

Elective in International Health - Bolivia

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Goals of Elective:

- Provide exposure to diseases not generally encountered during U.S. medical training.
- Develop medical skills necessary to practice in a setting that lacks many technological advances.
- Provide a cross-cultural medical experience beyond what is possible in the U.S.
- Allow students and residents to develop and nourish their sense of altruism.
- Expose students and physicians early in their careers, to the possibilities of working in the developing world and/or under-served populations.
- Understand the interaction between health and social, cultural and environmental issues.

Elective Overview

Supervision:

On site supervision of the students is carried out by U.S. physicians (often Northwestern or Loyola Medical School faculty) and Bolivian physicians approved by the course directors, as well as by Medical Residents from Northwestern, Loyola and other institutions. Occasionally physicians from outside the U.S. and Bolivia may supervise, if present.

Duration:

4-8 weeks (each student's and resident's rotation is reviewed individually). In some circumstances, longer periods can be arranged.

Number of students/residents:

Maximum 4 students and 2 residents

Special Note:

Students must be in good academic standing and have demonstrated commitment to medicine in underserved areas in the past. All students and residents must be sufficiently fluent in Spanish so as to be able to perform complete histories on their patients and communicate information to them.

Educational Goals and Objectives

Medical Knowledge:

- Recognize and understand diseases endemic to the area including malaria, yellow fever, dengue, Chagas disease, parasitic diseases, and leishmaniasis.
 - Clinical experience will be supplemented by formal lectures. Students and residents are expected to read the appropriate sections in their Medicine and Pediatric textbooks on infectious diseases and tropical medicine prior to their rotation. A variety of textbooks are available at the clinic to supplement this material. PDF's of several articles relating to tropical diseases are available on the website of the Clinic (see list at end).
- Comprehend basic pathophysiology, explain clinical presentations and complete diagnostic strategies and prognosis for these endemic diseases, with and without medical care.
- Complete care plans for these endemic diseases that include appropriate strategies for care with limited resources.
- Assist in management of chronic diseases such as diabetes and hypertension in a rural environment with relatively limited resources.

- Examine the role of community-based interventions in providing health care in rural communities with limited follow-up to ensure proper treatment in patients with chronic health issues.

Interpersonal and Communication Skills:

- Demonstrate effective communication skills with their patients, patients' families, and other health care providers.
 - There are teenage volunteers from Palacios who work at the clinic. The students and residents will be expected to contribute to their education.
- Communicate proficiently in Spanish in a clinical context
 - Students and residents ***must*** speak Spanish. People in the area around the clinic and at Hospital Japonés do not speak English.
- Exemplify an awareness of and respect for cultural differences unique to their experience and self-evaluate during difficult interactions

Evaluation Method:

Students and residents will be evaluated based on their demonstration of the following:

- Independent, self-directed learning
- Ability to adapt to a foreign environment
- Ability to work as a member of a team
- Medical abilities, knowledge and judgment
- Completion and dissemination of independent study project

The supervising physician will give direct clinical assessment of the student/resident's performance using the appropriate forms.

Bolivian Doctors who will work with and supervise our students

Douglas Villarroel, M.D. Lead Supervising Physician

Endocrinologist and Internist

Medical school: Universidad Mayor, Real y Pontificia de San Francisco Xavier de Chuquisaca, Sucre, Bolivia, 1989.

Residency: Centro Médico Nacional siglo XXI in México City, México, 1993

Endocrinology fellowship: Centro Médico Nacional siglo XXI in México City, México, 1995.

Current Position: Practicing endocrinology and internal medicine in Santa Cruz. Professor of Medicine. Director of the Centro Medico Humberto Parra in Palacios. Immediate Past-President of the Bolivian Endocrine Society.

Medical school affiliation: Universidad Católica Boliviana

Teaching/supervising role: Overall local director of the residency/student exchange program.

Will facilitate local transportation and coordination of teaching efforts. Will also supervise residents and students at Galene.

Herland Vaca Diez, M.D.

Nephrologist and Internist

Medical school: Universidad de la República Oriental del Uruguay, Montevideo, Uruguay, 1974.

Residency: Hospital de Clinicas, Sao Paulo, Brazil, 1980.

