



One Health (Including IPE) Initiatives/Activities **July 1, 2017 to January 1, 2018**

SUMMARY

During this period, Midwestern University submitted its Open Pathway Quality Initiative Report to the Higher Learning Commission (HLC). On the HLC Panel Review and Recommendation Form, the following statement summarized their findings and conclusions:

“Midwestern University has demonstrated genuine effort toward the Quality Initiative. The University undertook a comprehensive approach to leverage diverse colleges and departments toward the implementation of the “One Health Initiative.” The bold Quality Initiative appeared to have changed academic orientation and redefined the University with this creative approach to health care. Reviewers’ concur that the outcomes of this Quality Initiative represent the intent of the requirement for pathway accreditation.”

With this confirmation of the success of our efforts, One Health activities continued apace on both campuses. Starting with this report, future One Health Initiatives/Activities reports will be formatted such as this one. After a general summary, each College will describe their most significant One Health activity and list other such activities in bullet format.

SIGNIFICANT ONE HEALTH COLLABORATIVE INITIATIVES

One Health Center (OHC)

Our most significant activity was the hiring of Alice Chapman, DVM, MPH, DACVPM as Assistant Director. Dr. Chapman will be employed during this fiscal year as a 0.5FTE, primarily supporting the Downers Grove campus. Our plan is to increase this to a full 1.0FTE next fiscal year, after which she will serve both campuses from her base on the Glendale campus. The selection of this campus was appropriate since the additional funding will be provided by the College of Veterinary Medicine. Similar to Dr. Noah, Dr. Chapman will be dually appointed, in both the administration of the One Health Center and as a CVM faculty member.

Other significant initiatives included:

- Researched and prepared a *pro forma* proposal for Advanced Public Health Training (e.g., MPH and/or DrPH degrees) at Midwestern University, which is under consideration.
- In support of the public health training *pro forma*, a survey was conducted among all MWU students to gauge their interest in such educational opportunities. Salient analyses and conclusions

(performed by the Office of Institutional Research and Educational Assessment[OIREA]) included:

- The overall response rate was 10.8% from 6,767 students (n=733).
- The program with the highest mean level of likelihood (defined as 3=very likely; 2=moderately likely; 1=not likely) of pursuing a Master of Public Health dual degree was IL-Biomedical Sciences (m=2.68), followed by Veterinary Medicine (m=2.65), and then Podiatric Medicine (m=2.44).
- 245 students expressed their likelihood of pursuing a dual MPH degree as “very likely.” Of those students, 57.4% indicated their preference for a hybrid mix of online and in-classroom coursework.
- 108 students indicated that they were “very interested” in pursuing a dual DrPH degree, the clear majority of which preferred a hybrid mix of online and in-classroom coursework.
- Launched the first iteration of the multidisciplinary elective course, *One Health Grand Rounds* (ONEHG 1301), on the Glendale campus.
- Drafted a *Public Health 101* syllabus and course as requested by several Deans on the Downers Grove campus. Course content is currently under review by several Colleges for possible inclusion.
- Launched a One Health web page on the Midwestern University intranet in September 2017; the web page provides guidance and resources for faculty and program directors, as well as an online form to report One Health activities from each College/program. This web page can be accessed at https://www.midwestern.edu/one_health_center.html.
- Collaborated with CCP faculty members to plan and implement a *Veterinary Pharmacy* elective course to be initially offered during Spring Quarter 2018.

Institute for Healthcare Innovation (IHI)

The IHI has continued to foster and support the One Health Research initiative through inter-departmental collaborations, externally sponsored research activities, and scholastic contribution for faculty and students. For purposes of this report, certain confidential information (i.e. study Sponsors, drug name, etc.) has not been included.

