.
- Overseeing, reviewing, commenting on, and providing expertise during the preparation of draft policy documents, based on the issues previously identified.
- Identifying sources of, and facilitating access to, information and expertise relevant to the policy development project.
- Acting as stakeholder representatives to analyze issues, generate options and make recommendations concerning potential solutions.
- Providing feedback to stakeholder groups as appropriate.
- Recommending approaches to communicating risks associated with the animal uses of antimicrobial agents and the strategies identified to mitigate the risks.
- Reviewing, in consultation with the Bureau of Microbial Hazards and the Veterinary Drugs Directorate (Health Canada) and the CFIA, draft policy papers prior to general public consultation and subsequent implementation as policy documents.

Responses to the media regarding committee activity should be handled by the Chairperson (in English) and a designated francophone spokesperson. Individual committee members are free to comment to the media for their organization, but should refer any questions about the committee to committee spokespeople.

As an independent advisory committee, the group can make statements to the media on its own behalf without involvement from Health Canada. However, the committee cannot comment on behalf of the Department. Any communications that attempt to speak for the Department would need to be approved in advance by the Department.

Following each meeting, the committee may wish to write an update that can be used by each member to share information in their organizations or constituencies. This paragraph or letter could be inserted in information letters to members, or sent to media. If possible, Health Canada would appreciate knowing when this information is shared with the media so it can be prepared for follow-up questions.

## **Reporting Structure**

Provides advice to the Director General, Veterinary Drugs Directorate, Health Products and Food Branch, Health Canada.

## **Membership**

A small multi-sectoral group of knowledgeable individuals capable of providing advice and assistance to the Veterinary Drugs Directorate. It will incorporate a balanced perspective from a wide range of interested external parties, including representatives from the agriculture and aquaculture industries, the pharmaceutical industry, animal health organizations, animal welfare organizations, the Canadian Veterinary Medical Association, health professionals, academia, consumer groups, provincial governments, etc.

## **Term**

Members are appointed by the Director General, Veterinary Drugs Directorate, Health Products and Food Branch, Health Canada, for the duration of the project (expected to be approximately three years).

## **Meetings**

A large portion of the work will be conducted through a variety of communication means, including telephone or video conference interaction with the steering committee and various working groups. It is anticipated that there will be three to four advisory committee meetings per year.

## **Management and Administration**

The Health Products and Food Branch - Veterinary Drugs Directorate primary contact are the Project Managers, who can be reached as follows:

Dr. Rebecca Irwin  
Guelph Laboratory  
Health Canada  
4th Floor, 1 Stone Road West  
Guelph, ON N1G 4Y2

Dr. Lateef Adewoye  
Veterinary Drugs Directorate  
Holland Cross Complex  
Tower A, Ground Floor  
11 Holland Avenue  
Ottawa, ON K1A 0K9  
Address Locator: 3000A

Unfortunately, it will not be possible to pay a per diem for the time spent on work for this committee. Reimbursement of expenditures by committee members related to meeting attendance will be in accordance with Treasury Board guidelines on travel and accommodation.

