

Master of Public Health Field Experience Report

NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES, A FIELD EXPERIENCE

by

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MASTER OF PUBLIC HEALTH

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Summary

This report presents a field experience of 240 hours completed in the North Carolina Department of Health and Human Services, Communicable Disease Branch. The Communicable Disease Branch protects the public's health by facilitating communication among local, state and federal health agencies including physicians, local health department staff and hospital and occupational infection control personnel. They also play an active role in real-time surveillance for the state by monitoring International Coding Data input from hospital emergency departments, the Carolinas Poison Control Center, ambulance calls and some urgent care facilities in a program called the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). Reporting is monitored through The North Carolina Electronic Disease Surveillance System (NC EDSS) that is part of The Centers for Disease Control's initiative to move to electronic-based reporting. My time as an intern in the Communicable Disease Branch was spent exploring and experiencing the work of public health professionals through participation in activities of the branch in addition to various other agencies and departments. My completed projects include a guidance document for Animals in Public Settings in North Carolina, an updated Rabies Sample Submission Questionnaire, a PowerPoint for the use in teaching young school age children to stay safe around dogs, and a two page summary of what I have learned about public health practice at North Carolina Department of Health and Human Services. My participation in the activities of the Communicable Disease Branch and related agencies broadened my knowledge of public health by experiencing the role the various agencies play in contributing to the health of the community.

Subject Keywords: Subject Keywords: List up to 6 keywords

North Carolina

Communicable Disease

Rabies

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Chapter 1 - Field Experience Scope of Work

The North Carolina Department of Health and Human Services (NCDHHS) was established by the Executive Organization Act of 1971, and is comprised of more than 30 divisions and offices. Located in Raleigh, the NCDHHS is tasked with protecting the health and safety of all North Carolinians while providing essential human services in collaboration with their many partners and affiliations. In the summer of 2013, I served as an intern to Dr. Marilyn Goss Haskell, a DVM graduate of the University of Florida and an MPH graduate of The Medical College of Virginia, who works as a public health veterinarian for the Communicable Disease Branch (CDB), in the Epidemiology Section of the Division of Public Health (see Figure 1). As a 'home rule' state, NCDHHS supports North Carolina's 86 autonomous health departments distributed among its 100 counties. The Communicable Disease Branch serves the local health departments, other local and state agencies and the public through on-call support and consultations (24/7) in the areas of rabies and communicable diseases. I was invited to participate in conference calls for outbreak investigations; shadow On-Call days for both rabies and communicable disease, and participate in the field with public health professionals as arranged by Dr. Haskell. My primary focus in this internship was to explore and experience the work of public health professionals in North Carolina and to understand the role of the Communicable Disease Branch and other state agencies and entities that collaborate to protect public health in North Carolina.

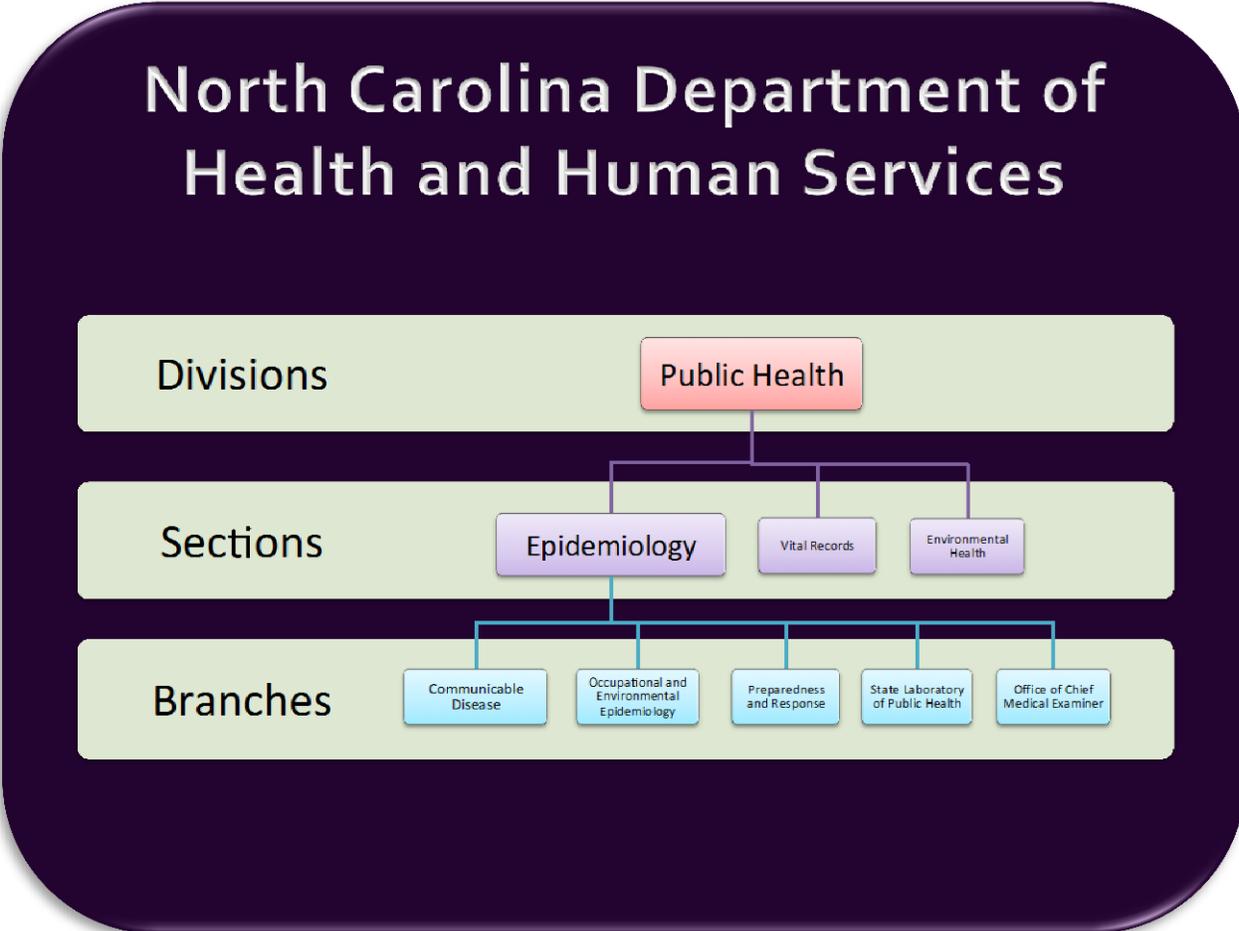


Figure 1 North Carolina Department of Health and Human Services Simple Organizational Chart

Chapter 2 - Learning Objectives

Objectives for Field Experience

1. Become familiar with the public health prevention and control measures mandated by federal and state laws and rules as well as the guidance documents for prevention and control of communicable diseases followed by NCDHHS. Become familiar with the Nationally Notifiable Disease list and the diseases reportable in North Carolina.
2. Understand the role of the Centers for Disease Control and Prevention (CDC) and become familiar with the CDC website. Become familiar with the NC DHHS website.
3. Understand the basis for the actions taken by the North Carolina State Department of Health and Human Services in communicable disease outbreaks.
4. Research laws, MMWRs, guidance documents and current articles related to public health education prevention and control of transmission of zoonotic diseases.
5. Learn about the NC State Laboratory of Public Health testing guidelines and criteria for different reportable diseases.

