Expanding Access to the Oral Cholera Vaccine

A Hopkins-led team of faculty and students evaluates its safety during pregnancy

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Building Research Capacity with the Fogarty International Center

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Faculty Profile
Larissa Jennings, PhD, MHS

Faculty Profile
Maria Merritt, PhD
From the Chair

Events this last year have revealed sharp contrasts between the politics of isolationism and the conviction that science and inclusive institutions are critical to promoting sustainable development here and around the world. If materialized, threats to public health funding could undermine research and capabilities of universities and other organizations, jeopardizing the health and wellbeing of populations in the US and across the world.

One of the current targets for loss of funding is the National Institutes of Health’s Fogarty International Center. While it is the NIH’s smallest center, Fogarty is the most effective at jump-starting global health research careers and collaborations between US and universities overseas. For decades the Department has worked with the Fogarty Center to build research capacity in infectious diseases and international health. As the global burden of disease has shifted, the Department’s partnership with Fogarty has expanded into research capacity building activities in the fields of injury prevention, trauma care, non-communicable diseases, and ethics. You can read more about some of those efforts on page 11.

In April, we lost R. Bradley Sack, MD, ScD ’68, a professor in International Health, and faculty member for over 40 years at the Bloomberg School. Brad was at the forefront of understanding, treating and preventing infectious diseases, most notably diarrheal diseases including cholera. His contributions to global health helped avert millions of deaths around the world, particularly among infants and young children. He was a much-loved mentor, teacher, and colleague, and will be sorely missed.

Despite challenges, the Department has much to celebrate this year. Over 30 doctoral dissertations were successfully defended and over 80 master’s students graduated. The contents of this issue highlight some of the impressive contributions to science, practice and education our department is making. And they attest to the global health values shared by International Health’s faculty, students and staff—values we need to act on today more than ever.

—David Peters, Edgar Berman Professor and Chair

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A Hopkins-led study finds significant evidence that the oral killed whole-cell cholera vaccine is safe to administer during pregnancy

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Assistant Professor, International Health Social & Behavioural Interventions Program

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Inaugural Associate Chair for Student Matters Associate Professor, International Health Health Systems Program

A new study by a team of Hopkins faculty and students led by Dr. Mohammad Ali, a senior scientist in International Health, found significant evidence that the oral killed whole-cell cholera vaccine is safe to administer during pregnancy.

Cholera affects about 2.5 million people a year, and, if untreated, the disease can be fatal in a matter of hours. As a result, around 100,000 people—overwhelmingly the world’s most vulnerable—die every year because they have no access to care. Among pregnant women, cholera can increase the risk of miscarriage and stillbirth by up to 36 percent. Yet, pregnant women have largely been excluded from vaccination campaigns because little evidence has been available to confirm that it is safe for fetuses—leaving both the women and their pregnancies less protected from the disease.

Cholera vaccine manufacturers currently advise against the use of the vaccine among pregnant women. The World Health Organization (WHO), however, recommends that pregnant women at high risk for cholera receive it. The disconnect lies in the amount of evidence and concerns about liability. Inactivated, or killed, vaccines especially when given orally, are generally not expected to pose an elevated risk to the fetus. Killed vaccines, such as the ones used against influenza and tetanus toxoid, are widely recommended for pregnant mothers across the world and have helped reduce mortality among mothers and newborns. But pre-licensure trials of even killed vaccines typically do not include pregnant women, in case the vaccine does cause unexpected adverse outcomes. Because the cholera vaccine has not been in wide use until the last decade, there has been relatively little opportunity to test its safety during pregnancy.

After recent vaccination campaigns, researchers have been able to conduct several retrospective studies to evaluate the safety of the vaccine during pregnancy. These studies rely on data from the women who inadvertently received the vaccine because they didn’t report being pregnant. Findings consistently point to the vaccine’s safety for fetuses. However, the evidence has not been enough to convince the vaccine manufacturers, fearful of litigation, to change their recommendations. As a result, programs and governments have frequently chosen not to vaccinate pregnant women.