## Appendix 2: Membership of Advisory Committee and Secretariat

Committee Member	Affiliation
Dr. Scott McEwen (chair)	Department of Population Medicine, University of Guelph
Dr. Paul Hasselback (co-chair)	Medical Officer of Health, Chinook Health Region, Lethbridge, Alberta
Ms. Brenda Nunns Shoemaker (co-chair)	Consumers' Association of Canada, North Saanich, British Columbia
Dr. Rejean Bouchard	Dairy Farmers of Canada, Ottawa, Ontario
Ms. Stephanie Brown	Animal Welfare Representative, Toronto, Ontario
Dr. Ron Clarke	Canadian Cattlemen's Association, Hague, Saskatchewan
Dr. Paul Dick	Canadian Animal Health Institute, Guelph, Ontario
Dr. Patricia Dowling	Western College of Veterinary Medicine, Saskatoon, Saskatchewan
Dr. Lyn Ferns	Veterinary Pathology Laboratory, Nova Scotia Department of Agriculture and Marketing, Truro, Nova Scotia
Dr. S. K. Ho	CARC, c/o Agriculture and Agri-Food Canada, Ottawa, Ontario
Dr. Yves Labbé	Chicken Farmers of Canada and CFIA, Ottawa, Ontario
Dr. Don Low	Mt. Sinai and Princess Margaret Hospitals, Toronto, Ontario
Dr. Keith McMillan	Lilydale Co-operative Ltd. Edmonton, Alberta
Mr. Carl Moore	Canadian Pork Council, Ottawa, Ontario
Dr. Marie Nadeau	Ministère de l'Agriculture, des Pêcheries et de l'Alimentation, Sainte-Foy, Québec
Dr. John Prescott	Department of Pathobiology, University of Guelph
Dr. Bill Revington	New-Life Mills Ltd., Cambridge, Ontario
Dr. Myron Roth	Salmon Health Consortium, Ottawa, Ontario
Dr. Deborah Stark	Canadian Veterinary Medical Association, Ottawa, Ontario
Secretariat Member	Affiliation
Dr. Lateef Adewoye	Health Canada, Ottawa, Ontario
Ms. Estelle Bernier	Health Canada, Ottawa, Ontario
Dr. Shiv Chopra	Health Canada, Ottawa, Ontario
Dr. Anne Deckert	Health Canada, Guelph, Ontario
Dr. Lucye Galand	Health Canada, Ottawa, Ontario
Dr. Rebecca Irwin	Health Canada, Guelph, Ontario
Ms. Catherine Italiano	CFIA, Ottawa, Ontario
Dr. Manisha Mehrotra	Health Canada, Ottawa, Ontario
Dr. Richard Reid-Smith	Health Canada, Guelph, Ontario
Ms. Annie Savoie	CFIA, Ottawa, Ontario
Ms. Linda Webster	CFIA, Ottawa, Ontario
Dr. William Yan	Health Canada, Ottawa, Ontario

## Appendix 3: Extra Tables for Chapter 5

Table A.3.1: Growth promoter claims in the CMIB: (8<sup>th</sup> edition, 1998)

CMIB #	Compound	Species	Level in Feed	Claim <sup>a</sup>
4	Arsanilic acid	1. Broilers	99 mg/kg	growth, f.c.
		2. Pullets	99 mg/kg	growth, f.c.
		3. Layers	99 mg/kg	growth, f.c.
		4. Turkeys	99 mg/kg	growth, f.c.
		5. Swine	50–99 mg/kg	growth, f.c.
10.1	Chlortetracycline HCl	1. Chickens	5.5 mg/kg	growth, f.e.
		2. Turkeys	5.5 mg/kg	growth, f.e.
		3. Swine	5.5 mg/kg	growth, f.e.
		4. Calves	11 mg/kg	growth, f.e.
		5. Lambs	11 mg/kg	growth, f.e.
		6. Mink	27 mg/kg	growth, f.e.
10.2	Bacitracin (Zn or MD)	1. Chickens	4.4 mg/kg	gain, f.e.
		2. Turkeys	4.4 mg/kg	gain, f.e.
		3. Swine	4.4 mg/kg	gain, f.e.
10.5	Lincomycin HCl	1. Broilers	2.2 mg/kg	growth, f.u.
10.7	Procaine Penicillin	1. Chickens	2.2 mg/kg	growth
10.1	Tylosin Phosphate	1. Swine	44/22/11 mg/kg <sup>b</sup>	growth, f.e.
10.11	Virginiamycin	1. Swine	11 mg/kg	gain
		2. Chickens	11 mg/kg	gain, f.e.
10.12	Bambermycins	1. Chickens	2 mg/kg	gain, f.e.
		2. Turkeys	2 mg/kg	gain
10.13	Salinomycin <sup>c</sup>	1. Swine	25 mg/kg	gain
		2. Swine	25 mg/kg	f.e.
10.14	Zinc Bacitracin and Procaine Penicillin	1. Chickens	3.3/1.1 mg/kg	gain, f.e.
		2. Turkeys	3.3/1.1 mg/kg	gain, f.e.
		3. Swine	3.3/1.1 mg/kg	gain, f.e.
21	3-nitro-4-hydroxyphenylarsonic acid	1. Chickens	50 mg/kg	gain, f.e.
		2. Chicken-r <sup>d</sup>	50 mg/kg	gain, f.e.
		3. Chicken-l <sup>e</sup>	50 mg/kg	f.e.
		4. Turkeys	50 mg/kg	gain, f.e.
		5. Swine	25–50 mg/kg	gain, f.e.
34	Chlortetracycline HCl	Various	See Table 5.6	
35, A	Oxytetracycline	Various	See Table 5.7	

