

# AMERICAN COLLEGE OF VETERINARY PREVENTIVE MEDICINE (ACVPM) EXAMINATION STUDY REFERENCES

Revised: September 2019

The following list of study references is NOT a definitive, exhaustive list for preparing for the ACVPM examinations in the five subject areas:

1. Environmental Health and Toxicology
2. Epidemiology and Biostatistics
3. Food Protection
4. Infectious and Parasitic Diseases
5. Public Health Administration and Education

Use this list as a guide, in as much as it represents a compromise between brevity and completeness. Supplementary titles are provided for those who wish to do additional reading.

You are encouraged to read as much additional material as possible. Reading the current scientific and professional literature (ProMed, *JAVMA*, *MMWR*, *Lancet*, *NEJM*, *Science*, etc.) is also necessary to properly prepare for the examinations.

## Primary references applicable to more than one subject area:

- The Merck Veterinary Manual by Cynthia M. Kahn and Scott Line, current edition, Merck Publishing Group (P) <http://www.merckmanuals.com/vet/index.html> (Environmental Health and Toxicology, Infectious Diseases)
- Control of Communicable Diseases Manual. Washington, DC: American Public Health Association (Infectious Diseases, Food Protection)
- Websites in topic areas: [www.avma.org](http://www.avma.org), [www.cdc.gov](http://www.cdc.gov) (site includes access to MMWR), [www.cfsan.fda.gov](http://www.cfsan.fda.gov), [www.fda.gov/cvm](http://www.fda.gov/cvm), [www.fsis.usda.gov](http://www.fsis.usda.gov), [www.usda.gov](http://www.usda.gov), [www.who.int](http://www.who.int)

## 1. ENVIRONMENTAL HEALTH AND TOXICOLOGY

The Environmental Health and Toxicology section includes nine subcategories: Air; Land/soil; Water; Waste; Emergency Preparedness and Response; Occupational Health; Vectors; Radiation; and Toxicology. An equal number of questions will be drawn from each subcategory in the multiple choice section of the exam. The Toxicology subcategory draws upon the principles of toxicology and toxic substances in general. Applied knowledge of toxicology is incorporated into many of the subcategories areas.

### Primary References

- Peter Rabinowitz and Lisa Conti, editors, Human-Animal Medicine: Clinical Approaches to Zoonoses, Toxicants, and Other Shared Health Risks, 2010, Saunders/Elsevier (There are several non-infectious disease chapters that are applicable.)
- Osweiler, G.D.: Toxicology, 1996, Williams and Wilkins, Media, PA
- Landesman, Linda Young (ed): Public Health Management of Disasters, the Practice Guide, current edition. American Public Health Association
- Websites in topic areas: U.S. Environmental Protection Agency, Centers for Disease Control and Prevention's National Center for Environmental Health, Agency for Toxic Substances and Disease

Registry, National Institute for Occupational Safety and Health, Occupational Safety and Health Administration, U.S. Department of Agriculture, American Board of Veterinary Toxicology, etc.

### Supplementary References

- ❑ Salvato, JA, Nemerow, N; Agardy, FJ; Sullivan, P (ed): Environmental Engineering, current edition, 3 Volumes, Wiley Press, Hoboken, NJ
- ❑ Koren, H; Bisesi, M: Handbook of Environmental Health (2 volumes), current edition, CRC Press/Lewis publishers, Boca Raton, FL
- ❑ Klaassen, C.D.: Casarett & Doull's Toxicology: The Basic Science of Poisons, current edition, McGraw-Hill, New York, NY
- ❑ Medical Management of Radiological Casualties, current edition, Military Medical Operations, Armed Forces Radiobiology Research Institute  
<http://www.usuhs.edu/afri/outreach/pdf/4edmmrhandbook.pdf>

## **2. EPIDEMIOLOGY AND BIOSTATISTICS**

The Epidemiology and Biostatistics section of the multiple choice exam includes questions that are drawn from 10 subcategories: Data distributions; Diagnostic tests; Measures of disease occurrence and measures of effect; Analytical study designs and measures of association; Biostatistics; Outbreak investigation; Causality; Basic epidemiology concepts; Economics; and, Surveillance and sampling designs.