Other significant initiatives included:

- One Health clinical studies and research. These studies are defined as those studies which are translational in nature and propose to advance human and veterinary medicine in parallel. All studies are considered novel in nature, meaning that the IHI is performing unique research to further distinguish the IHI and MWU as a cutting edge clinical research institution. Listed below are key studies, categorized by medical discipline, with respective MWU or affiliate faculty study team members.
 - Regenerative Medicine.
 - Drs. Craig Woods (IHI), Chad VanDenBerg (IHI), and Michael Jaffe (CVM). *Evaluation of Allogenic Stem Cells in Dogs with Osteoarthritis*. Industry sponsored FDA-regulated, double blind, prospective, placebo controlled pivotal efficacy and safety study evaluating allogeneic stem cells in dogs with osteoarthritis.

- Infectious Disease.
 - Drs. Craig Woods (IHI), Jason Eberhardt (CVM), Kara Thomas (CVM), Elizabeth Robbins (CVM), Lisa Keenan (CVM), Scott Soby (CHS), and Vanthida Huang (CPG). *Comparison of Chelating Agent Alone or in Combination with Standard of Care Otic Formulation for Treatment of Canine Chronic Otitis Externa.* Prospective, double blind, comparator controlled study of a novel, non-antibiotic anti-infective in dogs with otitis externa (CVM). Bacterial and fungal isolates will be collected, characterized by 16s rRNA (CHS) sequencing and antimicrobial sensitivity (CPG), and retained to build internal bacterial and fungal repository for future pharmaceutical research.
 - Drs. Ghazal Ebadzadsahrai (CHS), Craig Woods (IHI), Scott Soby (CHS), Kara Thomas (CVM), and Elizabeth Robbins (CVM). *Comparative Metagenomes in Unilateral Canine Otitis Externa Infections.* This is the first known study which will characterize canine bacterial metagenomes between infected and non-infected ears.
- Oncology.
 - Drs. Craig Woods (IHI) and Rachel Venable (CVM – Arizona Veterinary Oncology). *Analysis of cancer biomarker enzymes in dog sera samples.* We are performing an analysis of several biomarker enzymes in dogs with cancer compared to healthy aged matched controls. This study may reveal novel approaches to early cancer detection in humans and dogs, since the same enzymes exist in both species.
 - Drs. Craig Woods (IHI), Chad VanDenBerg (IHI), Stephanie Shaver (CVM) and Stephanie Szabo (CVM). *Evaluation of [drug] on Pulmonary Metastasis Size and Quantity in Dogs with Osteosarcoma.* Prospective therapeutic study of a new drug entity in dogs with pulmonary metastasis from osteosarcoma, which is comparative to human osteosarcoma.
 - Drs. Craig Woods (IHI), Chad VanDenBerg (IHI), Stephanie Shaver (CVM) and Stephanie Szabo (CVM). *Evaluation of [drug] on in Dogs with Primary Osteosarcoma.* Prospective therapeutic study of a new drug entity in dogs with appendicular primary osteosarcoma, which is comparative to human osteosarcoma.
 - Drs. Craig Woods (IHI), Chad VanDenBerg (IHI), Theresa Fossum (MWU), Lisa Keenan (CVM), Alexis Siler (CVM), Kara Thomas (CVM), Omar Gonzales (CVM), Lynn Maki (CVM), Stephanie Shaver (CVM), Stephanie Szabo (CVM). *Evaluation of a Tumor Selective Imaging Agent in Dogs with Solid Neoplasia.* Prospective study evaluating the effects of a tumor imaging agent in dogs with various solid non-hepatic tumors. This study is advancing the efforts towards improving image guided surgery for human and veterinary cancer patients.
- Neuroregenerative Disease.
 - Drs. Craig Woods (IHI), Chad VanDenBerg (IHI), Jason Evans (CVM) and Anil Gulati (CPG). *Therapeutic Effect of an Endothelin Agonist in Dogs with Degenerative Myelopathy.* This is a prospective, historically controlled pilot study evaluating the efficacy of an endothelin agonist in dogs with previous confirmation of degenerative myelopathy, a comparative disease to human amyotrophic lateral sclerosis (ALS).