Nephrology fellowship: Hospital de Clinicas, Sao Paulo, Brazil, 1984. Hospital Necker, Paris, France, 1985.

Current Position: Practicing nephrology and internal medicine in Santa Cruz. Director of the Dialysis Unit and the Renal Transplantation Program of INCOR clinic. Director of the Instituto del Riñon. Professor of Medicine.

Medical school affiliation: Universidad Católica Boliviana

Teaching/supervising role: Teaching and supervising nephrology and internal medicine at Instituto del Riñon in Santa Cruz.

Roxana Barbero, M.D.

Endocrinologist and Internist

Medical school: Universidad Mayor, Real y Pontificia de San Francisco Xavier de Chuquisaca, Sucre, Bolivia, 1988.

Residency: Hospital de Clínicas, Universidad de Sao Paolo, Brazil, 1991

Endocrinology fellowship: 1993

Current Position: Practicing endocrinology and internal medicine in Santa Cruz. Professor of Medicine.

Medical school affiliation: Universidad Cristiana de Bolivia.

Teaching/supervising role: Teaching and supervising Endocrinology and Internal Medicine at Hospital de la Caja Nacional de Seguro Social and Galene.

Carlos Vargas Moreira, M.D.

General Physician.

Medical School: Universidad Mayor de San Simón Cochabamba.

Residency: Hospital de Montero y Portachuelo

Current Position: Vice President of the Sociedad Científica Boliviana Filial Montero.

Medical School affiliation: None

Teaching/Supervising role: Teaching and supervising general medicine at Centro Medico Clinic in Palacios

Carmelo Nazario, M.D.

General Physician

Current Position: General Physician in Portachuelo.

Medical School affiliation: None

Teaching/Supervising role: Teaching and supervising general medicine at Centro Medico Clinic in Palacios

Rudy Javier Ledezma, DDS

Current Position: Dentist

Dental School: Universidad Nacional del Siglo Veinte in Odontología

Dental School Affiliation: none

Teaching/Supervising role: He is very willing to teach some dental procedures to interested students

Required Elective Components

In order to enhance the experience of visiting 4th year medical students while also providing an opportunity for students to make a lasting impact on the clinic, we have added some new requirements to the elective. These activities and projects are intended to help the student/resident learn about the complexities of the health care system and see both inpatient and outpatient care both in public and private settings. Further details of each component are listed below:

1. Centro Medico Humberto Parra, Palacios

Residents and students will see patients at the clinic in Palacios Wednesday through Saturday. The patient load can vary greatly, with our heaviest patient day generally being Saturday. There is usually 20-50 patients seen daily. The cornerstone of the international health experience, this outpatient clinic is a site where practitioners are challenged to confront issues of urgent care, chronic disease management, and case referral. The clinic was founded in 2001 and is funded by the Daniels Hamant Foundation. It is located 100 kilometers from Santa Cruz, the largest city in Bolivia. This clinic serves an area with about 40,000 people. The clinic has 3 regular examination rooms, a class room, a dental suite and an ophthalmology room. It has a small pharmacy and a laboratory that is capable of doing routine chemistries, CBCs, and urinalyses. We currently do not have a functioning electrocardiogram machine but hope to replace this soon. The clinic is staffed by two full time nurses and by rotating Bolivian and American doctors who supervise students and residents. Students and residents will be expected to do the following when seeing patients:

- Do the initial focused history and physical examinations. Depending on the number of volunteers, residents and medical students may be asked to work together.
- Do a succinct presentation to a supervising physician, offering a reasonable diagnosis and management plan.
- Recognize the limited ancillary data available and be able to integrate this into a team-oriented approach to care.
- Write a concise but thorough note IN SPANISH into the electronic medical record. Prescriptions are also done in the computer. Alek, our pharmacist, is always available if students or residents have questions on medications and doses of meds.
- Make the proper referrals when necessary (ask coordinators for help with this process).