CMIB #	Compound	Species	Level in Feed	Claim <sup>a</sup>
	HCl			
38	CTC, Sulfamethazine & Proc. Penicillin	Swine	See Table 5.8	
41	Erythromycin thiocyanate	Breeding Chick.	220 mg/kg	gain, egg prod'n
49	CTC & Sulfamethazine	Beef Cattle	350/350 mg/h/d	gain, f.e.
53	Carbadox	Swine-w <sup>f</sup>	55 mg/kg	gain, f.e.
55	OTC & Neomycin Sulfate	Beef Cattle	500/500 mg/h/d	gain, f.e.
57	Monensin sodium	3. Beef Cattle	11/33 mg/kg	f.e.
		5. Cattle <sup>g</sup>	200 mg/h/d	gain
66	Lasalocid sodium	3. Beef Cattle	36 mg/kg	gain, f.e.
		4. Cattle <sup>g</sup>	200mg/h/d	gain
69	Salinomycin sodium	2. Beef Cattle	11,13,16 mg/kg	f.e.

<sup>a</sup> Growth and increased rate of gain are taken to be synonymous. Feed conversion (f.c.), feed efficiency (f.e.) and feed utilization (f.u.) are taken to be synonymous and are generally defined as feed intake per unit of live weight gain.

<sup>b</sup> 44 mg/kg for use in starters, 22 mg/kg in growers, and 11 mg/kg in finishers.

<sup>c</sup> The efficacy for improvement of feed efficiency in swine has not been established with mash feed;

Claim 2 is for pellet feed only.

<sup>d</sup> Replacement chickens (pullets intended for lay).

<sup>e</sup> Laying (mature) chickens.

<sup>f</sup> Weaner pigs up to 35 kg body weight; carbadox is currently under a federal "stop sale" in Canada.

<sup>g</sup> For cattle on pasture (slaughter, stocker and feeder cattle; beef and dairy replacements).

Table A.3.2: Summary of CMIB 34 chlortetracycline HCl

Species	Total Claims	GP Claims <sup>a</sup>	GP Plus... <sup>b</sup>	Prophylactic <sup>c</sup>	Rates <sup>d</sup>	Notes
Broilers	8	7	5	1	220 (2)	5
					110 (5)	
					55 (1)	
Layers	6	6	4	1	110 (5)	
					55 (1)	
Pullets	7	6	4	1	220 (1)	5
					110 (5)	
					55(1)	
Turkeys	12	7	5	2	220 (3)	5
					110 (7)	
					55 (2)	
Lambs	1	0	0	0	22(1)	
Swine	4	2	1	1	110 (2)	
					55(2)	
Beef and NL Dairy <sup>e</sup>	1	0	0	1	0.22mg/k g BW <sup>f</sup>	
Calves	2	0	0	2	55 (2)	

<sup>a</sup>growth promoter claims are claims that refer to growth and/or feed efficiency, but not a recognized disease condition. Typically, these claims refer to "stress due to..." or similar phrasing.

<sup>b</sup>growth promoter plus... refers to growth and/or feed efficiency but also mentions another recognized disease condition such as chronic respiratory disease, atrophic rhinitis, synovitis, non-specific enteritis. These are a subset of the growth promoter claims.

<sup>c</sup>Prophylactic claims are claims that refer to the expected exposure of target species to a named disease condition. This is the 55 mg/kg level except for one claim in turkeys (110 mg/kg for synovitis/infectious sinusitis) and for beef and non-lactating dairy cows.

<sup>d</sup>Rates given as mg/kg of diet unless otherwise indicated; the number of claims at that rate are given in brackets.

<sup>e</sup>Non-lactating dairy animals.

<sup>f</sup>BW = body weight; claim also allows 70 mg/head/day.

Table A.3.3: Summary of CMIB 35 oxytetracycline HCl

Species	Total Claims	GP Claims <sup>a</sup>	GP Plus... <sup>b</sup>	Prophylactic <sup>c</sup>	Rates <sup>d</sup>	Notes
Broilers	8	7	5	1	220 (2)	5
					110 (5)	
					55 (1)	
Layers	6	6	5	1	220 (1)	
					110 (4)	
					55 (1)	
Pullets	7	6	5	1	220 (2)	5
					110 (4)	
					55 (1)	
Turkeys	9	7	6	2	220 (2)	
					110 (6)	
					55 (1)	
Lambs	2	0	0	0	110(1)	
					22 (1)	
Swine	5	2	2	1	550 (1)	
					110(2)	
					55(2)	
Beef	1	0	0	1	75mg/hd/ d <sup>e</sup>	
Calves	2	0	0	2	55 (2)	

<sup>a</sup>growth promoter claims are claims that refer to growth and/or feed efficiency, but not a recognized disease condition. Typically, these claims refer to “stress due to...” or similar phrasing.

