

NEXUS

Physician Assistants for Global Health Monthly Newsletter

DEC & JAN
2013

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Out With the Old, In With the New



The Nexus celebrates 3 years of monthly publication in January and it's fitting that this edition of the Nexus marks the first by our new editor, Chad Eventide, PA-C. A 2011 graduate of the Duke PA program, Chad has since been working in primary care in rural northern California. Over the last two years, while both a student and a PA, Chad has donated time to PAGH, and after the Global Health Symposium decided to make a leap and assume a leadership role at PAGH. As the new Nexus editor, he will be able to employ his prior work experience in publishing as well as his medical knowledge to continue to produce a high quality, clinically-relevant newsletter for our members. The look of the Nexus as well as the specific content will be different, but the importance and utility of each edition of Nexus will remain the same.

In order to help Chad as well as the rest of our members, I ask that each and every one of our readers take a moment to consider donating a personal story, a disease state, or an opportunity that they gathered while traveling internationally. The experiences you share could help shape the future travels of a fellow PA or PA student. And as always, please remember that as a volunteer board for PAGH, our main purpose is to help direct the endless enthusiasm of our individual members such that it benefits the group as a whole – but we need everybody's help to do it successfully. Thank you for your continued support of PAGH, and we wish you a wonderful start to 2013!

Sincerely,
Jacob Hauptman, PA-C, President
Physician Assistants for Global Health

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Physician Assistants for Global Health
Local Hands, Global Reach

Disease of the Month: Protozoan Parasites – *Giardia* and *Cryptosporidium*

By Emily Pilachowski, PA-S

Diarrhea is one of the most common illnesses worldwide, with about two billion cases every year. Diarrhea usually results from an infection in the gastrointestinal tract, and caused by a number of sources such as bacteria, viruses, chemicals, or parasitic organisms. Infection is spread through contaminated food or drinking-water, or from person-to-person as a result of poor hygiene. This is of special concern to the health care worker traveling to unfamiliar environments where water quality may be in question, such as in disaster response, international medical missions, or wilderness settings. While viruses are the most common cause of illness, protozoan parasitic organisms are also prevalent. The two most common types of protozoa encountered are *Giardia lamblia* and *Cryptosporidium parvum*. Method of infection by these two protozoa is the same – both are transmitted via the fecal-oral route – and cysts of *Giardia* and oocysts of *Cryptosporidium* are found in aquatic environments throughout the world (Image 1 & 2). The (oo)cysts are shed with the feces of the infected host, and can remain actively infectious for long periods of time. After ingestion, the cysts undergo excystation, burrowing into and infecting epithelial cells of the small intestine. *Giardia*

mainly affects the duodenum, while *Cryptosporidium* attacks the jejunum and ileum. Over the course of the disease, new cysts are shed in the feces, starting the cycle over unless measures are taken to prevent the spread.

Giardia lamblia

While *Giardia* may be encountered when traveling abroad, it is also the most common intestinal parasite in the United States. Illness from *Giardia* is characterized by yellowish diarrhea with a variety of other symptom including steatorrhea, abdominal cramps, bloating, weight loss, and malabsorption. Symptoms last for about 2-4 weeks, and up to 40 percent of patients may experience acquired lactose intolerance, which may take weeks to recover from even after clearance of the parasite. Chronic infection with *Giardia* may also occur in up to half of all infected patients, with symptoms waxing and waning over months.

The primary method of diagnosis is with ova and parasite (O&P) of three separate stool samples, which allows for visualization of the trophozoites and cysts (Image 3). Stool immunoassays such as DFA or ELISA may also be used to detect giardia antigen. Duodenal biopsy can be used when the previous two tests are inconclusive. For patients infected with *Giardia*, supportive measures such as rehydration and correction of electrolyte imbalances are indicated. Antimicrobial treatment is recommended for all symptomatic patients, and for asymptomatic patients at risk for spreading the disease to a pregnant woman or immuno-compromised individual. Nitroimidazoles such as tinidazole and metronidazole are the treatment of choice, and are highly effective. Pregnant patients are encouraged to avoid antibiotic treatment if possible, but may take paromomycin during the first trimester and metronidazole after the first trimester if needed.