2. Hospital Inpatient Experience in Portachuelo

Dr. Vargas and Dr. Davila are two of the regular attending physicians who work at the clinic. They both also work at the public hospital in Portachuelo, a town that is near the clinic. As part of your rotation here, you will be required to do one over night call (on a Tuesday or Wednesday night) and one Saturday day time shift at the hospital in Portachuelo, working with either Dr. Davila or Dr. Vargas. In the hospital you will see patients who have more serious conditions than you might see in the clinic. There may also be opportunities to participate in surgeries or births if that interests you. Make sure to bring scrubs, your white coat, and stethoscope.

3. Endocrinology with Dr. Douglas Villarroel

Tuesday afternoons will be spent with Dr. Douglas Villarroel in his endocrinology clinic, Galene, in Santa Cruz. He can only accommodate two students at a time, so if there are more than two student volunteers, students will need to rotate weeks. Your performance at Galene will be a part of your final evaluation.

4. Weekly Lecture Series/Case Discussions

These will be run by Dr. Vargas. The schedule will be flexible depending on patient loads and the number of volunteers, but will most likely occur over lunch or after we are done seeing patients for the day. The lectures will include both tropical medicine and preventative medicine specific to health care in a low resource setting. Topics may include Chagas' Disease, Dengue, Parasites, etc. Furthermore, after the lectures, we will have a series of less formal case discussions on the topics of the lectures. You will be receiving a number of articles related to the specific topics which can supplement the lecture material.

5. Social Work Experience

Hospital Japonés is a 200 bed public hospital in Santa Cruz that was founded in 1986. It was initially financed by the Japanese government which supported it for the first decade of its history. It has departments of Internal Medicine, Surgery, Gynecology and Pediatrics. In addition to inpatient services, it has an emergency room, observation area, outpatient clinics, a resuscitation room, and operating rooms. Kidney transplants and cardiac surgery are done at the hospital. Two living donor liver transplants have been done there. It is a teaching hospital which educates both medical students and residents. It is associated with Universidad Católica, Universidad Cristiana and Universidad Gabriel Mene Moreno.

Gabi is our social worker who helps our patients navigate the confusing public hospitals of Santa Cruz, such as Hospital Japonés. The system here is tedious, complicated, and very frustrating at times. Luckily, Gabi knows the system well and can manipulate her way through with surprising ease. During your rotation you will be required to work with Gabi one day. Hopefully this will provide insight into how complicated the system is and demonstrate what our patients have to deal with on a regular basis.

6. Independent Study Project

During their rotation, medical students will be required to complete an independent study project focused on a topic chosen from a list developed by the clinic or one of your choosing, approved by the clinic coordinators. These topics include various programs and protocols that are either old and in need of revision, proposed initiatives the clinic has considered pursuing, or a research project on a common disease entity. Examples include colon cancer screening, pediatric dental health, and Chagas' Disease screening and treatment protocols. The expectation is that students will conduct a brief literature search before their rotation, and then complete the rest of their project on site in Bolivia. The final product will be a brief (5-10 pages) summary of research and recommendations. These projects will be turned into Dr. Douglas Villaroel and Dr. Justine Macneil for grading. They will also be placed into a database to be accessed and referenced by clinic administrators and future volunteers. Again, students are welcome to email the current medical coordinators if they have any questions or would like help developing an idea.

Below is the current list of approved topics (though suggestions are also possible but will be subject to review):

- Colon cancer screening
- Healthy cooking and eating with native Bolivian foods
- Domestic violence screening protocols
- Asthma screening protocol
- Training midwives/health promoters to recognize abnormal births and when more help is needed
- Protocol for starting insulin in Type 2 DM in a resource poor setting
- Hospice care and counseling
- Guidelines for new onset seizures
- Community Garden expansion
- Chagas Program (Dx, Tx and/or re-roofing)
- Pediatric Care
- Pediatric Dental Health
- Obesity/Exercise Program
- Pharmacy optimization (which drugs, from where)
- Diabetes program (large project, but there are many different possibilities for this)
- Laboratory Quality Control and Optimization

7. Optional OB/Gyn Experience

Dr. Padilla is the head of the OB/Gyn residency program at Hospital Japones. Dr. Padilla and his residents have recently started coming to the clinic on Saturdays to see gyn patients. They offered to have students work with them Monday and Tuesday at Hospital Japones in Santa Cruz. There will be opportunities to do births and C-sections. If you have an interest in OB and would like to take part in this experience, please let the coordinators know and they will arrange this.

