R25 Practicum Report

Ethiopian Health and Nutrition Research Institute

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Section I: Practicum Report

Introduction

My practicum took place at the Ethiopian Health and Nutrition Research Institute (EHNRI), in Addis Ababa, Ethiopia. Specifically, my project was located in the rabies office at EHNRI, the sole location in Ethiopia where rabies Post-Exposure Prophylaxis (PEP) prescriptions are available, and therefore, where all recorded cases of potential human rabies exposures throughout the nation are received. The objectives of this practicum were to examine clinical and laboratory cases of human rabies within EHNRI and to provide epidemiological data about the health burden of rabies in Addis Ababa. Additionally, the goal was to pilot a mechanism to gather reliable epidemiological data for zoonotic diseases, such as rabies, in underserved populations. This practicum met these objectives and allowed for use of both veterinary and public health knowledge in gathering information from rabies exposure victims both in and outside of Addis Ababa. Through both the development of the questionnaire and during the interviews themselves, my understanding of epidemiological data collection improved, and the zoonotic nature of rabies exposed me to the challenges of addressing a disease requiring control from a multi-disciplinary approach. Further, gaining a better understanding of the lack of reliable rabies data from outside of Addis Ababa more effectively framed the magnitude of the problem in creating a strategic public health response to this rabies. In addition to the focus on data collection, I also had the opportunity for observation of and participation in the Direct Rapid Immunohistochemistry Test (dRIT), Direct Fluorescent Antibody assay (DFA) and lateral flow rabies diagnostic techniques. As the DFA is considered the gold standard rabies diagnostic test, exposure to the dRIT and lateral flow techniques was a unique opportunity to appreciate the application of laboratory diagnostics to the specific needs of a region.

Questionnaire development

Questionnaire development among any population is challenging, and this challenge is enhanced in a foreign country, especially one in which the local culture is unfamiliar. Needless to say, I have learned about Ethiopian culture, attitudes towards rabies and local individual interactions with animals through the development of this questionnaire. The CDC graciously provided template questionnaires that had been used for previous rabies studies on which I was able to build, and my colleagues at EHNRI kindly offered numerous suggestions and helpful critiques to improve the initial draft questionnaire. The final product was a mixture of open-ended questions, categorical short-answer questions and yes/no questions covering demographic information, rabies knowledge, exposure data, post-exposure actions taken and status of suspect animals. Interviews took place at EHNRI and at the nearby St. Paul’s Hospital between 30 March 2011 and 18 April 2011, and at the time this report was written, 102 questionnaires had been collected. Translators during the interviews were all knowledgeable about rabies and accustomed to interviewing exposure victims, and most interviewers took part in questionnaire development as well. Although I was fortunate to work with patient and dedicated translators, it is difficult to conduct a survey in an unfamiliar language, and adjustments to wording of certain questions, as well as additions or deletions of questions were made during the initial days of interviewing. Another challenge was the length of the questionnaire—there was a great deal of valuable
knowledge that my colleagues at EHNRI, contacts at the CDC, OSU faculty mentor and myself wanted to extract from the interviews, while at the same time respecting the fact that we were interviewing injured individuals, often under high amounts of stress. It was challenging to narrow down the questions to a manageable number and attempt to elicit information from each question in the most efficient way possible.

Following my practicum at EHNRI, I plan to complete an elective rotation at the Centers for Disease Control and Prevention in Atlanta, GA. Analysis of the collected data, as well as retrospective data from rabies exposure cases during 2011, will be conducted at this time. The goal of this analysis will be to submit a report for publication, in conjunction with EHNRI and CDC co-authors, that will be of value in providing information needed to address the rabies situation in Ethiopia.