Image 3. *Giardia intestinalis* in vitro culture

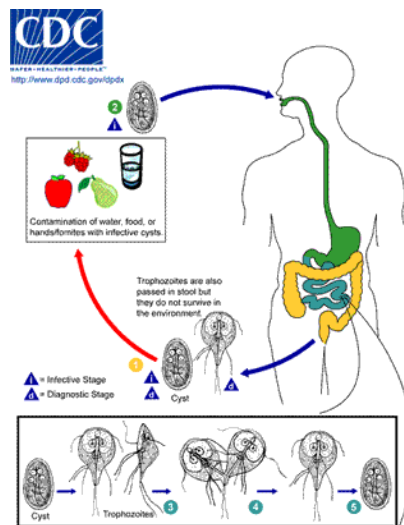
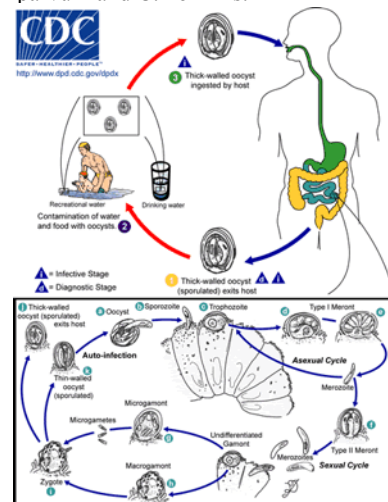


Image 1 (above). Giardiasis. Image 2 (below). Life cycle of *Cryptosporidium parvum* and *C. hominis*.





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Cryptosporidium parvum

Cryptosporidium infection was first reported in 1976, and since then has been found worldwide, most notably in countries with increased crowding and poor sanitation. It is of particular concern because of the debilitating progression of the disease that can occur among people with HIV. Ingestion of *Cryptosporidium* usually causes intestinal infection, but it can also cause biliary tract, pancreatic, and respiratory tract disease, especially in immunocompromised patients. Incubation is about 7 days, with illness usually lasting between 7 and 14 days. Watery diarrhea is the hallmark symptom, but abdominal cramps, nausea, mild fever, and malaise may also be present.

Traditional O&P testing does not identify cryptosporidium, so diagnosis must be made other ways. Modified acid-fast stains of three stool specimens are the primary method of diagnosis, but fluorescent ELISA tests or enzyme immunoassay may also be used (Image 4). Symptoms of *Cryptosporidium* infection are generally self-limiting, so standard treatment consists of supportive therapy, and most patients will clear the infection with no further sequelae. For those patients needing further treatment, particularly those with HIV, nitazoxanide is the treatment of choice. In HIV patients, it is important to start antiretroviral treatment if the patient has not already.

Prevention and water purification

For those people traveling to endemic areas, there are number of ways to ensure water consumed is safe. The three primary ways are heat, physical removal, and halogenations, but other disinfectants such as silver, hydrogen peroxide, UV light, and ozone have been successfully used. The most important method, however, is prevention. Hand washing prevents spread of infection, and is especially important in breaking the fecal-oral cycle of contamination. No one with diarrheal illness should prepare food. Use outhouses or portable toilets when available; if not, practice proper disposal of human waste by burying it 8 to 12 inches deep and at least 100 feet from any water source.

Heat is the oldest method of water disinfection, but fuel availability is the most important

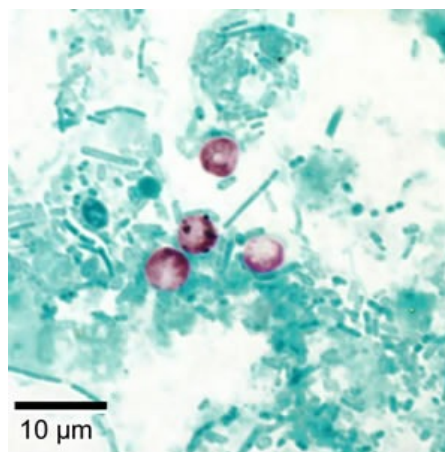


Image 4. *Cryptosporidium parvum* oocysts stained with modified acid-fast.

limitation. Wood may not be available, and liquid fuel can be heavy for those in situations that necessitate carrying in supplies. All common enteric pathogens are inactivated by heat greater than 60°C (140°F), and most pathogens are killed within seconds of bringing water to a boil. An extra margin of safety can be added by boiling for 1 minute. Altitude does not affect these recommendations.