Fulfillment of Objectives

The Communicable Disease Branch (CDB) serves the entire state through on-call support (24/7) in the areas of rabies and communicable disease by providing consultation to local health departments, nurses, and other public health professionals through the Medical Consultation Unit (MCU). The MCU is a team of physicians, nurses, veterinarians, and epidemiologists working to limit the spread of communicable disease. The focus of the MCU is to consult, prevent and control disease in the population or the community as a whole rather than treating an individual patient. Individual patients are referred to their primary care physician for diagnostics and treatment. Upon notification of an event in the community through a call from the local health department, a laboratory or physician's report, the epidemiologist on call develops a Situation Report that is sent by email to the entire Epidemiology Section and the State Epidemiologist. This report details the date and time of initial event notification, reporting Epidemiologist, event description, location, primary local health department contacts, narrative of the

situation and any action items for review. The investigation then begins. The MCU follows these steps in an outbreak investigation:

1. Identify investigation team and resources.
 - Establish one point of contact in the reporting department
 - Identify the Subject Matter Expert (SME)
2. Establish the existence of an outbreak.
 - Increase in disease from what is expected for a time period or geographic region.
 - OR 2 or more cases that are linked by a common source.
3. Verify the diagnosis
 - Clinical signs and symptoms
 - Test results – Confirmatory
 - History – Medical records
4. Construct a working case definition
 - CDC case definition with time and geographic location parameters
5. Case finding
 - Find cases systematically and develop a line list, which contains patient demographics, clinical signs, and other pertinent case information such as time and place. It is organized into a spreadsheet-type document for easy review and analysis.
6. Perform descriptive epidemiology and develop a hypothesis
7. Evaluate hypothesis and perform additional studies
8. Implement control measures
9. Communicate findings
10. Maintain surveillance
 - North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT)
 - North Carolina Electronic Disease Surveillance System (NC EDSS)

North Carolina DHHS provides guidance to the public through documents such as the Communicable Disease Manual and the Rabies Public Health Program Manual on the Department of Health and Human Services website, which links to resources related to investigation, reporting, and control of communicable disease. There are also links to other communicable disease manuals such as, Hepatitis B, Tuberculosis,

Sexually Transmitted Diseases and Vaccine-Preventable Disease. These separate resources outline the laws and codes set forth by the state, as well as provide guidance documents and other reference materials and resources for local health departments and other local and state agencies. The CDC also provides numerous references and guidance to the public in the form of statistical reports, facts and figures in a number of subjects related to health.

In conjunction with NC General Statute and NC Administrative Code, the CDB uses The American Public Health Association's publication, the Control of Communicable Diseases Manual as an authoritative guide for control measures in outbreak investigations as well as everyday prevention and control consultation. When NC Administrative Code does not address a particular subject the Communicable Disease Manual of the APHA provides the required control measures, however, any recommended actions provided by the Centers for Disease Control (CDC) supersedes all other documents and guidance. All of these tools are a foundation for the basis of action taken by the NCDHHS in outbreak situations. Additional materials from the CDC such as Morbidity and Mortality Weekly Reports, toolkits, and compendia are used to further support investigations and recommendations made by the department.

The surveillance and reporting of diseases provides information for the basis of action in public health. In 2005, North Carolina mandated the reporting of all Emergency Department data into the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) with General Statute 130A-480. Funded by federal bioterrorism grants, this tool is a unique real-time surveillance program that collects International Classification of Diseases (ICD) coding data from the Carolinas Poison Center, hospital emergency departments, ambulance calls, and some urgent care facilities. These data can then be reviewed and analyzed for event tracking and investigation of possible outbreaks, giving North Carolina earlier event detection by having near real time disease information. This earlier event detection is an improvement upon the reliance of reporting alone. It allows for intervention at the suspicion of disease and implementation of control measures to prevent the spread before a case is confirmed. Although a small number of other states have comparable programs, NC DETECT is unique to North Carolina.

The North Carolina Electronic Disease Surveillance System (NC EDSS) is a reporting system that is part of a CDC initiative to move to electronic based surveillance and reporting and is supported by the Federal Preparedness Grant. NC EDSS receives reporting data from local health departments, several laboratories including the State Laboratory for Public Health, and HIV/STD regional offices. This regional data is available to the individual health departments, and the collaborative data is available to the Department of Public Health.

State law regulates reportable diseases as outlined in General Statute § 130A-134, but the reporting of notifiable diseases to the CDC is voluntary. Funding is provided contractually in exchange for data by the federal bioterrorism and preparedness grants. NCEDSS provides the CDC with de-identified data, but the transmission of data directly to the CDC is still a work in progress. IT is working toward a solution, but right now the two programs are unable to communicate, and the data must be manually transmitted. As defined by the CDC, notifiable disease is “one for which regular, frequent and timely information regarding individual cases is considered necessary for the prevention and control of the disease”¹². The Notifiable Disease List is updated yearly by a group of epidemiologists, the Council of State and Territorial Epidemiologists (CSTE). The council meets in June, and revisions to the list are made as emerging diseases and changes in current list disease prevalence are evaluated. Changes or updates to the list go into effect Jan 1st of the following year. State laws are not necessarily up to date by that time, so it is possible that a disease is notifiable to the CDC, but not reportable in a state, so at the state level there aren’t surveillance or reporting mechanisms in place. Each year a summary of notifiable diseases is made in the CDC’s Morbidity and Mortality Weekly Report. This summary is a compilation of data from all the states and territories that report notifiable disease information. The numbers reported in the summary are finalized by each state or territory before publication. Any discrepancies in the final numbers may be due to timing of reporting and publication.

The North Carolina State Laboratory for Public Health (SLPH) is the state’s reference laboratory. SLPH provides public health testing services for North Carolina including human, animal and environmental samples. Rabies Direct Fluorescent

Antibody (DFA) testing is available through the SLPH to all health care providers and local health departments (animal control) in the state, and is the sole source of public health rabies testing in North Carolina. Submission of specimens must meet specific testing criteria as outlined on the website.

The SLPH also provides HIV serology through health care providers. Testing of HIV samples at the SLPH requires 3mL of serum to complete the testing protocol. Enzyme Immunosorbent Assay (EIA) is run as a screening test for antibodies to both HIV-1 and HIV-2. This test is highly sensitive, so there is confidence in the negative results, to rule-out disease. A second EIA is run on all initially reactive EIA tests to verify the results. If both EIA screening tests are positive, a Western Blot HIV-1 assay is run as a confirmatory test. A health care provider can request a Western Blot HIV-1 assay given that the submitter indicates the screening tests are repeatedly reactive. Any test that is reactive for EIA but fails to test as reactive for Western Blot or HIV RNA will be tested for HIV-2. If this HIV-2 test is reactive, the sample is sent to the CDC for confirmation. All nonreactive EIA results are tested for HIV RNA to detect acute infection by molecular methodology using pooling techniques.

Chapter 3 - Activities Performed

My completed activities include:

- Shadowing Public Health professionals in daily work environments
- Shadowing Epidemiologists on outbreak investigation calls
- Shadowing Public Health Veterinarians on rabies calls
- Reviewing and updating educational materials for the public
- Conducting interviews in outbreak investigations
 - I was involved in several outbreak investigation conference calls, but not directly involved in the interview process due to HIPAA privacy requirements.

