

TIMELINE NARRATIVE

1. One Health Networking Event: One World One Health Michigan State University - July 28, 2014

On July 28th, 2014, MSU's Canadian Studies Center and the Institute of International Health convened the first One Health Networking Event at the main campus in East Lansing. The event brought together several key government leads including Carol Rubin of the Center for Disease Control and Prevention (CDC) and Immediate Past Chief Public Health Officer of Canada, David Butler-Jones. Michigan Farm Bureau, Community Health, Agricultural and Rural Development, along with Senator Carl Levin's and Debbie Stabenow's offices were among the governmental interests in the audience.

Interest from MSU's campus was captured by participation of a broad spectrum of health professionals and researchers from fifteen colleges on campus (Osteopathic Medicine, Human Medicine, Veterinary Medicine, Nursing, Agriculture and Natural Resources, Natural Science, Education, Arts and Letters, Communication Arts and Sciences, Education, Business, Engineering, James Madison, Lyman Briggs, and Social Science), Institute of International Health, International Studies and Programs, North American Regional Centers, Center for Advanced Study of International Development and Libraries. Related interests were represented in attendees from the University of Michigan, University of Saskatchewan (Saskatoon), and Carleton University (Ottawa). All parties (academic, policy, and business sectors) were interested in identifying potential partner organizations and discussing opportunities for collaboration.

One of the key outcomes of this event was a report of recommendations that have served as a guideline for a successful One Health initiative. The main outcome of this event was developing a Memorandum of Understanding (MOU) between universities-University of Saskatchewan, Michigan State University, and Carleton University. This MOU formalized the working partnership and acknowledged and leveraged the strengths of each institution to conduct research and communications.

2. One Health Networking Event: One World One Health Michigan State University - March 21- 22, 2016

The second One Health Networking Event was held in March 2016. Campus visitors from Canada's University of Saskatchewan (USask, Dr. Vikram Misra) and Carleton University (CU, Dr. Kim Matheson), as well as a small working group of MSU faculty administrators, met to discuss ways our universities could collaborate, particularly on One Health education, training, and research. Discussions specifically noted how best to exchange information, how to engage teaching and research faculty as well as students in transdisciplinary learning, how to build case studies with those who are interested in the One Health Model, and how our three universities might connect and leverage resources. At the end of the meeting, priorities for addressing these challenges were described as two-fold: (1) building resilient communities by training the next generation of deciders across disciplines, developing a diverse (discipline) set of mentors, and cultivating leadership in One Health across disciplines; (2) fostering a collaborative culture to identify problems, strategize collaboration, and find optimal solutions to local and global problems.

3. One Health Initiative Research Colloquium: What's In It For You?

University of Saskatchewan - April 29, 2016

The One Health Initiative Research Colloquium represents the first networking event attended by the Canadian Studies Center in Canada. AnnMarie Schneider (Director, Canadian Studies Center) and Libbey Kutch (Ph.D. Candidate, Global Health and Medical Geography Laboratory) attended the One Health Research Symposium hosted by the University of Saskatchewan. The objective of the symposium was to allow researchers to organize interdisciplinary teams around identified problems and develop proposals for the One Health Research Development Grant Program. The proposals developed at the symposium were placed in a One Health research model to consider complex relationships between animals, humans, and the environment.

The purpose of the visit was to learn about the process implemented by the USask's One Health Initiative and the Research Development Grant Program, and to consider a possible model for engaging interdisciplinary faculty and student research teams focusing on the animal-human-environment interconnectedness at MSU. The experience at USASK provided a clear example of how to orchestrate interest as well as engage transdisciplinary teams for developing One Health related proposals. The participants learned how this program could provide a platform for collaboration across disciplines, and a training model that considers various research perspectives toward problem-solving, along with a financial incentive to students for their research. Furthermore, this model facilitated relationships, not only across colleges, but also across universities and borders.

4. Challenge Development: One H.E.A.L.t.H Challenge

Michigan State University - 2016

Michigan State University, University of Saskatchewan and Carleton University worked on developing a cross-border, cross-university collaboration. A model exchange program was developed to create a global network of early-career problem solvers. The basis of the program is a framework for developing possible solutions for health issues that, in a society of worldwide trade and travel, can quickly escalate to a global scale. The framework relies on the underlying principle of the One Health Concept: communication and collaboration across human, animal and environmental networks are critical for the prevention and treatment of disease and health management.

The cross border "One HEALtH Challenge" was developed as a strategy for engaging students and faculty in examining how their area of study pertains to a One Health focus. The program design was inspired by case competitions held in MSU's Broad College of Business.