Portable water treatment products are a popular choice for those traveling to remote areas. There are a number of removal techniques such as filtration, reverse osmosis, and granular activated carbon. Like heat, filtration has some drawbacks. The filter systems add space and weight to baggage, and eventually clog from suspended particulate matter. It is important to know which organisms will primarily be encountered, as filters should be equal or less than the smallest dimension of organism. A filter with 1-to-2µ pores will remove all organisms, but if in an area where viruses are a concern, heat or halogenation should be added to filtration method of choice.

Halogenation is the most widely used method for improving quality of drinking water, and chlorine and iodine are most effective. The amount of halogen and contact time determines quality of disinfectant, as well as the level of organic contaminant in the water. Halogens have a number of positive features – they are lightweight, easy to use, and stable for long periods of time if unopened – but have some drawbacks in certain situations. The agents can impart an unpleasant taste to drinking water, iodine use contraindicated for those with thyroid disease, and chlorine may irritate mucous membranes if too concentrated.



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Student Corner: Why Should I Pursue a Dual Degree?

By Emily Pilachowski, PA-S

As a third-year dual-degree student at Arcadia University, I have recently been approached by a few pre-PA students with questions about PA/Master of Public Health programs. These questions have ranged from “What are the advantages?” to “How can it improve my career in global health?” Since the number of dual-degree students and graduates is still small compared to the number of single degree PA program graduates, I thought it would be helpful to devote this Student Corner to discuss the connection between the roles of PA, Public Health, and Global Health and answer those questions.

Currently there are seven PA/MPH programs – Arcadia University, Emory University, George Washington University, Touro University California, University of Medicine and Dentistry of New Jersey, University of Nebraska, and Yale University – and the number of applicants to these programs has risen in the last few years. A study entitled “Assessing the Value of Dual Physician Assistant/Public Health Degrees” was recently published, and it looks at the advantages and disadvantages of dual degree programs. Some of the advantages found to pursuing a dual degree program include broadening of the student’s perspective on health and health care and enhanced expertise in health care administration or policy. Disadvantages include increased duration and expense of PA/MPH education and student burnout due to prolonged training. To those weighing the value of adding another year onto an already intense program, it is definitely worth the read.

As a refresher, public health is the practice of preventing disease and promoting health within populations, which can mean everything from neighborhoods to countries and continents. Public health professionals use policy and research to understand issues that cover all facets of health, from water quality and vaccination programs to urban design and global warming. Although public health work is conducted across the world, the relationship between the fields of

public health and global health are only now beginning to be realized.

To many people, global health is still seen through the lens of international aid, technologies, and interventions, but there is a growing understanding of the connection between public health and global health. A 2010 article in the *Lancet* suggests that global health and public health are indistinguishable, and “both view health in terms of physical, mental, and social wellbeing, rather than merely the absence of disease. Both emphasize population-level policies, as well as individual approaches to health promotion. And both address the root causes of ill-health through a broad array of scientific, social, cultural, and economic strategies.” I agree with this assessment, and believe concepts and strategies taught in both public health and global health overlap and inform each other.

Why did you decide to pursue a dual degree?

I initially learned about the dual-degree option while researching PA programs, and the more I read, the more it sounded like an interesting addition to my PA training. I thought it would give me a more in-depth education and help to make me a well-rounded PA. For other dual-degree students at Arcadia, this was also a reason that had prompted many of them to apply as well. Although I knew I would be spending an extra year (and a lot of extra money), I was attracted to the expanded opportunities that the degree would grant me as well as the connections I would make while I was in school. Other reasons I have heard from my classmates and other students have been a prior interest in public health, a desire to work in communities where knowledge of public health would be useful, and an aspiration to work internationally.