As an intern for the Communicable Disease Branch, I was included in many aspects of the branch activities. I shadowed within the branch among the various different areas of emphasis, as well as additional opportunities outside the branch with other agencies and collaborators in public health and agriculture as arranged by Dr. Haskell. My activities included, but were not limited to, observation and participation in:

- On-Call for rabies and communicable disease
- Conference calls of outbreak investigations
- State laboratory for public health, rabies testing
- North Carolina Department of Agriculture and Consumer Services, Rollins Laboratory for Animal Diseases, necropsy
- Wake County Food Inspection Services, restaurant inspections
- State HIV Bridge Counseling, contacting loss of care patients
- USDA National Poultry Improvement Plan, backyard flock testing
- Occupational and Environmental Epidemiology Branch, On-Call, debriefing, and bioterrorism meeting
- Orange County Animal Services – site visit and call with Animal Control

On-Call Support

The Veterinary Public Health Program within the CDB provides 24/7 rabies on-call support for Local Health Department Directors and Communicable Disease Nurses,

local animal control, healthcare providers, veterinarians, other local state agencies and the public. Many of the incoming callers are referred to the Rabies Public Health Program Manual, the state's foundation for the protocols in place. The manual outlines the roles and responsibilities of those involved in rabies prevention and control as well as the Rabies Laws, and regulations and authoritative guidance documents regarding animal and human and exposures and assessments. Some human cases must be referred to the hospital emergency department for consultation and post-exposure prophylaxis, as in the case of an assessed rabies exposure. The North Carolina Rabies Laws are the general statutes that provide the local health director enforcement authority to prevent and control rabid animals in their jurisdiction.. North Carolina Administrative Code supports the general statutes and details how these laws are to be carried out.

NCDHHS has published and distributed an algorithm, *Evaluating Human Rabies Risk from Animal Bites* for exposure and post-exposure prophylaxis. This algorithm defines a rabies exposure as well as pertinent questions to ask in an exposure situation. I learned how to differentiate between a high risk and a low risk animal and how to assess the risk of an exposure to rabies based on circumstances of the exposure. The distinctions between high and low risk vectors, type and circumstances of exposure are used to establish guidelines for exposure assessment risk and standardization of animal submissions.

Communicable disease on-call encompasses all infectious diseases reportable by law and diseases of public health significance including hospital acquired infections, vaccine-preventable diseases, food-borne diseases, potential bioterrorist agents reporting and much more. Call duty is similar in nature to rabies on-call hours, and provides the community and healthcare professionals with an on-call epidemiologist.

Conference Calls

Many of the necessary and essential steps of an outbreak investigation can be discussed and planned through conference calls with local health department staff, hospital staff, health care facility staff, and SLPH as well as others from within the Epidemiology section. Some examples of conference calls I participated in are:

- Legionnaire's outbreak in a hospital,
- Carbapenem-resistant *enterobacteriaceae* outbreak in a long-term care facility
- Bat infestation and exclusion situation within a state mental health facility.

State Laboratory for Public Health

I was invited to the State Laboratory for Public Health to shadow processing of the rabies submissions for the day. Before I could partake in the testing process, confirmation of my previous Rabies vaccination status was required, and personal protective equipment (PPE) as designated by the laboratory.

The process of Direct Fluorescent Antibody (DFA) is used for testing of rabies submissions. Submissions for the day are tagged with unique barcodes, and ordered by risk from least to greatest. The samples are then processed and viewed with a positive and negative control, which come from previous lab submissions. Some days require afternoon testing in addition to the morning samples, and on occasion the lab will test on weekends in cases where post-exposure prophylaxis is weighted on the results. The SLPH then sends notice to the CDB by fax, and logs the information into NC EDSS. If a fox or other suspect specimen tests positive, the sample is analyzed for the rabies type variant. Large animal submissions must first be submitted to the Rollins Laboratory for Animal Disease or any of their satellite labs, and are then submitted from that lab to the SLPH for rabies testing. All positive tissue samples get catalogued and permanently stored, and the remainder of the positive specimen is sent to the CDC for further research.

North Carolina Department of Agriculture and Consumer Services, Rollins Laboratory for Animal Diseases

Rollins Laboratory for Animal Diseases is part of the NC Department of Agriculture and Consumer Services, Veterinary Diagnostic Laboratory System (VDLS) and is part of the Veterinary Division. The Rollins Laboratory and branch laboratories located throughout the state serve to assist veterinarians and producers with diagnosis of livestock and poultry diseases. Situated in a BSL-3 Laboratory, Rollins is suited to test for many Infectious diseases. Services provided include: bacteriology,

histopathology and cytology, necropsy, parasitology, virology, serology, immunohistochemistry and molecular diagnostics. The NC VLDS' mission is "to provide veterinarians, the animal industry and the citizens of North Carolina with accurate and timely laboratory support services in order to diagnose, conduct surveillance, and assist in responding to and preventing animal disease." After a tour of the facilities I was invited by a veterinarian for the Rollins Laboratory to participate in necropsies for the day. Dressed in PPE, we began the necropsy systematically collecting samples and tissues. Submissions for necropsy are accepted from veterinarians and owners, and are provided a report upon completion of necropsy and sample processing.

Food Inspection

I spent a day working in the field with a Wake County Environmental Services Food Inspector. Our day consisted of re-inspecting a grocery store deli that had minor violations for correction, and a newly opened sushi and Japanese restaurant for their very first inspection. Wake County is divided among 17 field inspectors, with 3 team leaders who report to the Local Health Department Communicable Disease nurses. North Carolina has adopted the 2009 FDA Food Code Manual as 'rules to govern the food protection and sanitation of food establishments'¹³.

Wake County Environmental Services investigates foodborne illness upon complaint. Complaints are then ideally investigated within the next 24 hours. Wake County receives a variety of complaints, some unrelated to foodborne illness. Separate complaints with a common source are not considered an outbreak until separate parties are affected. For example, a family unit, (a mother, father and son) affected by illness is not considered an outbreak. In outbreak investigations, a common food timeline is made and trace back begins. Interviews then lead to inventory and handling procedures. Most outbreaks can be traced back to employee illness, or improper handling techniques.

HIV Bridge Counseling

The goal of care for HIV is virus suppression. The state of North Carolina has dedicated regional Bridge Counselors to make contact with newly notified HIV positive

patients, and get them into care. The counselor also reengages patients that are considered “loss of care”, meaning without care or appointment for 9 months or longer. Contacting patients can many times be a daunting task and is usually met with much resistance. The counselors use many resources and health databases to find last known addresses, phone numbers, and relatives. Contact is usually initiated with a phone call or notice requesting a phone call about an important health matter, and a patient must be positively identified before any health information is released. This often makes it difficult, as patients are usually unwilling to give personal information over the phone. Once contact and a positive patient identification are made, the counselor makes every effort to simplify the process for the patient to get back into care.

Creating a contact list for these patients is very important, and can be very complicated with the anonymity of the social technologies we have today. The reality of HIV infection is what struck me most with this experience. I hesitate to say my background in rural America has kept me sheltered from the devastation of this disease, but I have no previous experience with which to compare this day. It personally affected me to see how easily everything changes in a moment.