The objectives of the collaboration include the following: (1) create cross-border student interaction; (2) build an One World One Health (OWOH) binational network of both students and faculty; (3) introduce the One Health approach to problem solving; (4) create an exercise of cross border collaboration and productivity; (5) provide an opportunity for

student's to work across disciplines in the One Health Model; (6) familiarize students with group decision making; (7) present a crowdfunding exercise through KIVA.

The project was intended to be a club activity rather than a class activity with volunteer participation. Early in the semester (e.g. September), undergraduate students from a variety of disciplines would be recruited to participate in the One Health project.

As most problems have layers of challenges to solve, it would be up to the student team or teams to fit the case study into a One Health model and decide how to approach the problem or problems presented. A pre-selected panel of reviewers, who are well informed on the One Health model, will evaluate the presentations and select the winning team.

The planning committee considered a few incentives as awards. One incentive is a \$1,000 prize to be used as investment capital through KIVA (kiva.org), which is a crowd-funding program allowing investors to lend money to low-income entrepreneurs in underserved, international communities.

A second incentive being considered is sending the winning team to Ottawa to present their case study and strategy at a One Health event being planned by Carleton University's, *Critical Conversations*.

5. Challenge Implementation: One H.E.A.L.t.H Challenge

Michigan State University - 2017 & 2018

First implemented in 2017, the One HEALtH Challenge is a cross border partnership between at least two universities with multi-national enrollment. Students across a wide disciplinary spectrum build a volunteer cohort interested in addressing health-related problems at every level of society – local, regional, and global. Graduate students with faculty mentors facilitate the work of cross-border undergraduate interdisciplinary teams while they address a case study focused on a global health issue, such as anti-microbial resistance (2017) and water scarcity (2018). Each team is a mix of students from various majors and each university. Specific research tasks are assigned, such as a literature review, and culminate in a presentation competition. The presentation introduces the problem, explains how it fits into a One Health framework, and explores next steps for addressing the problem.

Participating graduate and undergraduate students spend 20 hours across two months on the Challenge including two four-hour webinars, and weekly team meetings. A webinar at the onset of the Challenge teaches the leading principles of One Health while team building. The second four-hour webinar allows for each team to present their case. During this webinar, a panel of professionals from various sectors aligning with human, animal and environmental health select a winning team. A \$1,000 award toward a selected KIVA project is granted (KIVA.org provides microloans to projects intended to help alleviate poverty).

Two student cohorts (2017, 2018) have completed the challenge. Participating students and faculty have set up One Health student clubs and social media sites. They have traveled to

each other's campus to meet team members while participating in extended One Health focused discussions. One example is the 2018 One World Health Congress where MSU sponsored students from China, Ghana, and the U.S. to present their projects (please refer to item 6). Team members have presented the OH Challenge as a model cross-border educational exchange at professional conferences, and have enjoyed related internships and overseas study opportunities (ex. Tanzania Food Project, Nepal Education Abroad). Connections have been made between faculty that have furthered teaching and research objectives. The Challenge has provided an opportunity for early career professionals, as well as faculty to collaborate with colleagues from around the world and discover how One Health is integral to their vocation.

6. 5th International World One Health Congress: University of Saskatchewan - June 22-25, 2018

In 2018, the One Health Platform and the University of Saskatchewan hosted the 5th International One Health Congress, a four-day conference, in Saskatoon, Canada. The conference covered topic areas such as One Health Science, science policy interface, and antimicrobial resistance issues.

The Canadian Studies Center funded the trip of three MSU students: two doctoral candidates (Department of Civil and Environmental Engineering) and one undergraduate student (Psychology and Public Health). The Ph.D. candidates presented their research work from a One Health perspective as well as the One Health Student Challenge Program. In addition, AnnMarie Schneider (Director, Canadian Studies Center) and Melinda Wilkins (Associate Professor, College of Veterinary Medicine) attended the conference.

During the conference, the One Health community expressed a few concerns such as the growing antivaccine sentiments and the lack of access to clean water in underprivileged communities. Other issues that were discussed included the shortage of knowledge on some vaccines, the need for more solid interaction between science and policy, the need to have more effective training response teams during disease outbreak, and the need to overcome the socio-cultural barriers that dictate how most people live their daily lives.