Current needs in addressing rabies in Ethiopia

It is well known that rabies is a zoonotic disease that poses significant danger to both human and animal populations. Although the questionnaire data is still being collected and no analysis has been conducted at this point, it is clear that most suspect rabies exposures during the project time frame were due to domestic canine bites (in agreement with previous findings), most bites were unprovoked, dog bites/scratches were from both owned and stray dogs, a sizeable portion of victims were children 15 years of age or younger, a concerning number of medical personnel are unable to direct exposure victims to appropriate PEP treatment and most victims resided in Addis Ababa. Additionally, I personally observed numerous stray dogs and cats roaming the streets near my living area on a regular basis. This initial assessment points to some of the more obvious factors of this disease that must be addressed, including disease control within the domestic canine population, population control of stray dogs and responsible ownership of owned dogs, education of the public and medical community regarding risk of rabies and improving access to PEP prescriptions to the population outside of Addis Ababa. Many of these issues have been well-documented in the rabies literature and there are many examples of effective rabies prevention and control programs that have been implemented in both higher and lower income countries as well. At this point in time, however, the most pressing problem, and the issue that prevents immediate implementation of prevention and control measures known to be effective, is the lack of country-wide, reliable epidemiological rabies data. Without this data, Ethiopia will be able to neither procure funds for nor strategically plan an effective and sustainable rabies control program. This scale-up of data collection should likely begin with the dRIT diagnostic procedure receiving approval for and being implemented into regional laboratories across Ethiopia, allowing more accessible rabies diagnostic capabilities outside of Addis Ababa that can be confirmed with the gold standard DFA procedure in the capital. Countrywide bite/exposure surveillance must also be completed at local health posts across Ethiopia in order to ascertain the bite burden distribution, and this can be accomplished through the country-wide rabies surveillance program that is currently in its planning stages. All this will allow the beginnings of a multi-disciplinary approach to addressing this disease.

1Personal communications from Drs. Abraham Ali and Fasil Mengistu, Ethiopian Health and Nutrition Research Institute, Addis Ababa.
**Recommendations for rabies prevention/control program**

Effective control of rabies in any region of the world must embrace a multi-faceted approach, recruiting the expertise of veterinary, medical, public health and government personnel. Awareness and support of this disease among the general public is important as well, in order to foster not only a constituency that encourages governing officials to prioritize rabies, but also a society that is motivated to support control of this disease through private donations and support of non-governmental programs. Furthermore, a consistent and adequate source of funding is necessary for a sustainable and effective rabies research, prevention and control program. First and foremost, this devastating disease cannot be controlled in the human population of many African countries without effective management in the canine population.\(^3\) Sustainable vaccination programs, Animal Birth Control (ABC) programs, management of stray dogs and education of dog owners and the general public regarding responsible ownership and safe dog interactions likely would be best handled by the veterinary community. Education of medical professionals regarding recognition of risks of exposure and symptoms of rabies in humans, as well as proper first aid of exposure victims likely should be addressed by the medical community. Public health professionals are equipped to provide expertise both to improve public knowledge of and behavior toward rabies (how to recognize exposure risks, first aid needed following an exposure and where to obtain PEP treatment) as well as epidemiological mapping of the distribution of canine rabies and rabies exposures in Ethiopia and assessment of knowledge, attitudes and practices of the public toward rabies. Public health, medical and veterinary professionals are all equipped to contribute to vaccine procurement and development in order to implement effective prevention and treatment measures. All of these issues will be helped by government awareness, concern and support for a sustainable and effective rabies program in Ethiopia.\(^2\)

**Summary**

In summary, there is much to be done and a diversity of expertise needed to sufficiently address the problem of rabies in Ethiopia. EHNRI’s project to implement an effective rabies surveillance system that includes regional laboratory diagnostic capabilities should provide the foundation on which to build a strategic rabies prevention and control program. In order to accomplish these goals, however, support and cooperation of both national and international health organizations as well as funds allocation and public support are needed in order to effectively and sustainably combat this destructive disease.