United States Department of Agriculture National Poultry Improvement Program

I shadowed a Veterinarian for the USDA Veterinary Services division on the routine testing day for backyard poultry in The National Poultry Improvement Plan (NPIP). The NPIP is a joint collaboration between the Animal Plant Health Inspection Service of the United States Department of Agriculture, and Official State Agencies. The Plan establishes standards for poultry breeding stock and hatchery products, and certifies that poultry and poultry products are free from the following egg-transmitted and hatchery-disseminated diseases:

- Pullorum – *Salmonella pullorum*
- Fowl Typhoid – *Salmonella gallinarum*
- Avian Mycoplasmas
- *Salmonella enterica*
- Avian Influenza

Testing is done quarterly for these backyard flocks to maintain status in the NPIP. We used rapid, whole-blood plate agglutination testing for each bird, the plate later helps us keep track of how many birds we have done. The clients we visited raise show birds, and this program makes it less complicated for them to bring birds to a show. With this certification, they do not have to test before each show, and buying and selling is much easier between program participants. Standard testing procedure is sampling 30 birds for Avian Influenza in each flock at random, no matter how many in the flock we are testing for other certification. These 30 samples are pooled into vials of 10 for submittal to Rollins Lab. If a test is positive, the flock is quarantined, and a sentinel animal is submitted to Rollins for further testing. Rollins Lab is an approved lab for both Pullorum-Typhoid and Avian Influenza testing.

Occupational and Environmental Epidemiology Branch (OEE)

I shadowed an Industrial Hygienist taking calls for the day. The Occupational and Environmental Epidemiology Branch also provides on-call support to the public, employers, physicians, and local health departments seeking consultation.

On-call consultation provided during my visit included a call from concerned parents of a student calling on their child's behalf about a rental property in a college town that had extensive mold following a prolonged rainy period. Also, a home appraiser found mold in all of the baseboard in a home of new construction. The builder had used MDF as baseboard, and as the MDF was stored in the garage portion of the new construction, had become wet. The finished product inside the home had mold, and as there is no acceptable limit of mold, it must be removed to pass inspection.

I attended a bioterrorism agent meeting with interns and staff in the OEE. We discussed each agent on the list and reviewed the CDC's case definition, actions in the event of mass release or infection, and treatment protocols and plans for mass treatment.

I was invited to attend a branch de-briefing meeting for a very recent industrial Carbon Monoxide poisoning investigation. The branch created a computerized line list, which includes categorical information of the investigation, clinical signs and diagnostic parameters for each patient. This aids the investigation in organizing and simplifying

the information to be reviewed. After reviewing the line list and discussing the aspects of the cases in the investigation, the branch prepared to interview survivors, and make a site visit.

Orange County Animal Services

Orange County North Carolina is home to an amazing new shelter facility, which houses the Animal Services unit. The shelter facility has state-of-the-art airflow design and construction, and has an enthusiastic and passionate staff. The Animal Control Officers for Orange County uphold county ordinances and enforce civil penalties, which are put in place to promote responsible pet ownership. I went on duty with an officer for the afternoon as we served warnings to residents for rabies tag and registration violations. These officers are a pillar for public health.

Chapter 4 - Products Developed

My products developed for this internship included

1. A public health educational / guidance document for the prevention and control of zoonotic diseases from animals in public settings
2. A PowerPoint to teach elementary children about prevention of dog bites.
3. A two-page summary of what I have learned about public health practice at NCDHHS.

Originally, one of my anticipated products was to update a current document on animals in schools. The Animals In Schools document currently on the North Carolina Department of Health and Human Services website outlines appropriate use of animals as teaching tools, but has limited scope outside of a school environment.

After some discussion of North Carolina's events involving the public and illness related to fairs and animal exhibits, it was decided a document that gave guidance to the public about animal contact in public settings was needed.

In North Carolina's recent history there have been numerous illnesses associated with animals in public settings. One such illness in 2004 involved a two-year-old child, Aedin, who was hospitalized following an *E. coli* 0157:H7 infection after visiting a petting zoo at the North Carolina State Fair with her family. She continues to suffer serious complications following the infection. As noted by Senate Bill 268 of 2005, "... It is in the interest of the public health of this State (North Carolina) to ensure that proper sanitation and other procedures are in place at fairs and animal exhibitions to address the potential for disease transmission"¹¹. Stricter guidelines for inspection and permitting were put in place for animal exhibits with the passing of this bill, and aptly named 'Aedins Law'.

The new document "Animals in Public Settings, North Carolina Guide" is a document I created which references authoritative guides, laws and contacts and provides links to relevant sources rather than providing direct written guidance. The new guide will be available to the public on the DHHS website and will provide an online resource for the public to research the topic and engage in healthy behavior around animals in public settings.

The National Association of State Public Health Veterinarians (NASPHV) has published a document 'Compendia of Animals In Public Settings' that is an exhaustive guide and reference for the subject. My research into the project started with the 2011 publication, but the organization has just released a 2013 version. For the organization of the document, it was important to make a comprehensive list of possible venues where the public has contact with animals. It was also noted that the organization by venue would be best, serving both the visitor and the exhibitor. As the document progressed and venues were added and grouped together, the need for authoritative resources grew. I had no problem finding authoritative guidance, but needed to make sure the references I found were applicable to North Carolina. The department has reviewed this document, and I have been asked to write a short summary of each section to better guide the user and to consider adding a section on allergies to the document. The sustainability of a document of this nature depends heavily on the dedication of the department to its maintenance. Please see Appendix A.

I developed a PowerPoint presentation on the prevention of dog bites in young children with the purpose of providing a teaching tool for use by Local Health Department Communicable Disease Nurses and Animal Control Officers. Children ages 5-9 are the most susceptible to dog bites. The presentation should be given in the early spring, a time when children will be outdoors more often⁴. I also wrote a short outline as a guide to the presenter. I took all the photographs used, as it was easier to convey consistency and to illustrate the appropriate interactions. I used the coloring / activity book publication *Staying Safe from Dog Bites* produced by the NCDHHS, and recommendations from the American Veterinary Medical Association as a guide. The presentation I have included in Appendix B is the most current version, and has been reviewed by the department; however, I have been asked to re-format it to a more interactive session with question and open answer type dialogue, and to include cats. This re-formatting will require a few more pictures and some re-evaluation of content, replacing the word 'dogs' with 'animals'. This project was fun for me, as pet photography is a hobby of mine. I have contacts who are elementary educators who helped guide me in the length and focus of the project. Please See Appendix B

I was asked to re-format and adjust a rabies sample submission questionnaire that is used to survey the contacts for rabies-positive cases. The main interest of the survey is the vaccination status of the animal at the time of exposure. In re-writing the survey, it was interesting to learn the relationship between the feral cat management practices and ordinances of a county and the rabies positive cases. Feral cat ordinances are developed and implemented at a county level. For the contacts I surveyed, the counties' responses were varied, and the definitions of the ordinances were unique to each county, which would make it difficult to obtain conclusive data on a relationship between the ordinances and rabies incidence. Please See Appendix C

The difficulty in completing the data collection on this project was my limited time availability, counties had to be contacted during business hours, and county responses. It was at times difficult to make retrospective contact with the primary contact on the rabies reporting form. The new form is available as a more detailed data collection instrument for future use.

At the completion of my internship, I wrote a two-page paper reflecting upon and summarizing what I have learned about public health practice from my field experience in the Communicable Disease Branch. Please See Appendix D.

During my time in North Carolina at various agencies and departments, I kept a handwritten journal in a notebook which logged my note taking, scheduling, areas of interest to research and explore, and brief summary for each day. I also kept a more formal journal of activities in a word document, summarizing each experience and reflections on what I had learned. The journal has been submitted to my preceptor Dr. Haskell, but is not included here, as publishing it would potentially violate HIPAA.