<sup>b</sup>growth promoter plus... refers to growth and/or feed efficiency but also mentions another recognized disease condition such as chronic respiratory disease, atrophic rhinitis, synovitis, non-specific enteritis. These are a subset of the growth promoter claims.

<sup>c</sup>Prophylactic claims are claims that refer to the expected exposure of target species to a named disease condition. This is the 55 mg/kg level except for one claim in turkeys (110 mg/kg for synovitis/infectious sinusitis) and for beef and non-lactating dairy cows.

<sup>d</sup>Rates given as mg/kg of diet unless otherwise indicated; the number of claims at that rate are given in brackets.

<sup>e</sup> 75 mg/head/day for prevention of bloat.

Table A.3.4: Summary of CMIB 38 chlortetracycline/sulfamethazine/procaine penicillin

Species	Total Claims	GP Claims <sup>a</sup>	GP Plus... <sup>b</sup>	Prophylactic <sup>c</sup>	Rates <sup>d</sup>
Swine	6	4	2	0	110/110/55 (6)

<sup>a</sup> growth promoter claims are claims that refer to growth and/or feed efficiency, but not a recognized disease condition. Typically, these claims refer to “stress due to...” or similar phrasing.

<sup>b</sup> growth promoter plus... refers to growth and/or feed efficiency but also mentions another recognized disease condition such as chronic respiratory disease, atrophic rhinitis, synovitis, non-specific enteritis. These are a subset of the growth promoter claims.

<sup>c</sup> Prophylactic claims are claims that refer to the expected exposure of target species to a named disease condition. This is the 55 mg/kg level except for one claim in turkeys (110 mg/kg for synovitis/infectious sinusitis) and for beef and non-lactating dairy cows.

<sup>d</sup> Rates given as mg/kg of diet unless otherwise indicated; the number of claims at that rate are given in brackets.

## Appendix 4: Presentations Made to Committee

Presenter	Date	Topic
Diane Kirkpatrick, Health Canada	December 13, 1999	Background on the Policy Development Process
Jean Breton, Kelly Butler, Health Canada	March 20, 2000	Veterinary Drug Regulation and Approval Process in Canada
Don Low, Mt Sinai Hospital	March 20, 2000	Antibiotics Important in Human Medicine
Richard Reid-Smith, Health Canada	March 20, 2000	Antimicrobial Use Surveillance
Anne Deckert, Health Canada	March 20, 2000	Antimicrobial Resistance Surveillance
Scott McEwen, University of Guelph	March 20, 2000	Risk Assessment
Ian Alexander, Health Canada	June 19, 2000	Extra Label Drug Use
Bruce Wozny, Health Canada	June 19, 2000	Sale of Active Pharmaceutical Ingredients as Drugs for Veterinary Use
Mansen Yong, Health Canada	June 19, 2000	Human Health Safety Assessment of Veterinary Drugs
Myron Roth, Aqua Health Ltd	June 19, 2000	Antimicrobial Use in Canadian Aquaculture
Bill Revington, New Life Feeds	January 15, 2001	Use of Antimicrobials – Feed Producer's Perspective
Stephen Sundlof, U.S. Food and Drug Administration, Rockville MD, U.S.A.	June 7, 2001	The United States Perspective on Agricultural Antimicrobial Resistance Issues
John Turnidge, Women and Children's Hospital, Adelaide, Australia	June 7, 2001	The Australian Perspective on Agricultural Antimicrobial Resistance Issues
Paula Fedorka-Cray U.S.D.A., Athens, GA, U.S.A.	June 7, 2001	National Antimicrobial Resistance Monitoring System and Related Research Activities in the United States