Epidemiology is the basic science with tools to support decision making processes in veterinary public health and preventive medicine. It deals with the investigation of diseases, production losses, and health issues in animal and human populations. Essential activities within epidemiology encompass the broad areas of study design, data collection, analysis, and interpretation. Biostatistical methods and techniques are relied upon to objectively determine which factors are associated with specific outcomes.

Preventive medicine professionals and other practitioners dealing with this topic must be able to integrate and synthesize information obtained from epidemiological findings with their knowledge from other basic and clinical sciences to design effective disease control and health maintenance programs. This includes the ability to plan surveillance or research activities and to evaluate the results.

General Epidemiology study objectives include:

- Describe different types of study designs, when they are used, and the advantages and disadvantages of each
- Interpret properties of diagnostic tests
- Calculate common measures of disease occurrence
- Use epidemiologic methods to identify risk factors
- List and describe the steps in an outbreak investigation
- Describe guidelines for evaluating causality in epidemiologic studies
- Describe different routes of disease transmission and sources of infection
- Describe common disease control and prevention strategies
- Explain how bias and confounding influence the results of epidemiologic studies
- Describe methods for prevention and control of confounding
- Interpret epidemiologic literature

Biostatistics -- The ACVPM General Exam will require biostatistical knowledge that is essential for a diplomate to operate within the preventive veterinary medicine fields. Basic biostatistics and the statistics used in epidemiologic studies and investigations will be the foci. General biostatistics books will provide the underlying knowledge required but should be supplemented with an analytic epidemiology text.

General Biostatistical study objectives include:

- Describe common probability distributions
- Describe data using measures of central tendency and dispersion
- Name common statistical tests for different data types and study designs
- Interpret results of statistical hypothesis tests
- Interpret regression coefficients and confidence intervals
- Differentiate between the two types of hypothesis testing errors
- Describe the elements involved in sample size estimation
- Determine appropriate statistical methods for epidemiologic studies
- Interpret common multivariable statistical models used in epidemiologic research

#### Primary References

- Dohoo I, Martin W, Stryhn H. Veterinary Epidemiologic Research, current edition. AVC Inc., Charlottetown, PEI, Canada.
- Smith RD. Veterinary Clinical Epidemiology current edition. CRC Press, Boca Raton, FL.

#### Supplementary References

- Thrusfield M. Veterinary Epidemiology, current edition. Blackwell Science: Ames, IA.
- Gordis L. Epidemiology, current edition. Saunders, Philadelphia, PA.
- Gregg MB. Field Epidemiology, current edition. Oxford University Press, Inc. NY, NY
- Rothman KJ. Epidemiology: An Introduction, current edition. Oxford University Press: NY, NY
- Rothman KJ and Greenland S. Modern Epidemiology, current edition. Lippincott Williams & Wilkins: Philadelphia, PA.
- Daniel WW. Biostatistics: A Foundation for Analysis in the Health Sciences, current edition. John Wiley & Sons, Inc: Hoboken, NJ.
- Rosner B. Fundamentals of Biostatistics, current edition. Duxbury Press: Belmont, CA.
- Glantz S. Primer of Biostatistics, current edition. McGraw-Hill Medical: NY, NY.

### **3. FOOD PROTECTION**

Food science in the ‘Farm to Fork’ spectrum is essential for a diplomate to operate within the preventive veterinary medicine fields. The Food Protection section includes nine subcategories: Agents and sources of foodborne illness (including microbiological, virology, chemical, toxicological, and radiological); Preharvest; Postharvest and Processing; Detection methods and analytics; Food Defense; Food Security (as it relates to Food Safety); Product safety and consumer exposures; Outbreaks, epidemiology, and surveillance; Policy and regulation guidance, controls, and compliance; and Current Topics (e.g. biotechnology, nanotechnology, antimicrobial resistance, global health).