7. One Health Leadership Experience: University of Saskatchewan - 2017 & 2018 & 2019

Since 2012, the University of Saskatchewan has been annually hosting the One Health Leadership Experience. This workshop is attended by high caliber One Health leaders, faculty, and undergraduate and graduate students from different colleges on USask's campus (Human Medicine, Veterinary Medicine, Nursing, Public Health, Kinesiology, Pharmacy and Nutrition, Environment and Sustainability, Agriculture and Bioresources, Engineering, Law, Public Policy, Business, Arts and Science, and Education). The workshop is partially supported by Zoetis, the world's largest animal health and Vaccine Corporation.

The objectives of the workshop include the following: (1) introducing participants to the concept of One Health; (2) providing the opportunity to interact with accomplished One

Health leaders from across North America; (3) improving communication between professions and different disciplines.

In 2017, the Canadian Studies Center (CSC) participated for the first time in the workshop and since then, CSC has funded more than 10 MSU undergraduate students and graduate students, and faculty members from various disciplines to attend the workshop.

8. Student Community Outreach Event: Paint the Rock Michigan State University - October 30-31st, 2018

Our University has a long-standing tradition to paint a large rock that is situated in a high-traffic pedestrian and rider area in the center of campus. It is referred to as “The Rock” and it is used to promote student organizations, ideas and current events. To gain access to paint “The Rock” the group must claim it and guard it by camping out overnight. To kick off One Health Week, “The Rock” was claimed by the “International One Health Week Team.” The “MSU Bat Association” and “One Health MSU”, both undergraduate student organizations, teamed up on The Rock activities. We painted the message “One Health Spartans” upon it in school colors. The team guarded “The Rock” for two days. We talked with passerbys and handed out flyers regarding the events of One Health Week along with a brief description of One Health. We provided doughnuts and cider to all who showed interest in the One Health Initiative. We encouraged them to get involved by joining the “One Health MSU” organization, and attending the events during the week to learn more and connect with others on campus who were interested. The purpose of handing out flyers and speaking with students was to increase public awareness of the concept and the planned activities for the first-ever “International One Health Week” at Michigan State University. Our One Health message reached an optimum number of students in various areas of study as well as faculty and others who strolled by. Recognizably, One Health is an interdisciplinary concept, so the target audience was broad. One of the activity goals was successfully reached by engaging people who are outside of the mainstream of One Health.

9. ESPP Symposium: Faculty/Student Research Partner Michigan State University - November 1st, 2018

About 120 students and faculty attended the “Environmental Science and Policy Program Symposium: Climate-Food-Energy-Water.” Many attendees participated in a poster session demonstrating their research interest and work. The majority were graduate students representing a variety of disciplines, including natural science, social science, engineering, biology and communication arts. During the symposium, the One Health poster with activities of the week was displayed, and a One Health description was distributed. The attendees got to know the concept of One Health, and reflect their connections to One Health in the symposium. There was a “One Health” session in the program during which students presented their research and activities on the OH Framework to other students and faculty. Many of those who learned about One Health there attended the other activities offered during MSU’s One Health International Week.

10. One Health Networking Event and International One Health Week Celebration:

“One Health-An Animal Health Industry Perspective”

Breakfast Reception and Poster Session; Michigan State University - November 2nd, 2018

More than 60 people from the broader campus community gathered to discuss the One Health framework and how it influences our everyday lives. A networking breakfast meeting and poster session helped people on and off campus meet and talk about their interest in One Health. The centerpiece of the discussion was a key address on emerging infectious disease by Dr. Mahesh Kumar, Zoetis Senior Vice President of Global Biologic R&D entitled, “One Health – An Animal Health Industry Perspective.” Dr. Kumar is responsible for the development of biologic research and development of veterinary medicines and diagnostic products. The event attracted university faculty, and off campus professionals from a wide variety of disciplines from medical, social, communication, environmental and engineering sciences. Follow up Q&A increased awareness of the intersections of various disciplines realized in the One Health framework. A continuation of these connections after the networking even are exemplified by research meetings held by faculty and students to examine how they can work better together. Additionally, there have been invitations from stakeholders in attendance for internships and career days. An undergraduate One Health Club on MSU’s campus is being created, expanding the Graduate program on One Health. Moreover, there has been further advancement of a new One Health On-Line Master’s Degree Program at MSU.

11. Student Community Outreach Event: “Run-A-Munk” 5K Race for One Health

Woldumar Nature Center - November 4th, 2018

On this day, we were able to not only continue our outreach and educational efforts for the One Health perspective, but we were also able to put One Health into practice by participating in a 5-kilometer/10-kilometer running race. We sought the Nature Center as a community partner as a way to reach across the region and inform a broader range of people about the One Health framework. The race, titled “Run-a-Munk”, was held at the Nature Center in Lansing, Michigan and brought together over 200 participants for a fun fitness activity within the multiple ecosystems that the nature center encompasses. This activity was a crucial component of our One Health week of events, because not only did it foster broader engagement beyond campus, but participants were able to support the environmental and animal health at the nature center through their race registration fees, while supporting their own health by engaging in physical fitness.