- Epigenetics.
 - Drs. Craig Woods (IHI), Chris Sasaki (Clemson) and Keith Murphy (North Dakota State University). *Epigenome Mapping of Canine Tissue Samples*. This study is an initial attempt at creating a much needed epigenomic map of canine methylation patterns, corresponding to the human epigenome roadmap initiative.
- Toxinology.
 - Amanda Rappaport (CVM-student), Monica Chen (CVM-student) and Dr. Craig Woods. – *listed under ORSP Student One Health Research Awards (below)*.
- Fulbright Scholar. Drs. Craig Woods (IHI), Ashlesh Murthy (CVM), and Svetla Danova (Bulgaria). *New Concept of Probiotics – Defining Their Parabiotic Mechanisms*. MWU will host Dr. Svetla Danova as a Fulbright Scholar (Sept 2018 – Dec 2018). During this period, Drs. Woods, Murthy and Danova will evaluate the effects of parabiotic lysates in cell based assays in preparation for advancing into human and veterinary studies.
- One Health Teaching/Education/Training. The IHI remains committed to advancing student exposure to a) clinical research and b) non-clinical career opportunities in regulatory affairs, business development, and other areas outside of clinical practice.
 - Craig Woods DVM, MS, MBA (IHI) – Student Research Ground Rounds – provide monthly CVM student ground rounds concerning ongoing One Health research projects and career opportunities in industry and the private sector.
 - Craig Woods DVM, MS, MBA (IHI) – VMED 1325 – Venoms and Toxins – developed and introduced course to CPG and CVM students on venoms and toxins, venom pathophysiology, global medical burden of envenomation, and One Health perspectives on snake envenomation. This course is also designed to introduce the concepts of developing a clinical study for those students interested in pursuing careers in research.
 - Craig Woods DVM, MS, MBA – Community Health Lecture Series Glendale-Foothills Branch Library- presented lecture on Venom; *The Good, the Bad, The Basics*.

Office of Research and Sponsored Programs (ORSP)

The ORSP offered competitive intramural funding through MWU’s One Health Research Stimulus Award. Annual stimulus awards offered on both campuses provide up to \$10,000 for a one-year period to foster research in One Health. Proposals are encouraged from investigators in distinctly different disciplines, whose projects integrate at least two of the One Health components, including human health, animal health, and ecosystem integrity and change. The goals of these stimulus awards are to foster research in One Health, initiate new and emerging multidisciplinary partnerships and to generate pilot data for extramural grant applications. The two awards for \$10,000 each, starting on July 1st, 2017 included:

- Drs. John VandenBrooks, Jose Hernandez, Michael Quinlan, Nellie Goetz, Rachael Kreisler and Jung Keun Lee for their project titled “Elucidating the Role of *Rhipicephalus sanguineus* (the Brown dog tick) as a Vector for Rocky Mountain Spotted Fever (RMSF) Transmission in Arizona.”
- Drs. Jose Rodriguez Sosa, Tony Tullo and Nagaraj Vinay Janthakahalli for their project titled “Study of the Effects of Plasticizers on the Male Reproductive System in the Testis Xenografting Model.”

Additionally, four Student One Health Research Awards, each for \$2,500, were determined across both campuses to foster research in One Health for students collaborating with MWU faculty. These included:

- J’Rick Lu mentored by Drs. Kirk Dineley, Latha Malaiyandi and Karen Nichols for their project titled “Investigating the Effects of Flame Retardant on Organelle Morphology in Adrenal Cortex Cells.”
- Arie Jung, mentored by Dr. Julie Swartzendruber, for their project titled “Prevention of Sensitization to House Dust Mites with the Probiotic *B. Subtilis*.”
- Amanda Rappaport and Monica Chen, mentored by Dr. Craig Woods, for their project titled “Determine if weather pattern changes are associated with changes in reported snake envenomations.”
- Jonathan Allen mentored by Drs. John VandenBrooks, Jose Hernandez, Michael Quinlan, Nellie Goetz, Rachael Kreisler and Jung Keun Lee for their project titled “Elucidating the role of *R. sanguineus* as a vector for RMSF transmission in Arizona.”

