

CHALLENGES AND JOYS IN TEACHING NEONATAL RESUSCITATION IN BOLIVIA



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Typically, when one hears the term “medical mission trip,” one envisions physicians and nurses traveling to work with underserved populations in remote areas of developing countries far from the United States. The team dispatched by Project Helping Hands in July 2018 served a different type of medical mission: providing continuing education and best practices for Bolivian physicians and nurses on the topics of toxicology, disaster management, trauma, and neonatal resuscitation. Preparing and delivering seminars in a foreign country with a different culture presented interesting challenges.

Bolivia is one of the poorest countries in South America. Although infant mortality rates have dropped tremendously since 2000, they still remain the worst in South America at 35 per 1,000 births.¹ Improved economic and political stability led to improved access to education for Bolivians, and efforts by the medical establishment to improve the quality of health care in the country increased. The Colegio de Enfermeras (College of Nursing) and the Colegio de Medicos (College of Medicine) in La Paz invited Project Helping Hands to offer a continuing education seminar on emergency situations relating to toxicology, disaster management, trauma, and neonatal resuscitation. Physicians, licensed nurses, and paramedics attended the seminars, which were offered first in La Paz (Figure 1) and then in the rural community of Uyuni. The College of Nursing serves a unique role in Bolivian professional nursing—part professional association, part educational institution, and part regulatory body for licensed nurses.

The College of Nursing lent a great deal of support to our team. After arriving at our hotel at approximately

6 AM, we met with members of the College of Nursing in the early afternoon to coordinate the start of the La Paz seminar for the next day. Although I had brought supplies, including manikins borrowed from the University of Cincinnati–UC Blue Ash College Nursing Laboratory, the addition of 2 more manikins and equipment made it possible to include more practice stations for the students. With a larger than expected class in La Paz, the extra resources were an invaluable help. The College of Nursing also helped us by printing handouts for the students, because weight limits and volume made it impractical for us to print materials in the United States. We had planned to find the equivalent of a FedEx or Kinkos to do the printing. The offer by the College of Nursing to print the handouts saved us time and resources and was greatly appreciated, not the least by the students who did not expect handouts in Spanish to assist in their learning. We also greatly appreciated the assistance of our Bolivian host and translators who, prior to our arrival, painstakingly translated everything, including these handouts and all our PowerPoint presentations.

I was among the nurses recruited to teach these seminars, specifically neonatal resuscitation and part of the trauma course. The first challenge in preparing for the seminar was my general lack of knowledge about Bolivia, its health care system, and how Bolivian nurses are educated. Access to nurses familiar with Bolivia proved invaluable and helped me understand that I would be able to conduct the seminar the way I would for American nurses who were not specialists in neonatal nursing.

The next challenge was planning the curriculum. I decided to start with a review of the care of a healthy newborn through a normal transition to extrauterine life. The goal was to ascertain the knowledge base of the students and put the students at ease by discussing a topic that many would be glad to review or would feel comfortable discussing. From there, teaching moved into how to quickly identify a newborn in distress, the most common causes of crisis within the first 10 minutes of life, and when and how to intervene. Other topics covered included airway management, when to perform cardiopulmonary resuscitation, common medications used in resuscitation, hypoglycemic emergencies, and when to stop a resuscitation effort.

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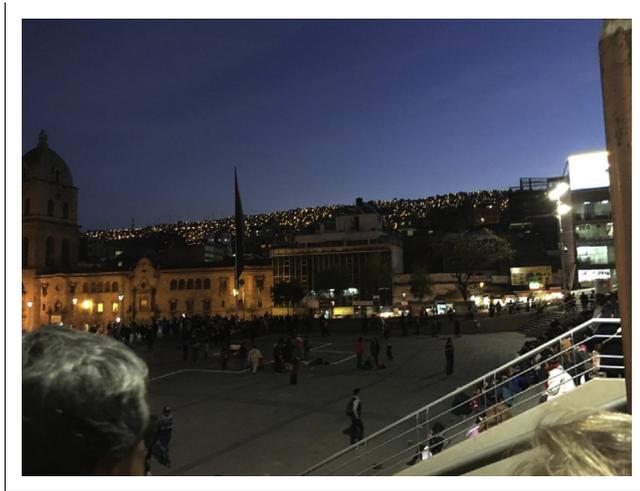


FIGURE 1
The city of La Paz, Bolivia. (Photo by Amy G. Crittenden, MSN, RN.)

A “hands-on” practice with the equipment after our discussion of airway management and cardiopulmonary resuscitation followed. I wrapped up the seminar with a “mega-code” type simulation. The students were given the scenario of a newborn in respiratory distress at birth. The students had to correctly identify respiratory distress, begin airway management in a timely manner, know when to begin chest compressions, and know when to administer epinephrine (Figure 2). The mega code was followed by a debriefing period that allowed students to reflect on the scenario, the care they provided, and what they learned.