MSU’s Go Green! Go One Health! Group organized a team of runners for the race, as well as sponsoring the event. As a race sponsor, the group was able to reach out to other participants and talk about One Health, why it is important, and how they can get more involved within the One Health community. We were able to develop connections with families that we otherwise would not have reached at MSU. Additionally, the race

sponsorship allowed the group to put the One Health Day logo on the official race t-shirts, helping to further publicize One Health and One Health Day.

The One Health team represented a mix of interests including the Colleges of Veterinary Medicine, Human Medicine, Natural Sciences, and Engineering; and programs such as Environmental Science and Policy and the Institute for Public Policy and Social Research. Each team member was also provided with a One Health-specific t-shirt, to help show their support for the One Health framework, even after the race festivities.

Not only did the race allow for the promotion of One Health and the other One Health Week events, it also held the promise of continuing partnerships between the Go Green! Go One Health! Group and the Woldumar Nature Center, MSU's Council of Graduate Students, and MSU's Environmental Science and Policy Program. The group is already talking about next year's One Health Run!

12. Capstone Presentation: "Why One Health Matters: Environmental and Behavioral Factors that have led to a Perfect Microbial Storm"

Michigan State University - November 4th, 2018

The capstone event celebrating International One Health Day/Week brought nearly 250 people together to meet Commander Heather Bair-Brake, U.S. Center for Disease Control and Prevention. Entitled, "Why One Health Matters: Environmental and Behavioral Factors that have led to a Perfect Microbial Storm," CDR Bair-Brake talked about how diseases "go global" more quickly, as well as how they are more quickly managed under the One Health model. CDR Heather Bair-Brake, MS, DVM, DACVPM is a veterinary public health officer with the CDC or Center for Disease Control and Prevention. She has served in communication roles with the Division of Foodborne, Waterborne, and Enteric Diseases, the Division of Global Migration and Quarantine, and most recently as the Director of Communication Science for the National Center for Environmental Health and the Agency for Toxic Substances and Disease Registry. During her visit, she did a media interview to further the message of One Health. As a concluding presentation, the program brought together a great majority of people who had participated in other International One Health Week/Day events.

13. Research Grant: One Health Project

Michigan State University – 2017-2018

A research grant program administered by the Institute for Public Policy and Social Research (IPPSR) funded a 2017 One Health project entitled "A One Health Approach to Information Seeking and Sharing about Antibiotic Resistance among Agriculture Producers and Veterinarians". This research project used a One Health approach - taking human, animal, and environmental health into account- to address antibiotic resistance.

"Specifically, this project focused on veterinarians who sit at the nexus of decisions about antibiotic use as they interact with major stakeholders such as the agriculture industry and function as the gatekeepers." Excerpt from Informing the Debate paper.

The IPPSR-funded research resulted in a 2018 briefing, which was included in the paper

series, informing the Debate. The expected outcomes of the paper series include discussion that fosters and strengthens multidimensional connections between the policy, academic, and practitioner community. The series continues to cultivate research interest in policy-relevant issues for consideration of decision makers in urban communities.

14. Research Support for Graduate Students Training

University of Saskatchewan - Summer 2019

In summer 2019, the Canadian Studies Center supported two graduate students, working under the guidance of Dr. David Ferguson in the College of Education (Department of Kinesiology), to travel to the University of Saskatchewan. The purpose of the trip was to receive training on modern research techniques.

Dr. Ferguson investigates how undernutrition in early life leads to mortality due to non-communicable diseases. Specifically, he uses a mouse model to understand how growth restriction leads to cardiovascular diseases. In effort to translate his findings to human population, he has established collaboration with Dr. Dan Columbus at the University of Saskatchewan, who also studies growth restriction, but using a pig model.

As an outcome, the students established a data pipeline with Dr. Columbus, who has now access to molecular analysis resources in Dr. Ferguson's lab, and in turn, Dr. Ferguson's students received training from Dr. Columbus on the modern techniques to evaluate tissue growth. This collaboration will likely yield to publication in scientific peer reviewed journals and external funding.