Chicago College of Osteopathic Medicine (CCOM)

In collaboration with the Illinois Osteopathic Medical Society, CCOM sponsored its annual Clinical Refresher Course (CRC) and Alumni Reunion weekend in November 2017. The medicine program offered participants up to 30 hours of continuing education credits through interactive sessions, case lectures, and hands-on lab training. In previous years, the CRC included 2-4 hours of lectures focused on One Health as the discussion topic. In contrast, this year’s speakers incorporated One Health-related clinical concepts throughout all the sessions which included addiction medicine, internal medicine, neurology, obesity, and sports medicine. Additionally, the CCOM Dean presented a 2-hour lecture that focused on interdisciplinary communication.

Other significant initiatives included:

- During the 24 months that 3rd and 4th year CCOM students spend in clinical rotations at Chicago regional hospitals, they accumulate thousands of interprofessional experiences with a range of healthcare professionals, including physicians, pharmacists, dieticians, nurses, physical therapists, and social workers. Currently, students are required to log professional interactions and procedures performed using a paper system. To better track and characterize interprofessional encounters and the types and numbers of patients and allied health professionals involved, CCOM is working with information technology staff to establish an electronic tracking system. This will not only facilitate data capture but will enable more thorough analysis of training trends.

Arizona College of Osteopathic Medicine (AZCOM)

Since the on-boarding of our new Medical Director, Dr. Shannon Scott, interdisciplinary clinical education has accelerated and expanded. As examples, AZCOPT students are training with AZCOM students in the Multispecialty Clinics; ClinPsych student interns consult for patients with mental health issues real time when patients are seen for their medical appointments; CPG faculty and students are collaborating on interventions such as blood thinners and insulin; and AZPOD faculty and students are helping to provide comprehensive diabetic care. The new physical therapy services have also opened, increasing patients’ abilities to receive full care for musculoskeletal injuries.

Other significant initiatives included:

- The Health Outreach through Medicine and Education (HOME) program is exploring implementation options for electronic medical records. If successful, this will significantly enhance both the quality and continuity of care for homeless beneficiaries.
- Dr. Lawrence Sands is the AZCOM faculty representative for MWU's interdisciplinary team preparing for the annual CLARION Competition held in April at the University of Minnesota. CLARION is an inter professional student case competition for health professional students, enabling them to achieve a 360-degree perspective on patient safety in today's health care system and how it might be improved.

Chicago College of Pharmacy (CCP)

Our Student Leadership Institute, an on-going event for years now, was enhanced during this period by becoming interprofessional. During the most recent offering, an extracurricular multi-day event, we had a very good turnout from medicine, dental and health sciences.

Other significant initiatives included:

- Pharmacy faculty members are collaborating with dental (CDMI) faculty on a research project aimed at creation of improved disposal methods for medication waste.
- Pharmacy faculty and students are working with dental students in the Multispecialty Clinic to enhance medication history taking and dental treatment planning.

College of Pharmacy-Glendale (CPG)

Permanent establishment of the CPG Nanomedicine Center of Excellence in Translational Cancer Research was approved. The Center currently has 8 faculty collaborators spanning 6 MWU colleges; 7 primary multidisciplinary research areas; and 2 clinical partnerships.