Chapter 5 - Core Competencies

I have fulfilled the Core Competencies in the area of Infectious and Zoonotic Disease as set forth by Kansas State University in the following ways:

My MPH and veterinary coursework have prepared me to identify infectious and zoonotic diseases through the interpretation of clinical signs and laboratory testing. The courses in Emerging Diseases and Global Health have heightened my awareness to diseases and the organizations globally that continue to work to protect veterinary and human health. Understanding the disease triad and how changes in the triad affect disease is an essential concept from my epidemiology course, which correlates to the methods used in disease outbreak investigations.

Immunology and epidemiology have given me a background with which to understand the protocols in place with post-exposure prophylaxis and rabies exposure risk assessment. These courses are also important in understanding the recommendations made by authoritative entities regarding vaccination of the human and animal populations for preventable diseases.

In the course Environmental Toxicology, an assignment and a large part of the course was to develop a risk analysis. I now understand the implications and use of these risk analyses in the work of the Occupational and Environmental Epidemiology Branch to assess health risk and make appropriate recommendations.

Disease events can be quantified and analyzed, and are often the result of surveillance and reporting. The courses biostatistics and epidemiology have shown me that disease patterns and the interpretation of these patterns are important to public health and selecting appropriate control measures.

I have demonstrated strategies to communicate a public health topic to children. Sometimes children are the hardest group to effectively reach. With patience and understanding of the fine line between education and fear, I feel I have communicated appropriate actions for safety around dogs in children based on the recommendations of the American Veterinary Medical Association.

My emphasis is infectious and zoonotic disease, however, I am also interested in food protection and food safety. The food science-related courses I have taken helped me to understand the basis for many of the actions and procedures in food inspection. I am glad this degree was flexible enough to allow me to explore my interest while still being focused in my program of study.

There are endless avenues to explore within the Department of Health and Human Services. I feel I gained knowledge in many different areas of public health while serving as an intern. It was different for me to focus on the human aspects of medicine and prevention, and I enjoyed the challenge of changing my perspective. I found it difficult at first to get a good grasp on the influence each department makes on another, but as time progressed, the relationships became more evident with cases, illustrations and participation in on-call assessments. This experience has given me a great foundation for one health work in the future.

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Appendix A - Animals In Public Settings Guidance Document

ANIMALS IN PUBLIC SETTINGS NORTH CAROLINA GUIDE

INTRODUCTION

This guide is designed to provide a quick reference to resources for North Carolina animal exhibitors and operators of multiple animal venues to assist in creating healthy and safe environments for the public to interact with animals. Human contact with animals and animal excrements (urine, feces, saliva, birthing fluids, etc.) may be associated with zoonotic disease transmission. Zoonotic diseases are infectious diseases transmitted from vertebrate animals to humans. Young children, the elderly and immune-compromised persons are especially susceptible.

The [Compendium of Measures to Prevent Disease Associated with Animal in Public Settings](#), published by the National Association of State Public Health Veterinarians Animal Contact Compendium Committee, is the definitive resource for national guidance. In addition to referencing the Compendium, this document provides more specific North Carolina guidance.

Venues for human-animal interaction are meant to be educational, therapeutic, and/or entertaining, however, if the proper precautions are not taken, these events can put the public's health at risk. Hand washing remains the single most important risk-reducing behavior and should be emphasized at all animal venues. You will find key resources in this document for legal requirements, contacts, venue design, animal husbandry, public education and signage emphasizing preventive behaviors. References to applicable federal and state laws and regulations, Centers for Disease Control (CDC) guidance documents, Morbidity and Mortality Reports (MMWRs), and animal venue-specific websites are provided as necessary guidance for use in public human-animal settings.

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SECTION A – LAWS, CODES AND REGULATIONS

SECTION B – OTHER GUIDANCE DOCUMENTS, CDC MMWRs AND NASPHV COMPENDIA

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2 – PETTING ZOOS

3 – EDUCATIONAL FARMS AND AGRITOURISM

4 – SCHOOL SETTINGS

5 – PET STORES, FEED STORES, REPTILE AND EXOTIC ANIMAL EXHIBITS

6 – RESTAURANTS

7 – SERVICE ANIMALS

SECTION A – LAWS, CODES AND REGULATIONS

- i. North Carolina [General Statutes, Table of Contents](#)
- a. [North Carolina Rabies Control Laws](#)
 - i. § 130A-185 - Vaccination required, Rabies.
 - ii. § 130A-193 - Vaccination and confinement of animals brought into North Carolina, Rabies.
- b. Agriculture [Chapter 106, Agricultural societies and Fairs Article 45](#)
 - i. § 106-516 to § 106-519 - Vendors, Exhibitors and Licensing.
 - ii. § 106-520.1 - Definition of 'fair'
 - iii. § 106-520.3A - Animal exhibition regulation; permit required; civil penalties. (Aedin's Law)
 - 1. 2005 Original General Assembly Senate Bill 268 - [Aedin's Law](#)
- ii. North Carolina [Administrative Code, Table of Contents](#)
 - a. Agriculture and Consumer Services - Title 02
 - i. Chapter 52, Veterinary
 - 1. NCAC 52B .0212 Importation Requirements : Wild Animals
 - 2. NCAC 52K .0101-.0702 - Animal Exhibitions
 - b. Health and Human Services – Title 10A
 - i. Chapter 41, Epidemiology Health
 - 1. NCAC 41A.0302 – Sale of Turtles Restricted
 - 2. NCAC 41A.0303 – Recording the Sale of Birds
 - 3. NCAC 41G .0101-.0103 – Rabies
 - c. Environment and Natural Resources
 - i. Chapter 18, Environmental Health
 - 1. NCAC 18A .2656 – Physical Facilities
- iii. Federal Code of Regulations, USDA, Animal Welfare Act
 - a. [Animal Welfare Act as of February 1, 2010 \(PDF | 122 KB\)](#)
 - b. [Animal Welfare Regulations \(PDF | 463 KB\)](#)
 - c. APHIS Animal Care Program, [Animal Welfare Homepage](#)
 - i. [Licensing Information](#)
 - ii. [Licensing Application Kit](#)
- iv. [Local Ordinances in North Carolina](#)

SECTION B – OTHER GUIDANCE AND COMPENDIA

- i. Centers for Disease Control – Morbidity and Mortality Weekly Report, [Compendia of Measures to Prevent Disease Associated with Animals in Public Settings](#), by the National Association of State Public Health Veterinarians.
- ii. [North Carolina Rabies Public Health Program Manual](#)
- iii. Centers for Disease Control – [Healthy Pets Healthy People](#)
- iv. [Compendium of Animal Rabies Prevention and Control, 2011](#) by National Association of State Public Health Veterinarians.
- v. [USDA Animal Care Policy](#)

SECTION C - CONTACTS

- I. [NC DHHS Veterinary Public Health](#)
919-733-3419
- II. North Carolina [Health Departments](#) by County
- III. [NC Department of Agriculture and Consumer Services](#), Veterinary Division
919-733-7601
- IV. [APHIS United States Department of Agriculture](#), Animal Welfare

SECTION D - VENUES

VENUE 1 – FAIRS

- i. Please see Appendices A and B of [Compendia of Measures to Prevent Disease Associated with Animals in Public Settings 2011](#).
- ii. Tips from the CDC to prevent illness when visiting animal exhibits. [Stay Healthy at Animal Exhibits this Summer](#)
- iii. [Animal Contact Exhibit Information](#) from the North Carolina Department of Agriculture & Consumer Services
- iv. [MMWR State Fair – E. Coli](#)
- v. North Carolina [MMWR State Fair Outbreak of E. Coli 2011](#)
- vi. The State Fair Study Commission initialized [changes in pedestrian and animal traffic patterns](#) that are designed to reduce health risks.
- vii. [H3N2 Swine Flu Factsheet](#) –Centers for Disease Control
- viii. [Downloadable signage](#) from the North Carolina Department of Agriculture and Consumer Services