15. One Health Collaborative Research and Education Initiative

Michigan State University- March 25-26, 2019

The Canadian Studies Center hosted a "Collaboration Initiative" to cultivate research and education partners across MSU campus and with universities in Canada. The objective of the effort was to build or reinforce connections among MSU and Canadian scholars for collaborative teaching and problem solving. The initiative focused on two main themes of collaboration tying in areas such as One Health and the Arctic Platform: Food and Agriculture and Water Science. Seven Canadian universities (Carleton University, Dalhousie University, Ryerson University, University of Guelph, University of Saskatchewan, University of Toronto, and University of Waterloo) attended the meeting and met with faculty and students from 25 different campus units to build collaboration that continues today through research and education projects.

16. Policy Forum

Lansing - 2015 & 2016 & 2017 & 2019

The Canadian Studies Center has tapped into a community of policy decision makers by teaming up with MSU's IPPSR and several colleges. Through this network, the center has increased understanding and awareness of trending societal issues with a One Health nature far outside the boundaries of campus.

Planned for an audience of government and business leaders, IPPSR's annual public policy forum series combines and presents evidence-based research, theory and best practice. The forum recruits faculty expertise and practitioners to participate in panel discussions on pressing policy-relevant issues. Panelists share research and exchange experiential knowledge on difficult problems being discussed in the legislature.

There are eight forums held in an annual series. Each forum hosts an average of 157 attendees. They are open to the public at no charge. Topics relevant to One Health include:

- The Gray between Mental Health and Crime – April 2015
- Flint Water System: State and Local Responsibilities – March 2016
- Access to Mental Health Care – September 2016
- A Fight for Life – Tackling Opioid Addiction – March 2017
- The Obscurity of Human Trafficking – April 2017
- Curbing Vaccination Waivers – November 2017
- Health of the Great Lakes – March 2018
- Lending Light to Michigan's Double Crisis – Opioid Use and Suicide – January 2019
- Aging at Its Best: Building Michigan's Age-Friendly Communities – February 2019
- Oil Spills on Winter Lakes: Risk Perception, Detection, and Remediation – April 2019
- Michigan's Response to PFAS – May 2019
- Managing Water Level Change in the Great Lakes – October 2019
- Urban Meets Rural, Balancing Human and Environmental Health – November 2019

17. Research Grant: One Health Project Michigan State University – 2019-2020

A research grant program administered by IPPSR funded a project related to the Great Lakes Health, entitled "Line 5: Oil Spill Detection, Remediation, and Risk Perceptions in Winter Conditions". The goal of the project was to improve the understanding of both the perceived and technical risks associated with Line 5, an increasingly contentious oil transport pipeline in the Straits of Mackinac.

The first part of the project, which examined the social perceptions of Line 5 was completed earlier this year. The outcome was a podcast that provided insight into the public's and decision-makers' perceptions of the risks associated with a Line 5 underwater oil spill. The second part of the project is ongoing and focuses on the physical risks associated with line 5, specifically how oil accumulates and spreads beneath ice in the winter season.

The findings from this research will have critical implications for identifying best practices and developing spill remediation policy for the State of Michigan. In addition to the production of a briefing paper, this research will inform Line 5 related public policy development and generate high-quality peer-reviewed research publications.

The project connects to the OH as it presents the environmental, economic, and health considerations of a pipeline leak if it were to occur.

18. Partnership Forum

Michigan State University - 2020

Cross-border collaborations have been critical in shaping perspectives and solutions to some of our world's biggest problems. The MSU Canadian Partnership (MSUCP) Forum aims to build partnerships between MSU and Canada's teaching and research institutions in areas related to the Center's four key focus areas: food and agriculture, environment and energy, health and nutrition, and education.

Forums are held throughout the academic year and are designed to encourage discussion and collaborative thinking to address global challenges and provide well-rounded solutions. Each forum features a key MSU faculty speaker and a visiting colleague from one of Canada's research or teaching institutions. The intended outcome of the visit is a shared partnership between the MSU faculty and the visitor in the line of teaching or research collaborations, grant proposals, or joint publications.

This year's topics include:

- PFAS exposure in communities – January 2020
- Developmental origins of cardiovascular disease – February 2020
- Plant response to environmental stress and pathogens – February 2020
- Impacts of built environment on public health – March 2020
- Natural resource management and sustainable energy – March 2020
- Human impacts on the water cycle – April 2020

19. One Health Panel: Coronavirus Outbreak

Michigan State University – March 2020

The Canadian Studies Center hosted a panel discussion focused on the 2019-2020 Coronavirus Outbreak from a One Health perspective. MSU experts on human, animal, and environmental health discussed what we know about this novel virus, how the current outbreak compares with previous outbreaks, how it can be managed, how it has affected campus and the broader community, and what's to come. The panel discussion was open to students, faculty, and the broader community.