Other significant initiatives included:

- PPRAG 1677 (Advanced Interprofessional Development) expanded such that a third of CPG students take the course in each Fall, Winter, and Spring quarters. This provides additional clinical practice sessions with CDMA students in the MWU Dental Institute.
- Approved PPRAG 1443 (Veterinary Pharmacology), an elective course created in collaboration with CVM.
- PPRAG 1796 (Elective Advanced Pharmacy Practice Experience (rotation)) emphasizing veterinary pharmacy has been established with the MWU Companion Animal Clinic. The first student has been scheduled. Other veterinary pharmacy rotations include those at Road Runner Pharmacy and Diamondback Drugs.
- IPECG 1410 (Safe Opioids Prescribing elective course) has been approved by CPG, AZCOM, and CDMA.
- The complete Improving Patient Safety elective course series (IPECG 1401, 1402, and 1403), a collaboration between CPG, AZCOM, and CDMA, has been implemented.
- A CPG/AZCOPT Grand Rounds series has been established. Dr. Mindy Burnworth presented on September 29, 2017 on Rare and Interesting Diseases.
- The AZCOM/CPG/CVM Disaster Preparedness Seminar Series held two presentations: Drs. Don Noah, Larry Sands and Alice Chapman presented on August 2, 2017 on Tuberculosis: A Global One Health Challenge; and Ms. Nikki Kemper presented on November 3, 2017 on Firsthand Experiences in Hurricane Harvey in Houston, TX.

College of Dental Medicine-Illinois (CDMI)

Dental faculty collaborated with the College of Health Sciences to continue a research project on addressing dental anxiety in older adults.

Other significant initiatives included:

- Dental faculty presented a One Health scenario which addressed the availability of oral healthcare of pets belonging to owners receiving dental care.

College of Dental Medicine-Arizona (CDMA)

We are developing plans to incorporate canine service animals into our pediatric dental clinics aimed toward several positive outcomes. In addition to the obvious reduction in anxiety among our patients, it should facilitate the reduction or possible elimination of nitrous oxide and/or intravenous sedation administration. Moreover, we will perform initial bloodwork on the dogs to assess their exposure status to various pathogens of dental importance. Following their period of service, they will be assessed again to determine what they may have exposed to during the course of that service.

Other significant initiatives included:

- As a partner member of the Autism Center of Excellence, we have been awarded a grant (in collaboration with ClinPsych and Occupational Therapy) by the Great Western Behavioral Center to provide dental care to patients with autism disorders. Implementation of this clinical program will be the next step.

Chicago College of Optometry (CCOPT)

The most significant accomplishment during this period was the matriculation of the inaugural class of 66 students to the new Chicago College of Optometry. Dr. Melissa Suckow was appointed Dean.

Other significant initiatives included:

- Faculty from CCOPT provided guest lectures on the role of vision therapy in the physical therapy program elective course, *Independent Study in Vestibular Rehabilitation*.

Arizona College of Optometry (AZCOPT)

The college received very positive feedback from students and faculty regarding its first ventures into interprofessional practice. As such, the program has sought to strengthen current interprofessional practice experiences with the Arizona College of Medicine and the Clinical Psychology. Fourth year optometry students rotate through the multispecialty clinic where they are exposed to the management of patients with chronic conditions such as diabetes and hypertension and can discuss cases with primary care providers from a more global perspective. Clinical Psychology students have been incorporated into additional clinics including electrodiagnostic, low vision, and acquired and traumatic brain injury. Additionally, the college is investigating the opportunity for further collaborative practice opportunities with physical and occupational therapy.

Other significant initiatives included:

- Dr. Pierce Kenworthy is serving as the optometry faculty mentor for MWU's interdisciplinary team preparing for the annual CLARION competition held in April at the University of Minnesota. This will mark only the second time that an optometry student and faculty has had the honor of participating in this program.
- The Eye Institute as well as co-investigators from both the Eye Institute and the Multispecialty Clinic faculty were recommended to participate in two multi-center studies:

- SHP640-301, A Phase 3, Multi-center, Randomized, Double-Masked Study to Evaluate the Clinical Efficacy and Safety of SHP640 (PVP-Iodine 0.6% and Dexamethasone 0.1%) Ophthalmic Suspension Compared to PVP-Iodine and Placebo in the Treatment of Adenoviral Conjunctivitis.
- SHP640-303, A Phase 3, Multi-center, Randomized, Double-Masked Study to Evaluate the Clinical Efficacy and Safety of SHP640 (PVP-Iodine 0.6% and Dexamethasone 0.1%) Ophthalmic Suspension Compared to Placebo in the Treatment of Bacterial Conjunctivitis.