VENUE 2 - PETTING ZOOS

- i. Please see Appendices A and B of [Compendia of Measures to Prevent Disease Associated with Animals in Public Settings 2011](#).
- ii. [Animal Contact Exhibit Information](#) from the North Carolina Department of Agriculture & Consumer Services
- iii. Do I need a permit for my petting zoo? See the [Flowchart](#) from the North Carolina Department of Agriculture & Consumer Services
- iv. [2004 Report of Shiga toxin producing E. coli](#) infections associated with a petting zoo at the North Carolina State Fair
- v. [Downloadable signage](#) from the North Carolina Department of Agriculture and Consumer Services

VENUE 3 - EDUCATIONAL FARMS AND AGRITOURISM

- i. So you want to Start and Agritourism Farm? [Start Here](#).
- ii. [Agritourism guidance](#) by North Carolina Department of Agriculture and Consumer Services
- iii. Is Agritourism right for you? [Factsheet](#) by North Carolina State University, Cooperative Extension
- iv. [Downloadable signage](#) from the North Carolina Department of Agriculture and Consumer Services

VENUE 4 - SCHOOL SETTINGS

- i. Please see Appendices D of [Compendia of Measures to Prevent Disease Associated with Animals in Public Settings 2011](#)
- ii. National Science Teachers Association [position statement](#) on the responsible use of live animals and dissection in the science classroom.
- iii. National Association of Biology Teachers [position statement](#) on the use of animals in biology education.
- iv. [Rabies and Kids](#), Centers for Disease Control

VENUE 5 – PET STORES, FEED STORES, REPTILE AND EXOTIC ANIMAL EXHIBITORS

- i. Exotic Animals
 - a. Administrative Code [02 NCAC 52B .0212](#) Importation Requirements: Wild Animals
 - b. Auctions, [USDA License](#)

- c. Animal Care, [USDA Exhibit Animal Species](#)
- ii. USDA APHIS Animal Welfare Act, [Retail Pet Store Rule](#)
- iii. Some animals are not recommended as pets because of the health risk to young children. Please use caution when handling these animals
 - a. Poultry
 - i. [Risks of Salmonella from live baby poultry](#), CDC
 - ii. North Carolina Department of Agriculture & Consumer Services, Veterinary Division [Letter to Pet Stores](#) encouraging protection of public health.
 - b. Reptiles and Amphibians
 - i. CDC's Recommendations on [Reptiles and Amphibians](#)
 - ii. Pet Turtles - [FDA Consumer Health Information](#)
 - iii. North Carolina [Turtle Code](#)

VENUE 6 - RESTAURANTS

- i. Animals are often in public, but how should they be handled in restaurants? Please see the [North Carolina Food Code Manual](#) for more information. (See manual page 178, section 6-501.115, Prohibiting animals)
- ii. Administrative Code – 15A NCAC 18A .2656, Physical Facilities, [Rules Governing the Food Protection and Sanitation of Food Establishments](#), September 2012
- iii. Please also see [Section 7](#) about Service animals.

VENUE 7 - SERVICE ANIMALS

- i. Under the Americans with Disabilities Act published by the Department of Justice, “entities must permit service animals to accompany people with disabilities in all areas where members of the public are allowed to go”. Please See [ADA 2010 Revised Requirements - Service Animals](#).
- ii. Here are some commonly asked questions about service animals in places of business. [ADA Q and A - Service Animal Access](#).
- iii. A service animal may accompany persons with disabilities. North Carolina General Statutes [North Carolina General Statutes § 168-4.2](#).
- iv. North Carolina Requires a service animal to be registered, [Application for service animal registration](#).

PREPARED BY
NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
NC DIVISION OF PUBLIC HEALTH: EPIDEMIOLOGY SECTION
Communicable Disease Branch, Veterinary Public Health

ANIMALS IN PUBLIC SETTINGS | 7

Appendix B - Staying Safe Around Dogs

Staying Safe Around Dogs

As the CDC states, "Nearly 4.5 Million Americans are bitten by dogs each year, half of these are children."⁷ This lesson is intended to educate children at highest risk of dog bites (ages 5-9)⁴ about safety and appropriate interaction around dogs. It is recommended to give this presentation toward the end of the school year, a time when more children will be outdoors, and risk of exposure is greater. AVMA

It is recommended to engage your audience throughout the presentation. Ways to do this are ask general Yes/No questions, and take surveys by having the students raise their hands. Don't be afraid to repeat yourself, and most importantly, have fun.

Slides :

1. **TITLE SLIDE**
 - a. Introduce yourself!
 - b. It is almost summertime! That means we will be doing more things outside!
 - c. I am here today to teach you about dogs and how to stay safe around them.
2. **DOGS DOGS DOGS**
 - a. Raise your hand if you have a dog at home.
 - b. (you may also ask silly questions to engage them)
 - c. Who has a Brown dog? Who has a big dog?
3. **DOGS CAN BE GREAT FRIENDS**
 - a. Raise your hand if you have friends, we all have friends!
 - b. Dogs can be great friends, but
 - c. Any dog can bite, even the ones at home, so we must learn how to stay safe around them
 - d. Friends do things like play, run and laugh together.
 - e. We might enjoy those things, but dogs may not understand, and be scared.
4. **WHAT DOGS LIKE AND DON'T LIKE**
 - a. Now let's talk about things that dogs LIKE.
 - b. What do dogs like? (ambiguous audience chatter)
 - c. Dogs like soft, smooth, touch.
 - i. Some dogs may not like it if we pet them on the head.
 - ii. Stand beside the dog and make long, smooth and soft strokes down their back in the same direction as their fur
 - d. And dogs DONT like Hugs. Did you know dogs don't like hugs?
5. **WHAT DOGS LIKE AND DON'T LIKE**
 - a. Dogs really like inside voices. Dogs also like compliments. Did you know dogs like compliments? ("you look so very handsome today spike!")
 - b. Dogs DON'T like yelling or screaming, it hurts their ears, and they might be scared.
6. **WHEN SHOULD WE PET A DOG?**
 - a. Sometimes we might want to pet our dog, be he might be busy.
 - b. Should we pet a dog that is busy chewing on a bone? NO!
 - c. Should we pet a dog that is busy eating? How about sleeping? NO!
 - i. Do NOT pet a dog that is busy chewing on a bone or eating food, they might think we are trying to take it.
 - d. We should STAY AWAY for now, and come back later.

7. SAY IT AGAIN, PLEASE

- a. Lets Review.
- b. Dogs make great friends, but any dog can bite.
- c. Don't bother a dog while he's eating

8. SAFE WITH DOGS AT HOME

- a. We just learned how to be safe around dogs we know.
- b. What should we do when meeting a new dog?

9. SHOULD WE PET THIS DOG?

- a. This dog is behind a fence, should we go over and pet her?
- b. NO – we should never pet a dog behind a fence.
- c. This dog is all alone, I don't see any owner. Should we pet this dog?
- d. NO! We should not pet a dog without an owner and a parent around.