2015 Malawi Cholera Outbreak

In January 2015, cholera cases were being reported across Malawi after widespread flooding. Based on the slowly building evidence that the vaccine was safe during pregnancy, the Malawi Ministry of Health, in consultation with the WHO, planned for a mass vaccination program, which would include pregnant women. Unfortunately, there was not enough vaccine available to cover all affected regions. A decision was made to cover everyone age eligible in Nsanje district, which was the hardest hit at the time. In the neighboring district of Chikwawa, where the risk of the disease was lower, the vaccine would not be offered.

The Delivering Oral Vaccine Effectively (DOVE) Project

Dr. Ali is a member of the International Health’s Delivering Oral Vaccine Effectively (DOVE) Project, which is supported by the Bill & Melinda Gates Foundation and based in the Bloomberg School. As its name suggests, the DOVE Project funds and conducts research to answer questions on how to improve the delivery of cholera vaccine.

Members of the Malawi field team who visited pregnant women monthly to check on status of pregnancy and encourage them to go for prenatal visits

Cover page photos (clockwise from top left): The Department of International Health centennial photograph for the Bloomberg School’s time capsule; photo credit. Chris Hartlove; (H student)-faculty annual picnic during the Bloomberg School’s 102nd year; Allyson Nelson (far left). MSPH ’15, visiting a household included in a vaccination campaign in Malawi.

Expanding access to the oral cholera vaccine

A Hopkins-led study finds significant evidence that the oral killed whole-cell cholera vaccine is safe to administer during pregnancy.

About the Department of International Health

From a modest beginning in 1963, the Johns Hopkins Bloomberg School of Public Health’s Department of International Health has grown into a global leadership role in health research, policy analysis, and program implementation. The Department is divided into four areas: Global Disease Epidemiology and Control, Health Systems, Human Nutrition, and Social and Behavioral Interventions. We offer master’s and doctoral level training in these areas of international health.
The study enrolled nearly 1,800 pregnant women, and half of them received the vaccination. Research analyzed the following outcomes:

- Pregnancy loss (spontaneous miscarriage or stillbirth)
- Neonatal deaths
- Newborn malformations

The study’s success was made possible through a network of collaborators both in the US and Malawi. "We are very thankful for the excellent collaboration with the health officials and scientists in Malawi as well as the research resources developed by the Department of Epidemiology (especially Dr. Taha) in Blantyre," explains Dr. David Sack, a professor in International Health and the director of the DOVE Project. "Working together, it was possible for Dr. Ali and Allyson Nelson to conduct this very important study which will benefit vulnerable people around the world."

Findings and Implications

The study found no significant increase in risk of adverse outcomes in pregnancy or in neonatal deaths or newborn malformations. As a result, the study authors recommended that pregnant women in cholera-affected areas should receive the vaccine. Although the findings were only published in February of this year, other cholera vaccine experts have already acted on the findings, explains Ali:

Based on our study, WHO’s scientific advisory group for oral cholera vaccine reported that there is enough evidence to safely administer the vaccine without regard to pregnancy status. I’m hopeful that WHO will take this advice and strengthen its current recommendation in favor of vaccination during pregnancy.

While this study marks a major advance for the delivery and access of the cholera vaccine, Ali and his colleagues in the DOVE Project still have important questions left to answer. They hope to next look into the optimal dosing schedule for the vaccine. Currently, two doses are recommended over a two-week period. The timing has proven a logistical problem for many programs. The DOVE team would like to look into longer dosing intervals and the long-term effectiveness of a single dose—both of which could significantly reduce implementation barriers and improve access for vulnerable populations.

References cited in this story on following page
The award is presented annually to an outstanding student who has made a significant contribution to the university through a student job by consistently demonstrating good work ethics, reliability, initiative, creative thinking, and professionalism; either on-campus or off.

Humanitarian Assistance Award
Akshtta Siddula, Health Systems

This fund provides support to master’s and doctoral students who are committed to improving humanitarian response and health for refugees, displaced persons and populations affected by conflict and natural disasters.

Henry & Lola Beye Award
Francesca Schiavino Salazar, GDEC

This fund was established in 2001 through the estate of Lola Beye, widow of Henry Beye. MD. Dr. Beye received his MPH degree from the School in 1942 and was an authority on tropical diseases. He conducted intensive studies on elephantiasis, hemorrhagic fever, filariasis, and schistosomiasis, and during his career worked in such countries as Bolivia, British Guiana, Thailand, and Panama. Mrs. Beye, a nurse, often worked in the field with Dr. Beye. This fund supports an outstanding student who has completed a medical degree and is pursuing a graduate degree in the Department.