What are some of the challenges you have experienced in your program?

Unlike several of my classmates, I had no prior public health training or experience. This led to a steep learning curve for me the first

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semester, as I adjusted to my new schedule of PA and public health classes. Once I remembered how to write papers and figured out how to manage my time, things got a little easier. One thing that really stands out for me however, was the backlash and hostility from some of the first year PA students. The dual degree students were accused of “getting off easy” because we were writing papers instead of studying for tests. I am unaware if this happens at other schools, and it is something that is probably changing at Arcadia as a result of how the schedule of the two programs was recently reorganized. Finally, and this may have changed as well, the dual-degree students were sometimes overlooked when classes or study groups were scheduled, so it became important for us to be our own advocates in order to make sure our needs were being met.

How do you see your public health degree contributing to your interest in global health?

Although I knew I was interested in the field of global health before entering PA school, I was unsure how that would look once I was in school. Once I began classes, however, we were given the freedom to explore ideas that interested us, so I was able to do a lot of research and papers on international health topics. I was also fortunate to have a teacher with a lot of international public health experience, so many of the case studies and discussions in class were focused around international topics. Looking to the future, I hope to be able to work or volunteer internationally, and getting a public health degree has given me the

tools to not only look at a health problem from different dimensions, but has taught me more about ideas like sensitivity to culture and custom and the importance of collaboration.

Although sometimes I look at the two-year PA students that now have jobs and a life outside of school, I am still glad I pursued the public health portion of my degree. It has given me a different perspective on health care than my fellow PA students, and I discovered I have an interest in health policy. While it is ultimately a personal decision to pursue an additional degree on top of what we all know is an already rigorous program, I recommend it to anyone looking to expand their ideas of health and health care, and especially if you want to work in global health.



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8. Image 3 and caption retrieved November 28, 2012 from http://dpd.cdc.gov/dpdx/HTML/ImageLibrary/Giardiasis_il.htm
9. Image 4 and caption retrieved November 28, 2012 from http://dpd.cdc.gov/dpdx/HTML/ImageLibrary/Cryptosporidiosis_il.htm



Announcements

Welcome To Our New and Returning Fellow Members!

Preston Gorman, Hoonani Cuadrado, Gina Brown

Welcome To Our New and Returning Student Members!

Samantha Gammel, Ashley Sauls, Christina Buckley, Amy Knissel, Stuart Johnston, Kendra Cutter

Welcome To Our New Student Co-Chair: Kendra Cutter

Kendra is a second year PA student at Pacific University, and halfway through her clinical rotations. She is going to Kenya for her Community Health rotation, which will be her first international PA trip. One major goal she has for post-graduation is to continue annual international medical trips.

Student scholarship applications for 2013 are available now!

For an application, please contact your Student Representative Emily Pilachowski (epilachowski@gmail.com). Due date is April 14, 2013



PAGH Positions OPEN!

CME Chair

(2 year position)

We are already in the midst of planning for the 2013 PAGH Global Health Symposium and it is a perfect opportunity to learn the ropes so you can then lead the planning for our 2014 PAGH Global Health Symposium.

Membership/Volunteer Chair

Help recruit future members and maintain our current membership. This position will also be in charge of coordinating any PAGH volunteers!

Research Committee

Help coordinate and execute research projects directly related to global health and the PA role. Please contact Lea Dunn for more information: leamdunn@yahoo.com



Ultrasound Courses Available

A link from our conference lecturer, Dr. von Tander to his NEJM article:
<http://www.nejm.org/doi/full/10.1056/NEJMra0909487>

Links gathered through Yale University:

- http://yale-eus.com/Yale_Emergency_Ultrasound/Courses.html
- www.sonoguide.com/ (free online seminars)
- www.emergencyultrasound.com/course_calendar.php
- www.sonosite.com - loans US machines for global health missions

Also check your local Emergency Medicine chapter, school or Global Health program (e.g: UCSD or Ohio Academy of Emergency Physicians):

www.ohacep.org/aws/OACEP/pt/sp/cme_ultrasound (no 2013 schedule yet)



Announcements

Please Don't Forget To Renew!