10. SEES A DOG ON A LEASH

- a. Here's a handsome dog out for a walk with his owner
- b. We would very much like to go and pet the dog.
- c. Lets learn what to do next.

11. SMART STUDENTS WAIT

- a. What does that mean? Lets take a look...

12. W

- a. The W is for WAIT.
- b. Take a deep breath and be calm.
- c. We should never run toward a dog.

13. A

- a. The A is for ASK an Adult
- b. We should always ask both our parents and the owner first.
- c. "May I pet your dog?"
- d. If there is no Adult around, we STAY AWAY.

14. I

- a. The I is for INTEREST.
- b. We want to meet the dog, but does the dog want to meet me?
- c. How do dogs check things out? With their noses!
- d. To let the dog smell, put you hand in a ball, and let the dog smell the back of your hand.
- e. If the dog growls or seems scared, STAY AWAY

15. T

- a. Finally, T is for TOUCH.
- b. We WAITED, and the dog looks friendly.
- c. We ASKED and Adult.
- d. We let the dog smell the back of our hand to see if he was INTERESTED in meeting us and he still looks friendly.
- e. Now we may TOUCH the dog, in a calm slow motion, with the direction of the fur.

16. SUMMARY

- a. Great Job!
- b. What have we learned today so far?
- c. We have learned how to be kind to our dogs at home, we know what they like and what they don't like.
- d. We just learned how to WAIT before petting a dog.
- e. (you may ask additional questions to keep them engaged)

17. WHAT IF AN ANIMAL COMES TOWARD ME?

- a. Lets talk about dogs we don't know...
- b. What if a dog I don't know comes toward me?
- c. You might be scared, but don't scream or run.
- d. Be still like a tree – Can you be still like a tree?
- e. Don't look the dog in the eyes, and back away slowly to safety.

18. WHAT IF A DOG KNOCKS ME DOWN?

- a. Stay Calm.
- b. If you feel safe, get up and back away slowly.

19. PROTECT YOURSELF

- a. If you are knocked down, curl into a ball and cover your head.
- b. Do not scream
- c. Protect yourself and Wait for an adult

20. QUIZ –

- a. We have learned so much today!
- b. Lets see what you remember about staying safe around dogs.
- c. Who should I ask before petting a dog?
 - i. An ADULT – the owner and a parent
- d. May I pet a dog that is eating ?
 - i. No! Don't pet a dog that is busy eating, STAY AWAY
- e. What should I do if a dog I don't know comes toward me?
 - i. Be still like a tree, then Back away slowly to safety

Resources

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STAYING SAFE AROUND DOGS

A GUIDE FOR TEACHING SCHOOL CHILDREN

Dogs Dogs Dogs!



Dogs Can Be Great Friends!

We must learn how to be safe around them



What Dogs Like and Don't Like

LIKE - SOFT SMOOTH TOUCH

DON'T LIKE - HUGS

- Picture-
- Close up petting dog



What Dogs Like and Don't Like

LIKE – INSIDE VOICES
- COMPLIMENTS

DON'T LIKE

- Picture -
- Yelling or Screaming



When Should We Pet Dogs?



- This Dog is Chewing on a Bone.
- Should we pet her?
- STAY AWAY and come back later.

When Should We Pet Dogs?

- This dog is eating.
- Should we pet her?
- STAY AWAY and come back later.



Say It Again, Please...

- STAY AWAY when dogs are chewing on Bones or eating food.



Say It Again, Please...

- STAY AWAY when dogs are chewing on Bones or eating food.
- Dogs Don't like hugs, but they do like inside voices and can be great friends!



Safe With Dogs at Home

- How do we stay safe around new dogs we meet?



Should We Pet This Dog?



Should We Pet This Dog?



Should We Pet This Dog?

- This dog is with an Adult on a leash out for a walk.
- Lets Learn what to do when we first meet a dog.



Smart Students WAIT!

- W
- A
- I
- T



Smart Students WAIT!

- **W = WAIT**
 - A
 - I
 - T
-
- Take a deep breath
 - Does the dog look friendly?



Smart Students WAIT!

- W = WAIT
 - **A = ASK an ADULT**
 - I
 - T
-
- NO ADULT = STAY AWAY
 - The adult will tell you if their dog would like to meet you



Smart Students WAIT!

- W = WAIT
 - A = ASK
 - **I = INTEREST ?**
 - T
-
- NO INTEREST = STAY AWAY



Smart Students WAIT!

- W = WAIT
- A = ASK
- I = INTEREST ?
- **T = TOUCH**



Lets Review!

- GREAT JOB!
- What we have learned so far:
 - Be kind to our dogs at home
 - We know what dogs like and don't like
 - We learned how to WAIT before petting a dog

What if an animal comes toward me?

- Be still like a tree
- Do Not Scream
- Do Not Run



What if an Animal Knocks Me Down?



Protect Yourself



QUIZ

- Who should I ask before petting a dog?
- May I pet a dog that is eating?
- What should I do if a dog comes toward me?

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Appendix C - Rabies Sample Submission Questionnaires

Rabies Sample Submission Questionnaire

A. Person being interviewed or completing the questionnaire:

Title (check one): 1. Owner's veterinarian 4. Wildlife officer agency: _____
2. Shelter veterinarian/staff 5. Other (specify: _____)
3. Animal control officer agency: _____

B. Did the submitter have an established relationship with the animal and client prior to onset of symptoms?

1. Yes (please go to C) 2. No (please go to D)

If yes then answer C. If no then skip to question D.

C. Approximately how many times had you seen the patient prior to onset of symptoms?

1. Did not see prior to onset of symptoms
2. 1 to 3 times
3. 3 to 5 times
4. 6 to 10 times
5. More than 10 times

D. Animal info (circle or fill in the blank):

D1. Species:

1. Dog 2. Cat 3. Horse 4. Cow 5. Other (specify: _____)

D2. Sex:

1. Male 2. Female

D3. Status

1. Spayed /neutered

2. Intact

D4. Approximate age (years): _____

1. Less than 1 year old
2. 1 to < 2 years old
3. 2 to < 4 years old
4. 4 to < 6 years old
5. 6 years old or more

E. Housing:

1. Indoors 2. Outdoors 3. Indoor/outdoor mix 4. Unknown

County/city and state residing in or found in:

County/City: _____ State: _____

F. Rabies vaccination history (please write in 'unknown' where information is unavailable):

Date (mm/dd/yyyy)	Product (3 yr / 1 yr)	Manufacturer

G. Description of illness:

First sign of illness: _____ Onset date: _____

H. Other signs of illness:

	Increase	Decrease	None/ No change	D/K	If increase or decrease, then enter number days prior to death
1. Behavioral					
a. aggressiveness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. lack of awareness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. lethargy	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. sleep pattern	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. jumpiness/nervousness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. irritability	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
g. vocalization	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
h. licking	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
i. other (specify: _____)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
2. Central nervous system					
a. abnormal eye movement/nystagmus	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. seizures	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. weakness (paresis/paralysis)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. head tilt	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. shaking or tremors	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. circling	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
g. ataxia	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
h. other (specify: _____)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
3. Digestive					
a. vomiting	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. diarrhea	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. lack of appetite/ not eating (anorexia)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. not drinking	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. trouble swallowing/ dysphagia	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. dropped jaw and/or protruding tongue	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
4. Other					
a. fever		Yes <input type="checkbox"/> 1.	No <input type="checkbox"/> 3.		_____ days
b. other (specify: _____)		Yes <input type="checkbox"/> 1.	No <input type="checkbox"/> 3.		