Conclusion about Elective Requirements:

We believe this elective program will give you a broad view of the medical and social needs of the communities we serve here in Bolivia. If you have any questions/comments/suggestions please do not hesitate to get in touch with the elective offices at your respective medical schools (if you are a Loyola or Northwestern student) or contact the MS4 coordinators in Bolivia: Carolyn Quigley (cquiggers@gmail.com) & Nate Kittle (nathankittle@gmail.com) or Dr. Macneil (justine.macneil@gmail.com). As you will see when you come visit us in Bolivia, we have the ability to be flexible with your experience and can work with you to enhance your experience. This document serves as the minimum requirement for your time here at CMHP, but we hope you will find the work fulfilling and will want to do more! We are looking forward to working with you and hopefully making this rotation enjoyable and fulfilling for everyone involved.

Bolivia – Reading List

Students should read appropriate sections on Infectious Disease and Tropical Medicine in their Medicine and Pediatric textbooks. The articles in this Reading List may prove helpful and copies are also located in Google Documents which will be shared with all rotating volunteers.

Brucellosis

Pappas G, Akritidis N, Bosilkovski M et al. Brucellosis. N Engl J Med 2005;352:2325-2336.

Chagas Disease

Dias JCP. The treatment of Chagas disease (South American Trypanosomiasis). Ann Intern Med 2006;144:772-773.

Maguire JH. Chagas' Disease – can we stop the deaths? N Engl J Med 2006;355:760-761.

Rassi A, Rassi A, Little WC et al. Development and validation of a risk score for predicting death in Chagas' heart disease. N Engl J Med 2006;355:799-808.

Viotti R, Vigliano C, Lococo B et al. Long-term cardiac outcomes of treating chronic Chagas disease with benznidazole versus no treatment. *Ann Intern Med* 2006;144:724-734.

Cholera

Sack DA, Sack RB, Nair GB, Siddique AK. Cholera. *Lancet*. 2004;363:223-233.

Saha D, Karim MM, Khan WA, et al. Single-dose azithromycin for the treatment of cholera in adults. *N Engl J Med*. 2006;354:2452-2462.

Cysticercosis

Garcia HH, Gonazalez AE, Evans CA et al. *Taenia solium* cysticercosis. *Lancet* 2003;361:547-556.

Dengue

Wilder-Smith A, Schwartz E. Dengue in travelers. *N Engl J Med* 2005;353:924-932.

Kay B, Nam VS. New strategy against *Aedes aegypti* in Vietnam. *Lancet* 2005;365:613-617.

Fungal Diseases

Lupi O, Tying SK, McGinnis MR. Tropical dermatology: fungal tropical diseases. *J Am Acad Dermatol* 2005;53:931-951,

Helminthic Infections

Awasthi S, Bundy DAP, Savioli L. Helminthic infections. *BMJ* 2003;327:431-433.

Anon. How to add deworming to vitamin A distribution. WHO/CDS/CPE/PVC/2004.11

HIV

Goldie SJ, Yazdanpanah Y, Losina E et al. Cost-effectiveness of HIV treatment in resource-poor settings – the case of Côte d'Ivoire. *N Engl J Med* 2006;355:1141-1153.

Steinbrook R. Message from Toronto – Deliver AIDS treatment and prevention. *N Engl J Med* 2006;355:1081-1084.

Ferradini L, Jeannin A, Pinoges L et al. Scaling up of highly active antiretroviral therapy in a rural district of Malawi: an effectiveness assessment. *Lancet* 2006;367:1335-1342.

Okie S. Fighting HIV – lessons from Brazil. *N Engl J Med* 2006;354:1977-1982.

Leishmaniasis

Markle WH, Makhoul K. Cutaneous leishmaniasis: recognition and treatment. *Am Fam Physician* 2004;69:455-460.

Malaria

Baird JK. Effectiveness of antimalarial drugs. *N Engl J Med* 2005;352:1565-1577.

Greenwood BM, Bojang K, Whitty CJM, Targett GAT. Malaria. *Lancet* 2005;365:1487-1498.