PAGH needs to your continued support to grow! If your membership has expired, please go to www.pasforglobalhealth.us to renew now!

“Ministry to Recognize Doctors’ Assistants” [*The Jerusalem Post* (1/11/13)]:
www.jpost.com/landedpages/printarticle.aspx?Id=294994



Global Health and Innovation Conference

www.uniteforsight.org/conference

April 13th - 14th, 2013

Yale University in New Haven, Connecticut

Over 2,200 professionals and students from all 50 states and more than 55 countries will be attending this event which is billed as the world’s largest global health conference.



International Training Courses Available

Oregon Health and Sciences University; Portland, Oregon: Check website for schedule.
<http://www.ohsu.edu/xd/education/continuing-education/global-health-center/gh-education/ptgh.cfm>

Institute for International Medicine; Kansas City, Missouri: Exploring Medical Missions Conference
http://inmed.us/exploring_medical_missions_conference.asp



Careers

Physician Assistant Post in Ghana

<https://academicjobs.columbia.edu/applicants/jsp/shared/frameset/Frameset.jsp?time=135788>



Positions Open in Afghanistan

Earn up to \$205,000 plus benefits!

Onsite OHS is looking for PAs to work in Afghanistan. Make a difference to EXPATS and Third Country Nationals in our clinics. Bring your boots and spirit of adventure! 12 month contract for up to \$205,000 plus benefits. For more information please go to www.onsiteohs.com or contact:

jessie.dyer@onsiteohs.com



Medical Service Trips

Medical Relief International

www.medicalreliefinternational.org

Haiti: March 15th - March 23rd, 2013



The Tandana Foundation

www.tandanafoundation.org

Ecuador: March 16th - March 31st, 2013



Mountain Medics International

www.mountainmedics.org

Pisco, Peru Earthquake Recovery: Ongoing
Cordillera Huayhuash, Peru: August 3rd - August 16th, 2013



Project CURE

www.projectcure.org

Belize: February 2nd - February 10th, 2013
Nicaragua: March 1st - March 10th, 2013



International Medical Relief

www.internationalmedicalrelief.org

Panama: January 18th - January 27th, 2013



Flying Doctors of America

www.fdoamerica.org

Marshall Islands: January 24th - February 8th, 2013
Panama: March 9th - March 17th, 2013



Kenya Relief

www.kenyarelief.org

Kenya (General Surgery): January 31st - February 10th, 2013
Kenya (Gynecology): February 14th - February 24th, 2013



Medical Service Trips

Timmy Global Health

www.timmyglobalhealth.org

Monti Cristi, Dominican Republic: January 12th - January 19th, 2013



Palmetto Medical Initiative

www.palmettomedical.org

Uganda :March 8th -18th, 2013

Nicaragua: March 9th - March 19th, 2013



Health Horizon International

www.hhidr.org

2013 medical service trips to be announced.



Benjamin Wellness Center

www.benjaminwellness.org

Kenya: February 14th - March 3rd, 2013



Flying Samaritans

www.flyingsamaritans.net

Frequent trips originating from California and Arizona to clinics throughout Baja California, Mexico



Peacework Medical Projects

www.peaceworkmedical.com

Ranquitte, Haiti: Summer 2013



Amazon Promise

www.amazonpromise.org

February 9th - March 2nd, 2013: Medical Professionals and Medical Students -
Jungle trip to villages of the Yarapa, lower Ucayali, and lower Maranon rivers.



Volunteer Organizations

If you are aware of any trips or organizations that are looking for PA volunteers, please contact Olivia at obockoff@gmail.com. Please Note: it is not our desire to promote specific organizations only to connect PAs with opportunities and encourage professional philanthropy. This information is not an endorsement of these organizations.