Harry D. Kruse Fellowship in Biochemistry
Harry D. Kruse, the internationally respected authority on tropical diseases. He conducted intensive studies on elephantiasis, hemorrhagic fever, filariasis, and schistosomiasis, and during his career worked in such countries as Bolivia, British Guiana, Thailand, and Panama. Mrs. Beye, a nurse, often worked in the field with Dr. Beye. This fund supports an outstanding student who has completed a medical degree and is pursuing a graduate degree in the Department.

Mary and Carl Taylor Fund
Ankita Meighani, Health Systems

The Mary and Carl Taylor Fund was created in 1995 with contributions from faculty and alumni in honor of the Taylors' commitment to the students of the School of Public Health and to improving international health through research and action. The fund provides support to a student working in the area of international bioethics.

The Harry J. Prebluda Fellowship in Nutritional Biochemistry
Hyunjoo Kim, Human Nutrition

This fellowship was established in 1990 by Mrs. Harry J. Prebluda and her children in memory of her late husband. Harri Prebluda earned his doctorate degree in Biochemistry at the School in 1937, and worked closely with E.V. McCollum. The fellowship fosters the careers of outstanding young scientists focusing on nutritional biochemistry and metabolism.

The Elsa Orent Keiles Fellowship in Human Nutrition in International Health
Angela Trude, Human Nutrition

This fellowship was established in 1996 with a bequest from the estate of Elsa Orent Keiles, ScD ’25, a graduate of the Department of Chemical Hygiene (now Biochemistry and Molecular Biology). In keeping with Dr. Keiles’ research interests, the award provides tuition support for graduate students with demonstrated financial needs in the Department of Biochemistry and Molecular Biology or the Program in Human Nutrition in International Health.

Harry D. Kruse Fellowship in Nutrition
Marie Spiker, Human Nutrition

The Kruse family established the Harry D. Kruse Fellowship in Nutrition in 1987 to support a continuing doctoral candidate in the Program in Human Nutrition who has displayed outstanding achievement and promise. The fellowship honors Dr. Harry Kruse who received his ScD degree in 1926 and was a distinguished faculty member in the Department of Biochemistry.

Virginia Burke
Meagan Hawes
Emily Carter
Shirley Ho
Erin Cooney
Brittany Kmush
Collrane Frivold
Tess Shias
Atsia Goheer
Dana Stretchberry
Dina Goodman
Alana Teman

Congratulations to Our Delta Omega Honor Society Inductees

Procter & Gamble Fellowships
Erin Hunter, Social & Behavioral Interventions (SBI)

Established by Procter & Gamble in 2003, this fund supports master’s, doctoral and post-doctoral students committed to advancing the health and well-being of women and children through the provision of clean water and improved nutrition.

Georgeda Buchbinder Award
Marysol Encarnacion, SBI

Dr. Georgeda Buchbinder received her MPH from the School in 1984. She then moved to Hawaii and began a public health career by teaching Population Science and International Health. Her career was progressing extraordinarily well when she was diagnosed with cancer. This fund was established by friends and colleagues after her death to celebrate her all-too-brief career in public health. This fund annually supports students, junior faculty, or other priority projects in international health.

Hanna Hess Scholarship
Emily Nagourney, SBI

In 1983 the Hanna Hess Memorial Fund was established with contributions from her family and friends. Hanna Hess, a former Peace Corps volunteer in Kenya, was devoted to improving public health in Africa. The Hess Fund provides an annual scholarship to students in the Department of International Health. Preference is given to those planning to work in Africa.

Nancy Stephens Award
Daniel Erchick, Global Disease Epidemiology & Control (GDEC)

Established in 1970 as the International Health Fund, this fund provides grants to master’s or doctoral students in the Department who are completing their degrees. For 37 years Nancy Stephens was the immensely popular student coordinator in the Department. At her retirement in 2001, Dr. Robert Black renamed the fund in her honor.

JHU Grad Student Employee of the Year Award
Erie Hunter, SBI

The award is presented annually to an outstanding student who has made a significant contribution to the university through a student job by consistently demonstrating good work ethics, reliability, initiative, creative thinking, and professionalism; either on-campus or off.