College of Health Sciences-Illinois

The first iteration of a multidisciplinary course, *Interprofessional Education II* (CORED 1699), was launched during the Winter Quarter. This course is designed for student groups to follow a single patient throughout the 10-week course, with new information provided to students prior to their weekly meeting. Student groups discuss how each profession would make an intervention for the given topic, and then present an integrated approach to treatment during the in-class session. Intended as a follow-on to *IPE I*, *IPE II* enrolled 320 dental and pharmacy students in their 2nd year of study.

Other significant initiatives included:

- Cardiovascular Science faculty served as mentors for dental (CDMI) students during CDMI Grand Rounds. The case involved a dental patient with cardiovascular disease.
- Students from the speech-language pathology, physical and occupational therapy programs participated in an osteopathic medicine (CCOM) Grand Rounds on integrated rehabilitation planning for a patient recovering from a stroke.
- The multispecialty clinic hosted a balance and falls screening clinic for patients aged 65 years and older. Students from clinical psychology, physical and occupational therapy programs joined optometry students in evaluating 20 patients, providing them with recommendations and when indicated, referrals to other medical specialists.
- Physical therapy program faculty have initiated discussion with engineering faculty at the University of Illinois to explore opportunities for collaborative research using motion analysis tools and techniques.

College of Health Sciences-Arizona

Significant One Health research initiatives were undertaken by faculty in Biomedical Sciences Program. These initiatives include: a) the second and final phase of a joint research project between IHI, the CVM Companion Animal Clinic, and the Soby laboratory is underway to isolate and characterize microbes associated with canine ear infections; b) a metagenomics research project that will study the total bacterial populations of infected and healthy canine ears has begun and is in the DNA collection stage; and c) a potential new patent is being explored for exploiting volatile organic compounds produced by bacteria that inhibit fungal growth. Affected fungi include both human and plant pathogens

Other significant initiatives included:

- Physical Therapy Program is developing an elective on Canine Rehabilitation which will be available to Physical Therapy and Veterinary students.
- Physician Assistant Program is establishing a component of the EMED clinical rotation to include a day of learning with the dental surgeons at the dental clinic regarding evaluation and treatment of dental emergencies.
- Speech-Language Pathology coordinated joint observations for OT/SLP students at an Autism Spectrum Disorder treatment center and inclusive classroom.

- Clinical Psychology students provide brief psychological consultations for patients in Family Medicine Clinic and in the Optometry Clinic; the brief consultations can serve as the bridge into short of long-term psychological treatment.

College of Veterinary Medicine (CVM)

Faculty members and students took two trips to Sonora, Mexico to conduct regional animal clinics. Approximately 700-800 pet animals were spayed/neutered, vaccinated, and treated for internal & external parasites. This is especially significant since, in this region alone, 21 children have died recently from tickborne ehrlichiosis. Activities such as this directly enhance the health of multiple species (e.g., humans, dogs, and cats) and serve to prevent future zoonotic disease incidence and transmission through effective community education.

Other significant initiatives included:

- Conducted free feline trap-neuter-release (TNR) programs with local communities. In November, 178 cats were spayed/neutered.
- Conducted six mobile animal clinic trips to regional Tribal Nations. During these clinics, pet and stray animals were given physical exams, vaccinated, treated for diagnosed diseases, spayed/neutered, treated for parasites and community education materials were discussed with American Indian population. This is significant since, on the Navajo reservation alone, there are more dog bites reported annually than from the entire Phoenix Valley.
- The first pharmacy (CPG) student has been scheduled to complete a clinical rotation in the Companion Animal Clinic's pharmacy.
- With input from CVM faculty, a new Veterinary Pharmacy course was approved by CPG curriculum committee.