The temperature in the country produced another challenge. The seminar was held in late July, which is winter in South America. Temperatures were routinely in the 40s and 50s and into the 30s at night. Because of the expense, buildings are not always routinely heated as they are in the US. In Uyuni, large kerosene heaters typically used in outdoor settings were brought indoors to help alleviate the bitter cold, but they lent little assistance. Everyone dressed in layers and wore their coats—including the instructors. One instructor burnt the back of the blanket she had wrapped around herself, which later supported my teaching on burns in the trauma course.

In Uyuni, the seminar was held on a Bolivian Army outpost in a building normally used as a martial arts dojo. Access to the post each morning included a wait for the conclusion of the changing of the guard ceremony. The other issue here was that the building contained only 2 large rooms and we were presenting 4 seminars. With commitment and creative insight, the trauma and neonatal courses were set up at either end of the same large room and the toxi-

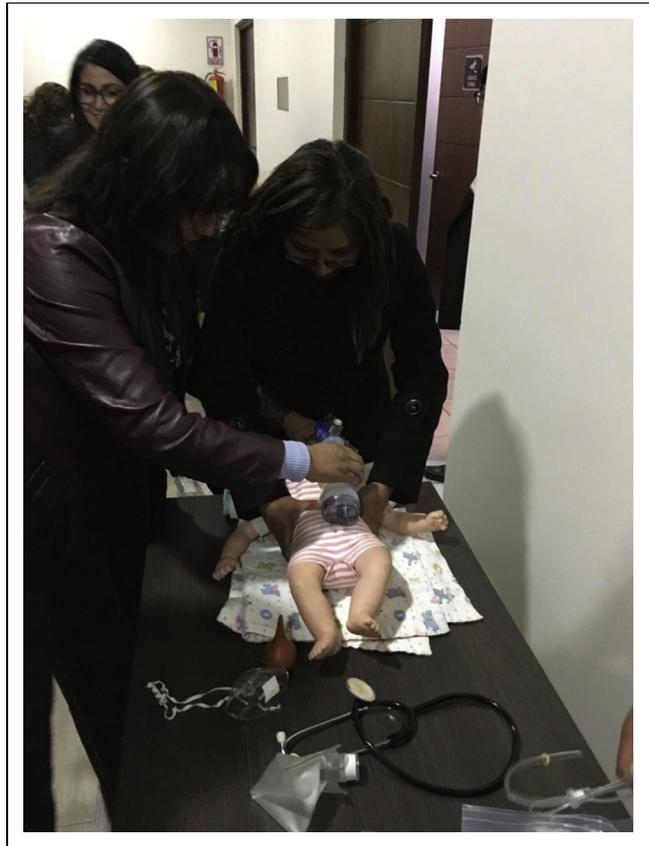


FIGURE 2
Students in La Paz resuscitate a neonate. (Photo by Amy G. Crittenden, MSN, RN.)

cology course was set up in the outer hallway. This scenario worked, and the students never complained about it or the lack of heat. Periodically we heard gunfire and other sounds of military drills.

Toilet facilities on the army post were a combination shower/toilet partitioned off for the women in our group. The water pressure to the toilets was turned off, making flushing a challenge over the 2 days. Public toilets were not free (nor available on the post), costing between 1 to 2 bolivianos (Bolivian dollars) per use; this fee was not terribly expensive considering that the exchange rate was 7 bolivianos for 1 US dollar, and a strip of toilet paper was included.

We encountered other toileting issues when we were taken to the beautiful Uyuni salt flats (Figure 3). Sanitation on the salt flats is a particular problem; human waste causes considerable environmental damage to the flats, and consequently hotel construction on the salt flats is no longer permitted. The Uyuni salt flats are an important natural resource to the Bolivian government. They are the world's



FIGURE 3
Uyuni salt flats (salar de Uyuni; photo by Amy G. Crittenden, MSN, RN).

largest deposit of lithium, and the flats are so bright and distinctive when viewed from space that NASA uses them to calibrate scientific instruments.² The stunning natural beauty of the flats attracts tourists from around the world and made Bolivia a location for the shooting of the film *The Last Jedi*.

Understanding how the Bolivian health care system works was another challenge. In the US, federal antidumping laws (Emergency Medical Treatment and Active Labor Act) and strong community support for EMS mean that patients who have needs for medical care while they are in the



FIGURE 4
The author presents a continuing education certificate from ENA to a student in Uyuni.