Humanitarian Assistance Award
Akshtta Siddula, Health Systems

This fund provides support to master’s and doctoral students who are committed to improving humanitarian response and health for refugees, displaced persons and populations affected by conflict and natural disasters.

Henry & Lola Beye Award
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Allyson Profile
Allyson Nelson, MSPH '15
International Health
Global Disease Epidemiology and Control Program

Allyson Nelson graduated from the International Health’s Global Disease Epidemiology and Control Program in 2015. As a student at Hopkins, Allyson worked in Malawi managing the day-to-day operations to start up a large field trial evaluating the safety of oral cholera vaccine during pregnancy. The results from that study were just published in Lancet Infectious Diseases. The study found significant evidence that the vaccine is safe to administer during pregnancy. You can read more about the study on page 3.

After graduation, Allyson joined Jhpiego, a non-governmental global health organization. She’s currently based in Liberia helping the country’s Ministry of Health build a stronger, more resilient health system. Allyson took some time to answer a few questions about her experience as a student in International Health and her current work at Jhpiego.

Can you tell me a little about your work with Jhpiego?
I’m the Monitoring, Evaluation and Research Manager for our projects in Liberia. My 9-person team is responsible for conducting studies and monitoring results to make our programs more efficient and effective, and supporting the government to improve health information and surveillance systems to strengthen health systems and the health workforce, ultimately improving health outcomes. For instance, we work with midwifery and lab technician schools and in health facilities throughout the country to strengthen the quality and availability of health care and to build diagnostic capacity. Strengthening the frontline health workforce is critical to reducing maternal and newborn mortality and to preventing infectious disease outbreaks from becoming epidemics like Ebola did in 2014.

What was the topic of your master’s thesis in International Health?
I wrote it on the work I did in Ghana helping implement an innovative midwife training program across the country. The first 24 hours of an infant’s life are critical for survival. In Ghana, the mortality rate during this time period was very high. The project continued on next page
Do you have any advice for current and future International Health students? Remember that faculty want to involve students in their work. Don’t be afraid to put yourself out there. If you want to develop certain skills or explore a new area, there will be chances for you to practice them under faculty mentorship if you seek out the opportunities. One more thing: save your course work after graduation. Just the other day I was digging through slides from my biostatistics course to get ideas about how to analyze data from one of the projects I’m working on.

Experimental Biology Conference 2017

18 Human Nutrition students receive funding to present their findings at the Experimental Biology Conference in Chicago

Eighteen students from the Department’s Human Nutrition Program won scholarships to present their research at this year’s Experimental Biology Conference in Chicago. “This is the major biological science meeting of the year,” says Dr. Keith West, Jr., professor and program director of the Department’s Human Nutrition Program. “We encourage students to work with their advisor to submit conference abstracts as first authors. Every student whose proposal is accepted receives support to attend the conference,” West adds.

Support for students to attend the conference every year comes from three scholarship funds:

- George G. Graham Professorship Endowment, named after the founding director of the Human Nutrition Division in the Department of International Health. Graham’s discoveries continue to guide infant and child feeding practices.
- Sight and Life / Global Nutrition Research Institute DSM Scholars Program, created with a gift from DSM Nutritional Products AG, the world’s largest producer of vitamins.
- Richard and Barbara Hall Student Award for Excellence in Nutrition Science, created by the Halls in 1997 to support innovative research by graduate students and junior faculty.

“Our students can present their findings to the global nutrition community because of this funding,” says West. “Equally important, it allows young scientists to learn how to engage with their colleagues from around the world. In our field, this is an essential skill to have.”

Fogarty International Center Grants – Building Global Health Research Capacity

The Department’s partnership with Fogarty continues to expand with new grants in Afghanistan, Uganda and Vietnam.

As the only arm of the National Institutes of Health dedicated exclusively to global health, the Fogarty International Center has played a crucial role in training leaders and expanding research projects in developing countries over the past 50 years. Since its inception, Fogarty has supported nearly 6,000 U.S. and foreign investigators working in developing countries, with a special emphasis on fostering institutional collaborations and local capacity building. For decades, the Department of International Health has partnered with Fogarty to train students and build local capacity, primarily in the areas of infectious diseases and tropical medicine. In recent years, the Department and Fogarty have been working together to build capacity in new areas such as injury prevention and non-communicable diseases.