Nunoa Project- two trips a year to Peru. www.nunoproject.org

Panama Global Connections-trips as volunteers become available. www.panamaglobalconnections.com

Heart to Heart International- weekly trips to Haiti and Guatemala. www.hearttoheart.org

Grounds for Health- Uses PAs in Africa, Mexico, Peru, and Nicaragua. www.groundsforhealth.org

Amazon Promise- Medical trips to portions of the Amazon Basin. www.amazonpromise.org

Peacework Medical Projects - www.peaceworkmedical.com

Project Hope - land based and ship-based care to regions around the world. www.projecthope.org

Health Horizon International - www.hhidr.org

Palmetto Medical Initiative- www.palmettomedical.org

The Carolina Honduras Health Foundation - Limón, Honduras. Active clinic, frequent need for medical volunteers. www.carolinahonduras.org

Community Coalition For Haiti-need for medical professionals for 1-2 week trips to staff a primary clinic in Jacmel, Haiti. www.cchaiti.org

Flying Samaritans Mexico- looking for volunteers year-round for Baja California, Mexico. www.flyingsamaritans.net

Health Volunteers Overseas- looking for volunteers to train and educate local health care providers around the world. www.hvousa.org

Timmy Global Health- looking for volunteers year-round. www.timmyglobalhealth.org

Hospitals of Hope- Year-Round Clinic work opportunities in Bolivia, Haiti, and Liberia. www.hospitalsofhope.org

Mountain Medics International- clinic in Cordillera Huayhuash, Peru. www.mountainmedics.org

US Doctors For Africa - utilizes PAs for Africa work. www.usdfa.org

Christian Medical and Dental Assistance - looking for mission volunteers. www.cmda.org

Omni Med-http- work focused in Uganda. www.omnimed.org



Volunteer Organizations

Physicians for Peace - work in Central/South America, Africa, Asia. www.physiciansforpeace.org

Mercy Ships - volunteer opportunities aboard “hospital ships”. www.mercyships.org

Benjamin Wellness Center- Opportunities in Gatamaiyu, Kenya. www.benjaminwellness.org

Exploration Logistics - Places PAs worldwide to serve as medical support for various expeditions. Positions include oil rigs and other industrial projects, etc. www.elgfze.com

Medical Missions Response-Trips to North Africa, Middle East, South Asia, East Asia. www.mmronline.org

HealthChildren - Trips to Ecuador and Haiti Contact: jensorooni@gmail.com
www.healthchildren.us

Africa Cancer Care Inc - International opportunities with an oncology focus. www.africacancercareinc.org

NYC Medics - deployment to disaster zones and humanitarian emergencies. www.nycmedics.org

ICHA Outreach to fight Cardiovascular Disease - Opportunities in Ghana. www.ichaonline.org

Goabroad.com - Assists different professions with placement internationally. www.goabroad.com

Flying Doctors of America provides medical assistance and hope to as many of the poor and needy as they are able to reach. Medical & dental teams to wherever the current need is. www.fdoamerica.org

Lalmba - works in two locations: on the shores of Lake Victoria in Kenya and in a rain-forest in Ethiopia. Goals are clinical medicine, coupled with public health, and working with local physicians. www.lalmba.org

WellShare International - International and domestic opportunities world wide. www.wellshareinternational.org

FIMRC Global Health Volunteer Program: Opportunities in El Salvador, Nicaragua, Peru, Costa Rica, India, and Uganda. www.fimrc.org

Rotations and Courses Internationally - www.gorgas.dom.uab.edu and www.cugh.org

Operation Smiles: providing surgeries around the world. www.operationsmile.org

International Medical Relief :Currently recruiting for a trip to Pakistan. Also trips to Asia, Africa, South & Central America, Eastern Europe. www.internationalmedicalrelief.org

Help Nexus Improve!

Your input can make a difference for future issues of Nexus. We welcome suggestions/submissions for future Book Reviews, Spotlights, or other features. And of course any and all comments are welcome.

Please direct to Chad at: chad.eventide@gmail.com 