#### Primary References

Websites provide key reference materials and current topics:

[www.acvpm.org](http://www.acvpm.org)

- US Department of Agriculture (USDA), including:
  - Food Safety and Inspection Service (FSIS), <http://www.fsis.usda.gov/wps/portal/fsis/home>
  - Animal and Plant Health Inspection Service (APHIS), <https://www.aphis.usda.gov/aphis/home/>
- US Food and Drug Administration (FDA), <http://www.fda.gov/>, including:
  - Food Protection topics
  - Pasteurized Milk Ordinance
  - Food Code
  - Bad Bug Book
- Centers for Disease Control and Prevention (CDC), <https://www.cdc.gov>, including:
  - Food protection topics
  - MMWR
  - PulseNet
  - FoodNet
- World Health Organization (WHO), [http://www.who.int/foodsafety/areas\\_work/en/](http://www.who.int/foodsafety/areas_work/en/)
- FoodSafety.gov, <https://www.foodsafety.gov/>
- American Veterinary Medical Association, concentrating on current topics and articles related to Food Protection, <https://www.avma.org/>
- Food and Agriculture Organization of the United Nations <http://www.fao.org/home/en/>
- Review food science basics in a food science text and current focus areas and hot topics in journals such as the Journal of Food Protection and above cited references. No specific text is required.
- Review basics on foodborne outbreak investigations and calculations in an appropriate food science or epidemiology textbook. No specific text required.

#### Supplementary References

- Vaclavik, Vickie and Christian, Elizabeth W. Essentials of Food Science, current edition. Springer Science + Business Media, LLC, New York, NY.

#### **4. INFECTIOUS AND PARASITIC DISEASES**

The Infectious Diseases section includes eight subcategories: Immunology and Pathogenesis; Transmission; Pharmaceuticals; Biologics; Diagnostics and Chemicals; Bacterial, Viral, Rickettsial, Parasitic, TSE, and Mycotic Agents; Foreign Animal Diseases; and, General.

#### Primary References

- Foreign Animal Diseases – Current Edition – United States Animal Health Association
- Veterinary Medicine: A textbook of the disease of cattle, sheep, goats, pigs and horses, Current Edition, Radostitis, Gay, Hinchcliff, and Constable
- Handbook of Zoonoses: Identification and Prevention, Colville and Berryhill or Zoonoses and communicable diseases common to man and animals, Volumes I & II, Pan American Health Organization
- Emerging Infectious Diseases (on-line Journal), U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention
- Transboundary and Emerging Diseases of Animals. A. Rovid Spickler, J.A. Roth, G. Brown, and J. Galyon, (eds.) Center for Food Security and Public Health, Iowa State University, 2016, 344 pages. ISBN 0-978-0-9846270-5-9

- National Brucellosis Eradication Program:  
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/national-brucellosis-eradication/brucellosis-eradication-program>
- National Tuberculosis Eradication Program:  
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/national-tuberculosis-eradication-program>
- OIE Terrestrial Animal Health Code (International disease standards):  
<http://www.oie.int/international-standard-setting/terrestrial-code/>
- OIE Manual of diagnostic tests and vaccines for terrestrial animals:  
<http://www.oie.int/international-standard-setting/terrestrial-manual/>
- OIE Aquatic animal health code: <http://www.oie.int/international-standard-setting/aquatic-code/>
- NASPHV Compendia and recommendations:  
<http://www.nasphv.org/documentsCompendia.html>
- Merck Veterinary Manual on-line: <http://www.merckvetmanual.com/>
- ISU Veterinary Diagnostic and Production Animal Medicine Disease Topics:  
<https://vetmed.iastate.edu/vdpam/research/disease-topics>
- AVMA Knowledge base: <https://www.avma.org/Search/advanced.aspx>
- AVMA Hot issues: <https://www.avma.org/News/Issues/Pages/default.aspx>
- USDA National Veterinary Accreditation Program (NVAP) Training Modules on foreign animal diseases, role of agencies, aquatic animal diseases, antibiotic use, etc.:  
[https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/ct\\_aast](https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/ct_aast)
- CDC Animal parasites: <https://www.cdc.gov/parasites/animals.html>
- CDC Healthy Pets, Healthy People (zoonotic disease library):  
<https://www.cdc.gov/healthypets/diseases/index.html>