**Section II: Practicum Experience**

Overall, this global health practicum at the Ethiopian Health and Nutrition Research Institute has been an excellent experience. The staff at EHNRI, particularly Drs. Abraham and Fasil, has been extremely attentive both in providing support for the practicum project and also in addressing any difficulties I experienced related to adjusting to Ethiopia. I have greatly appreciated their interest in the project and willingness to offer helpful feedback and suggestions when needed. Although it was not possible to allot

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\(^2\) Personal communication from Dr. Fasil Mengistu, Ethiopian Health and Nutrition Research Institute, Addis Ababa.
more time to this practicum due to schedule constraints, I do regret that I was not able to spend more
time at this site in order to conduct more interviews and begin the initial data analysis.

Expectations

Although, due to my unfamiliarity with Ethiopia, I did not enter my practicum with concrete
expectations outside of my proposed objectives, I was impressed with how quickly the questionnaire
was completed and initial interviews were conducted. The EHNRI rabies staff was quite willing to discuss
the implications of various questions in detail during the questionnaire development phase, and this
greatly facilitated a relatively smooth transition into the pilot interview phase of the project. I was also
somewhat surprised at the interest of bite victims in participating in the interviews, especially
considering that some of them were suffering from very recent injuries.

Responsibilities

My daily responsibilities for this practicum involved conducting rabies exposure victim interviews (this
was done on an “as-needed” basis, and individuals would arrive throughout the day for PEP
prescriptions and interviews), data entry, review of relevant literature and some observation/participation in laboratory diagnostic procedures. I typically worked from 8am-6pm on
weekdays, and from 8am-3pm on Saturdays.

Logistics

Regarding logistics for this practicum, Dr. Luce, a member of CDC-Ethiopia staff, provided many valuable
suggestions for accommodations and general preparation for the trip, and was a much-needed resource
during the planning stages of this practicum. I was able to stay at a nearby hotel which was an
approximately five minute walk from my site, and this made transportation during the course of the
practicum relatively simple. Otherwise, transportation is somewhat more complicated without a
fundamental grasp of the local language, as taxis and “minibuses” are the main modes of commercial
transportation. Although many hotels in Addis Ababa accept credit cards, my hotel did not, and nearly
all other transactions are made with cash, so any future students at this site should be advised to bring
enough cash for the entire trip, if possible. There was a variety of both local and European food available
within walking distance of my site and hotel, so finding places to eat in this area is not difficult. To any
future students at this site, I would recommend bringing sunscreen (if used), vitamins and any over-the-
counter medications used, as OTC medications from the U.S. generally are not available in Ethiopia.

Conclusion

As detailed in the preceding section, I have learned a tremendous amount through this practicum, and
felt that I was able to utilize both my veterinary and public health knowledge throughout the course of
the project. I have also enjoyed the time I have been able to spend learning more about Ethiopian
culture both on and off my practicum site. Even within the short time-frame, this practicum made highly
efficient use of the time available on-site, and was a very positive experience that I would recommend
to future interested students.
References


1 Room at the Motera Hotel ($11/night). Photo taken from the hallway door.
2 Closet and television at Motera room.
3 Opposite view of Motera room (taken from veranda side of room).
4 Bathroom at Motera.
5 Bathroom at Motera.
6 View from veranda at Motera Hotel.
Most of rabies group and me in front of EHNRI rabies office.
8 EHNRI colleagues and me before airport departure.
9 Produce stand in Piazza area of Addis Ababa.
10 Dr. Asefa in front of the EHNRI canteen.
11 Mr. Desalle in the interview room.
12 The lateral flow test.
The lateral flow test.
Combining brain samples for the lateral flow test.
This photo was taken at a Palm Sunday service. The girl in the picture made a headband for me out of palm branch leaves.
16 My colleague Alex and the girl from previous picture at the Orthodox service.
17 Main gate to the Ethiopian Health and Nutrition Research Institute.
18 Waiting area outside EHNRI rabies office.
19 Ethiopian flag on EHNRI campus.
20 First hotel room at Embilta Hotel ($45/night).