Typhoid

Parry CM, Hien TT, Dougan G et al. Typhoid fever. *N Engl J Med* 2002;347:1770-1782.

Yellow Fever

Barrett AD, Higgs S. Yellow fever: a disease that has yet to be conquered. *Annu Rev Entomol* 2007;52:209-229.

Van der Stuyft P, Gianella A, Pirard M et al. Urbanisation of yellow fever in Santa Cruz, Bolivia. *Lancet* 1999;353:1558-1562.

Other

Anon. drugs past their expiration date. *Medical Letter* 2002;44:93-94.

Basnyat B, Murdoch DR. High-altitude illness. *Lancet* 2003;361:1967-1974.

Brubaker PL. Adventure travel and type 1 diabetes. The complicating effects of high altitude. *Diabetes Care* 2005;28:2563-2572.

Filippi V, Ronsmans C, Campbell OMR et al. Maternal health in poor countries: the broader context and a call for action. *Lancet* 2006;368:1535-1541.

Glasier A, Gülmezoglu AM, Schmid GP et al. Sexual and reproductive health: a matter of life and death. *Lancet* 2006;368:1595-1607.

Hossain P, Kavar B, El Nahas M. Obesity and diabetes in the developing world – A growing challenge. *N Engl J Med* 2007;356:213-215.

King CH. Toward the elimination of schistosomiasis. *N Engl J Med* 2009;360:106-109.

Ronsmans C, Holtz S, Stanton C. Socioeconomic differentials in caesarean rates in developing countries: a retrospective analysis. *Lancet* 2006;368:1516-1523.

Zupan J. Perinatal mortality in developing countries. *N Engl J Med* 2005;352:2047-2048.

Clinic Photos:



The living quarters for the clinic are located on the left while the clinic building itself is partially seen on the right



The check-in area with the clinic nurses. There is a small supply room on the right and the pharmacy supplies through the door on the left.



The lab room where blood is drawn and specimens are processed. There is also a microscope for wet mount slides, etc located here.



One of 3 clinic exam rooms; however, the only one with a gyne exam table.



Waiting area and clinic rooms, at a rare time without patients.

Bolivia Fact Sheet



Source: [CIA - The World Factbook -- Bolivia](#)

- Area: *total*: 1,098,580 sq km, *land*: 1,084,390 sq km, *water*: 14,190 sq km
- Area - comparative: slightly less than three times the size of Montana
- Land boundaries: *border countries*: Argentina 832 km, Brazil 3,400 km, Chile 861 km, Paraguay 750 km, Peru 900 km
- Coastline: 0 km (landlocked)
- Terrain: rugged Andes Mountains with a highland plateau (Altiplano), hills, lowland plains of the Amazon Basin such as those that surround Santa Cruz
- Population: 8,857,870 (July 2005 est.)
- Age structure: *0-14 years*: 35.7% (male 1,613,049/female 1,551,023)
15-64 years: 59.8% (male 2,591,328/female 2,701,892)
65 years and over: 4.5% (male 178,486/female 222,092) (2005 est.)
- Median age: *total*: 21.47 years
male: 20.79 years
female: 22.17 years (2005 est.)
- Population growth 1.49% (2005 est.)
- Birth rate: 23.76 births/1,000 population (2005 est.)
- Death rate: 7.64 deaths/1,000 population (2005 est.)
- Infant mortality *total*: 53.11 deaths/1,000 live births
rate: *male*: 56.7 deaths/1,000 live births
female: 49.33 deaths/1,000 live births (2005 est.)
- Life expectancy at *total population*: 65.5 years
birth: *male*: 62.89 years
female: 68.25 years (2005 est.)
- Total fertility rate: 2.94 children born/woman (2005 est.)
- Ethnic groups: Quechua 30%, mestizo (mixed white and Amerindian ancestry) 30%, Aymara 25%, white 15%
- Religions: Roman Catholic 95%, Protestant (Evangelical Methodist) 5%
- Languages: Spanish (official), Quechua (official), Aymara (official)
- Literacy: *definition*: age 15 and over can read and write
total population: 87.2%
male: 93.1%
female: 81.6% (2003 est.)
- Capital: La Paz (seat of government); Sucre (legal capital and seat of judiciary)

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