Initials _____

Lab ID # _____

Rabies Sample Submission Questionnaire

A. Person being interviewed or completing the questionnaire:

Name(s): _____

- 1. Owner's Veterinarian
Practice: _____
Phone: _____
- 2. Shelter Veterinarian/staff
- 3. Animal Control Officer - Agency: _____
- 4. Wildlife Officer - Agency: _____
- 5. Caretaker (if feral or stray)
- 6. Owner
- 7. Other (specify: _____)

B. Did the submitter have an established relationship with the animal and client prior to onset of symptoms?

- 1. Yes (please go to C)
- 2. No (please skip to D)

C. Approximately how many times had you seen the patient prior to onset of symptoms?

- 1. Did not see prior to onset of symptoms
- 2. 1 to 3 times
- 3. 3 to 5 times
- 4. 6 to 10 times
- 5. More than 10 times

D. Animal information (circle or fill in the blank):

D1. Species:

- 1. Dog
- 2. Cat
- 3. Horse
- 4. Cow
- 5. Other (specify: _____)

D2. Sex:

- 1. Male
- 2. Female
- 3. Unknown

D3. Status:

- 1. Spayed /neutered
- 2. Intact
- 3. Unknown

D4. Approximate age (years): _____

- 1. Less than 1 year old
- 2. 1 to < 2 years old
- 3. 2 to < 4 years old
- 4. 4 to < 6 years old
- 5. 6 years old or more
- 6. Unknown

D5. Ownership Status

- 1. Owned
- 2. Feral
- 3. Stray
- 4. Managed Colony Member
- 5. Unknown

E. Housing:

- 1. Indoors
- 2. Outdoors
- 3. Indoor/outdoor mix
- 4. Unknown

F. County/city and state of residence or capture :

County/City: _____ State: _____

H. Does the county of animal residence/capture have a local Feral Cat Management Ordinance?

- 1. Yes
- 2. No
- 3. Unknown

I. Were there human exposures to this animal

Did the animal bite?

- 1. Bite
- 2. Scratch
- 3. Handling
- 4. Unknown
- 5. Other (non-bite)

describe: _____

J. Has the animal ever been vaccinated against Rabies?

- 1. Yes (Please fill in J1)
- 2. No
- 3. Unknown

Initials _____

Lab ID # _____

J1. Rabies vaccination history (please write in 'unknown' where information is unavailable):

Date (mm/dd/yyyy)	Product (3 yr / 1 yr)	Manufacturer

K. Description of illness:

Onset date: _____

First clinical signs of illness: _____

L. Other signs of illness:

	Increase	Decrease	None/ No change	If increase or decrease, then enter D/K number days prior to death	
1. Behavioral					
a. aggressiveness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. lack of awareness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. lethargy	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. sleep pattern	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. jumpiness/nervousness	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. irritability	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
g. vocalization	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
h. licking	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
i. other (specify: _____)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
2. Central nervous system					
a. abnormal eye movement/nystagmus	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. seizures	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. weakness (paresis/paralysis)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. head tilt	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. shaking or tremors	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. circling	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
g. ataxia	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
h. other (specify: _____)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
3. Digestive					
a. vomiting	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
b. diarrhea	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
c. lack of appetite/ not eating (anorexia)	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
d. not drinking	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
e. trouble swallowing/ dysphagia	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
f. dropped jaw and/or protruding tongue	<input type="checkbox"/> 1.	<input type="checkbox"/> 2.	<input type="checkbox"/> 3.	<input type="checkbox"/> 4.	_____ days
4. Other					
a. fever		<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No		_____ days
b. other (specify: _____)		<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No		_____ days

Appendix D - Public Health Practice

Public Health Practice at North Carolina Department of Health and Human Services, Division of Public Health, Communicable Disease Branch

Ashley R. Bredenberg

My Field experience at the North Carolina Department of Health and Human Services Division of Public Health Communicable Disease Branch was exceptionally informative and educational, with a vast array of experiences and opportunities.

Public Health practice is a collaborative effort and cannot be characterized by a single branch or organization. The NC Division of Public Health (DPH) is a pool of expertise across many disciplines and backgrounds, which makes for a diverse and knowledgeable team. Cooperation and communication among divisions, sections and branches in the organizational tree of the Department of Health and Human Services makes an intricate and fluid system well equipped to support the state's public health needs.

North Carolina's public health system is focused at the county level. Each county has a local health director who is the administrative head of the local health department, and performs public health duties under the supervision of the local board of health and the Department. Local health departments are assisted and supported by the state Department of Health and Human Services in accordance with NC general statute. Communicable diseases, reportable conditions and public health events are reported to and investigated by the local health director and his or her staff.

The Communicable Disease Branch (CDB) serves the entire state through on-call support (24/7) in the areas of rabies and communicable diseases. Many of the communicable disease calls come from the county communicable disease nurses and local health directors, while many of the rabies calls come from County Animal Control officers and veterinarians requesting clarification of the state rabies laws and guidance. The lines are always open to the public for medical consultation;

however, the focus is to consult, prevent and control disease in the population or the community as a whole rather than treating an individual patient. Often patients are referred to their primary care physician for specific consultation. North Carolina has an online communicable disease manual which links to resources related to investigation, reporting, and control of communicable disease. It also links to other communicable disease manuals such as Rabies, Hepatitis B, Tuberculosis, Sexually Transmitted Diseases and Vaccine-Preventable Disease. These separate resources outline the laws and codes set forth by the state, as well as provide guidance documents and other reference materials and resources for local health departments and other local and state agencies.

Reporting and surveillance of diseases are both key tools for the success of a public health system. North Carolina has electronic web-based surveillance systems in place for laboratory reporting of disease events and to identify outbreaks earlier than reporting upon diagnosis of disease, and have replaced older paper systems and forms .

North Carolina has a unique real-time surveillance program called the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). Funded by federal bioterrorism grants, this tool collects International Classification of Diseases (ICD) coding data from the Carolinas Poison Center, hospital emergency departments, ambulance calls and some urgent care facilities. These data can then be reviewed and analyzed for event tracking and investigation of possible outbreaks. North Carolina Electronic Disease Surveillance System (NC EDSS) is a reporting surveillance system that receives reporting data from local health departments, several laboratories including the State Laboratory of Public Health, and HIV/STD regional offices. This regional data is available to the individual health departments, and the collaborative data is available to the DPH.

Investigations of possible outbreak situations are initiated by the local health departments, upon initial notification, and begin with the collection of pertinent information by the communicable disease nurses and the local health directors. The communicable disease branch is informed of the outbreak details, and a situation report is written and sent out by email to the entire Epidemiology section. The

Situation Report includes the following information: date and time of initial event notification, reporting Epidemiologist, event, location, primary local health department contacts, a narrative of the situation and any action items for review. The case definition for a particular outbreak is created and defined by the following parameters: window of time, geographic location, and usually CDC toolkit case definition for the disease of interest. Some investigations involve a site visit with various personnel from the Communicable Disease Branch, and may involve other branches from within the Public Health division.

While serving the public with prevention, education, investigation and disease control, the protection and security of private patient information is extremely important. The Department of Health and Human Services protects the individual's privacy as they strictly follow HIPAA guidelines.

My Experience in this department was short, but rewarding and very educational. I got to walk the many paths of public health within and outside of this branch. This team is a cohesive force, bringing efficiency to the community level with state support in public health.