Trauma and Injury

Pakistan and Afghanistan

Since 2005, the Johns Hopkins International Injury Research Unit (JH-IIRU) based in the Department, has led a collaborative training grant on trauma and injury research training in Pakistan. Through master’s training and workshops the grant supported capacity building at Aga Khan University and Khyber Medical University. A new grant expands that training to include Afghanistan. The Johns Hopkins-Afghanistan-Pakistan International Collaborative Trauma and Injury Research Training Program is a partnership between Johns Hopkins, Aga Khan University, Afghan Public Health Institute, and Afghan Public Health University Programs in Afghanistan. The program will help strengthen Pakistani institutions for doctoral training, enhance injury research capacity in Afghanistan, and promote a sustainable research enterprise in western Asia.

Vietnam

Assistant Professor Abdulgafoor Bachani and Professor Abdullah Baqui recently received a 5-year grant to partner with Hanoi University of Public Health to strengthen research capacity on injury and trauma. The new training program, also based at JH-IIRU, will implement a capacity development model to address a major gap in injury and trauma research, a leading health burden in Vietnam. The new training program will establish mechanisms to ensure long-term sustainability through master’s level training for a strong injury research enterprise in Vietnam.

Uganda

Since 2012, the Johns Hopkins University-Makerere University-International Health in Bangladesh.

Bangladesh

Since 2007, the Department has led a training grant for scientists from Bangladesh to improve local capacity to carry out research in the area of childhood infectious diseases, with specific emphasis on maternal and neonatal infections. Professor Black was awarded the grant to be carried out by Professor Joanne Katz, the current 5-year grant is managed by Professor Abdullah Baqui and Professor Black. Through master’s, doctoral and postdoctoral training, the program is helping to build a critical mass of researchers focused on prevention and management of infectious diseases in Bangladesh.

Trainees have gone on to leading positions at several collaborating institutions around the world, including Save the Children, icddr,b, and the BRAC School of Public Health in Bangladesh.

Peru

Since the late 1980s, Fogarty training grants have allowed dozens of Hopkins students to study tropical medicine and infectious diseases in Peru under the mentorship of Professor Robert Gilman. Students have collaborated with his scientific and field teams at several sites throughout the country, and have conducted research on topics ranging from malaria in the Amazon, to respiratory illness in the Andes, to acute diarrheal diseases in the shantytowns outside of Lima.

Contributors: Jessica Rothstein, Samantha Hauf and Melissa Reed

Alumna Profile, Alyson Nelson, MSPH 15 (continued)
Faculty Profile

Maria Merritt, an associate professor in the Department’s Health Systems Program, was appointed the first Associate Chair for Student Matters. In her new position, Dr. Merritt will help ensure that as the Department grows, students have the resources they need to thrive both academically and personally.

In her new role, Merritt leads the Admissions Committee, works on policy formation for student tuition and financial support, and coordinates student matters across the Department’s four program areas. Merritt is working with Professor Joanne Katz, the Associate Chair for Academic Programs, to develop a new training program for International Health faculty who advise students. She also works one-on-one with students to help resolve specific academic challenges.

In May, the Bloomberg School’s Student Assembly honored Merritt with its Special Recognition Award for Outstanding Commitment to Student Success. Students from across the School nominated faculty and then cast their votes to determine the recipient. Cristina Salazar, the Department’s Academic Program Manager, who works closely with Merritt and International Health students, believes the award is well deserved:

Dr. Merritt puts her heart into her work. I’m very happy the students chose to honor her. It confirms how much positive impact she’s been able to have in less than one year in this new role.

Merritt is a philosopher by training, with a joint appointment in the Berman Institute of Bioethics, and teaches the course entitled, The Ethics of Public Health Practice in Developing Countries. In it, students learn how to apply ethical concepts to real-world public health issues.

Her prior scholarship has focused on the ethics of public health research in low- and middle-income countries and what sorts of responsibilities researchers may have to benefit participants and populations involved in their studies. She recently received a grant from the National Institutes of Health to lead the development of a way to factor in social justice issues when evaluating health policy options. “This work will be important for enabling decision makers to take explicitly into account both social justice and ‘value for money’ in a single analysis,” explains Merritt.