Supplementary References (Basic Immunology and Infectious Agent Textbooks – Current Edition)

- Veterinary Immunology – Current Edition, Ian Tizard
- Fenner's Veterinary Virology, N. James Maclachlan and Edward Dubovi editors.
- Parasitic Diseases. Michael Katz, Dickson D. Despommier, and Robert Gwadz
- Pathogenesis of Bacterial Infections in Animals, Carlton L. Gyles, J.F. Prescott, Glenn Songer, and Charles O. Thoen; or Essentials of Veterinary Bacteriology and Mycology, Current Edition, G Carter and D Wise

## 5. PUBLIC HEALTH ADMINISTRATION AND EDUCATION

The Public Health Administration and Education section includes nine subcategories: Risk Assessment; Communications (including Risk Communication); Governmental Function; Governmental Organization; Laws, Policies and Plans; Leadership; Prevention; Surveillance/Monitoring; and Evaluation.

General Public Health Administration and Education study objectives include:

- Describe governmental functions (regulatory/rule-making and enforcement, policies, responsibilities, information/data collection and management) that directly impact public health.

- Understand the organizational structure and define the major federal agencies and departments with functions and responsibilities that pertain to public health.
- Describe governmental interactions and relationships (local, state, federal) pertaining to public health, including the relationship, responsibilities, and distinctions between environmental services, wildlife services, agriculture and public health.
- Understand the ten essential public health services.
- Describe the three levels of prevention (primary, secondary, tertiary).
- Describe the benefits of a multidisciplinary team of public health professionals working at the local level.
- Define necessary steps to develop and implement public health plans.
- Define the responsibilities and integrated relationships of public health with partners in public health preparedness/bioterrorism preparedness, and the veterinary practitioner in emergency management/public health preparedness. Describe the benefits of a multidisciplinary team of public health professionals working at the local level.
- Define steps to conduct a risk assessment.
- Understand basics of risk communication and message mapping. Understand the public health communication interactions with diverse sectors of the public-at-large, the media, and government officials.

#### Primary References

- Maxcy, Rosenau, Last: Public Health and Preventive Medicine, current edition by Robert B Wallace (Editor), McGraw-Hill Medical.
- Principles and Practice of Public Health Surveillance, current edition by Lisa M. Lee (Editor), Steven M. Teutsch (Editor), Stephen B. Thacker (Editor), Oxford University Press, USA.
- CDC Crisis and Emergency Risk Communication manual, available at: <https://emergency.cdc.gov/cerc/manual/index.asp>
- AVMA Directory for AVMA Policy Statements and Guidelines; information on government agencies and their specific branches/offices that utilize veterinarians; and, references to other resources, including specialty groups.
- Websites: <http://www.cdc.gov/phlp/>, <http://www.cste.org/>, <http://www.dhs.gov/>, <http://www.nasphv.org/>, <http://www.naccho.org/>, <https://www.apha.org/>, Public Health Accreditation Board website: <http://www.phaboard.org/>

#### Supplementary References

- Lloyd F. Novick, Public Health Administration: Principles for Population-based Management, current edition Cynthia B. Morrow; Glen P. Mays (Editor), Jones and Bartlett Publishers.