## Appendix 5: List of Abbreviations

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AAFC	Agriculture and Agri-Food Canada
AASP	American Association of Swine Practitioners
AHI	Animal Health Institute
AIDS	acquired immunodeficiency syndrome
AMDUCA	<i>Animal Medicinal Drug Use Clarification Act</i>
AMR	antimicrobial resistance
API	active pharmaceutical ingredients
ARET	Accelerated/Reduction of Toxics
ARS	Agricultural Research Service
ARO	antibiotic resistant organisms
ATC vet	Anatomical Therapeutic Chemical Veterinary Classification
AVMA	American Veterinary Medical Association
BCMAFF	British Columbia Minister of Agriculture, Fisheries and Food
BSE	bovine spongiform encephalopathy
BVD	Bureau of Veterinary Drugs
CAHI	Canadian Animal Health Institute
CAIA	Canadian Aquaculture Industry Alliance
CARC	Canadian Agri-Food Research Council
CARD	Canadian Adaptation and Rural Development Fund
CBA	Canadian Bison Association
CBHEPA	Canadian Broiler Hatching Egg Producers Association
CCA	Canadian Cattleman's Association
CCAR	Canadian Committee on Antimicrobial Resistance
CCC	Canadian Cervid Council
CCP	critical control point
CDC	Centers for Disease Control and Prevention
CEMA	Canadian Egg Marketing Agency
CIDPC	Centre for Infectious Disease Prevention and Control
CFA	Canadian Federation of Agriculture
CFC	Chicken Farmers of Canada
CFIA	Canadian Food Inspection Agency
CHEQ	Canadian Hatching Egg Quality
CHF	Canadian Hatchery Federation
CMIB	Compendium of Medicated Ingredients Brochure
CNISP	Canadian Nosocomial Infection Surveillance Program
COFFSP	Canadian On-Farm Food Safety Program
CPC	Canadian Pork Council
CSF	Canadian Sheep Federation

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CTMA	Canadian Turkey Marketing Association
CVM	Center for Veterinary Medicine
CVMA	Canadian Veterinary Medical Association
DANMAP	Danish Integrated Antimicrobial Resistance Monitoring and Research Programme
DFC	Dairy Farmers of Canada
DIN	Drug Identification Number
DNA	deoxyribonucleic acid
DT	definitive phage type
E.C.	European Community
e.g.	exempli gratia
E.U.	European Union
EAGAR	Expert Advisory Group on Antibiotic Resistance
EDR	emergency drug release
EMA	European Medicines Evaluation Agency
EPA	Environmental Protection Agency
et al.	et alii
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
GATT	General Agreement on Tariffs and Trade
GMP	good management practices
GPP	good production practices
HACCP	Hazard Analysis Critical Control Point
HCl	hydrochloric acid
HIV	human immunodeficiency virus
HUS	haemolytic uremic syndrome
i.e.	id est
IOM	Institute of Medicine
JETACAR	Joint Expert Technical Advisory Committee on Antimicrobial Resistance
MDR	multidrug-resistant
MDRP	multidrug-resistant <i>Streptococcus pneumoniae</i>
MDRTB	multidrug-resistant <i>Mycobacterium tuberculosis</i>
MIC	minimum inhibitory concentration
MOS	mannan oligosaccharide
MRL	maximum residual levels
MRSA	methicillin-resistant <i>Staphylococcus aureus</i>
MT	metric tonne
NAFTA	North American Free Trade Agreement
NAHMS	National Animal Health Monitoring System
NARMS	National Antimicrobial Resistance Monitoring System
NAS	National Academy of Sciences
NCID	National Center for Infectious Disease
NIH	National Institutes of Health
NIPA	National Information Program on Antibiotics

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NNIS	National Nosocomial Infections Surveillance
NRC	National Research Council
OFFSP	On-Farm Food Safety Program
OIE	Office International des Epizooties
OMAF	Ontario Ministry of Agriculture and Food
OTC	over-the-counter
PAAB	Pharmaceutical Advertising Board
PT	phage type
QREC	quinolone-resistant <i>Escherichia coli</i>
QSH	Quality Starts Here
R factors	resistance factors
R	resistance plasmids
plasmids	
RSPCA	Royal Society for the Prevention of Cruelty to Animals
SAGE	Science Advice for Government Effectiveness
SHC	Salmon Health Consortium
SOP	standard operating procedure
SRA	Society of Risk Analysis
SVA	Swedish National Veterinary Institute
TB	Tuberculosis
TDD	Therapeutic Drugs Directorate
TGA	Therapeutic Goods Administration
TMP/SXT	trimethoprim/sulfamethoxazole
TPD	Therapeutic Products Directorate
TPP	Therapeutic Products Program
UCS	Union of Concerned Scientists
U.K.	United Kingdom
U.S.	United States
USDA	United States Department of Agriculture
VCPR	veterinarian-patient-client-relationship
VDD	Veterinary Drugs Directorate
VICH	International Cooperation on Harmonization of Technical Requirements for Registration of Veterinary Medical Products
VMAC	Veterinary Medical Advisory Committee
VMD	Veterinary Medicines Directorate
VRE	vancomycin-resistant enterococci
WHO	World Health Organization

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