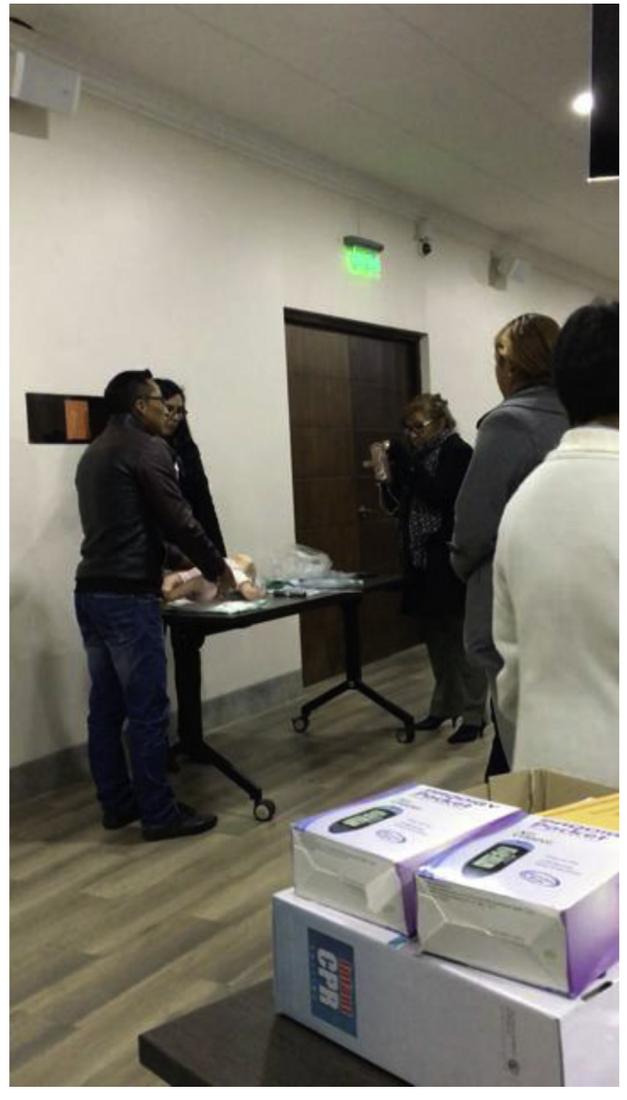


FIGURE 5
A student in La Paz demonstrates what he has learned to the local media.

community are transferred to the nearest receiving facility for care. A mix of public and private health services exists. In Bolivia, the paramedic may be where care ends if the patient cannot afford care at the hospital. Patients are asked to pay for services as they are rendered. Families are responsible for purchasing medications at a local pharmacy and bringing them to the hospital. In rural areas, a physician may not be readily available. The nurse may take the lead in patient care, and tasks normally in the RN scope are taken over by unlicensed nursing assistants. Access to equipment that we take for granted in the US, such as a Glucometer, is beyond the reach of some communities. Thus, although the Bolivian

nurses may know that they should check a blood sugar level for a new mother who is known to have diabetes, they may lack the equipment to do so. They also may have to convert medications to get the correct concentration and dose. For example, 1:1000 epinephrine should not be used in resuscitation, but if 1:10,000 epinephrine is not available, staff might have to improvise.³

Student engagement was high. During the seminars, students raised questions about how they might implement their new learning in their work environments. For example, one topic generating considerable discussion was altitude. Normal oxygen saturations in the first 10 minutes of life start around 60% at the first minute and rise to approximately 95% by 10 minutes.³ How altitude affects those numbers produced a lively discussion as we researched the topic, only to discover that research is ongoing.

Although I knew we would be in the Andes, I didn't think about how altitude would affect me, even as I obtained all the necessary vaccinations to enter the country. I was stunned to discover that my oxygen saturation on arrival was 87%. Despite warnings, I forgot to use bottled water to brush my teeth the first night I was there, with predictable consequences 2 days later. The demands of travel, the challenges of preparing for the start of the first seminar, and the stereotypical delay of luggage that forced us to teach the first day in our travel clothing, combined with the altitude, resulted in the need for me and 2 of my colleagues to sit in the hotel lobby and receive oxygen by face mask by the end of the La Paz seminar.

Attendance was another challenge. A point of contention existed between the College of Nursing and the College of Medicine regarding who would decide which nurses would be invited to attend. Nurses who did attend were responsible for finding their own coverage if they were scheduled to work that day. In several cases, nurses had to leave the seminar because they were on call at their workplace or their coverage did not last the entire day. This situation complicated the awarding of certificates of completion for continuing education hours. The seminar was approved for 7.5 hours of CEU credit through ENA, but certificates could not be extended to students who did not complete the program. Because each of the 2 seminars lasted 2 days but the neonatal course was only 1 day, I made arrangements for the students who had to leave early to return

the next day to complete the hours missed so they could be granted their certificates (Figure 4). Making a second trip was not easy for the students in Uyuni because the distances between communities make travel expensive or inconvenient. Most people cannot afford a private car and must travel by bus or train, both lengthy processes.

The seminar attracted considerable media interest in La Paz. A news crew came to cover the seminar, and I paused teaching to allow reporters to interview the students and film their practice (Figure 5). As one of the students spoke to the reporter while holding one of the manikins, the medical translator told me, "He's repeating your teaching to the reporter word for word."

Teaching colleagues in a developing nation was a rewarding experience. It was humbling to witness their eagerness to learn and implement best practices. The commitment, gratitude, and appreciation of the licensed nurses, paramedics, and physicians who attended were palpable. The warm reception from our hosts and the students were well worth the long distances traveled and long days of teaching. The natural beauty of the Andes and the salt flats and the friendships we forged have been a joy. Medical teaching missions such as these are invaluable in supporting Bolivian physicians, nurses, paramedics, and other allied health professions as they work to improve patient outcomes while enhancing their professional standing.

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