

Regenerative Medicine Minnesota Native Americans Into Medicine Final Report

Native Americans into Medicine
June 26, 2017 - July 21, 2017

Brief description of the project:

Throughout four weeks of summer 2017, the Center of American Indian and Minority Health (CAIMH) hosted a summer science and health professions preparatory program to undergraduate Native American students representing Indigenous communities across the United States. The program, in its third decade is called Native Americans into Medicine (NAM), and is designed to increase the number of Native American health professionals by introducing students to health professions careers while building their capacity to successfully complete the scientific coursework required for a career in medicine. Traditionally the program has emphasized medicine but has changed in the past two years to include other health disciplines, including dentistry, pharmacy, public health, nursing and veterinary medicine, recognizing that Native people are significantly underrepresented in all health professions. The four-week NAM curriculum focuses on a given theme, which for 2017 NAM was regenerative medicine, around which to teach science. We recognize that it is impossible to strongly affect student scientific knowledge in just four weeks. Our program aims instead to instill comfort with and confidence in science and math by teaching and reviewing basic and advanced scientific concepts with students. It also aims to strengthen student academic prowess and resiliency in general by empowering them through cultural programming and community building.

The 2017 NAM curriculum was ambitious and broad. Students studied basic science with lectures on cell biology and cell regeneration including a lab on planaria cell regeneration to more advanced science concepts such as gene therapy. They also studied a range of science disciplines with lectures in biology, physics, and chemistry. Cultural programming included community building among the students and through presentations by a local Native elder. Native American scholar, Dr. Roxanne Dunbar-Ortiz, states that a commonality among Indigenous people in the United States is a history of oppression, included many attempts to decimate Native culture. This common history, though terrible, can be a means of uniting and strengthening people. In addition, research demonstrates that Native people are able to mitigate the effects of historical trauma by enculturation. Cultural and historical knowledge were and are, therefore, an important component of the NAM program. Students learned about Ojibwe history and also participated in traditional Native games. The NAM course began with a

discussion on Tribal and self-identification, a topic rich in controversy that immediately elicited varied student opinions but also united students in their recognition of shared history and current struggles. The third component of the curriculum, introduction to health professions served to broaden student awareness of and interest in various medical disciplines, with interactive and engaging lectures. For instance, pharmacy representatives taught students how to formulate a medication while also teaching them about requisites for entry to pharmacy school and potential career paths for a doctorate of pharmacy. A veterinary school professor led NAM participants through several procedures on stuffed animals in addition to teaching students about opportunities in veterinary medicine. Finally, at least half of the students had opportunity to shadow with a Duluth area health professional on at least two different half-days. While the curriculum was ambitious and broad, its diversity of topic and skill level was almost necessary given the wide range of student ability in the program.

People impacted by the project and where they are from:

Twenty-one Native American students participated in the 2017 NAM program. Program participation was limited to students either in college and either just accepted or graduated. The range of grades and experience was intentionally large because it is the experience of CAIMH faculty and staff that most Native professionals, health and otherwise, do not take the traditional path to their careers and we wanted our program to recognize this factor and to encourage as many students as possible. In 2017, 33 students applied for the NAM Program, of which 29 were accepted. Three of the non-accepted applicants were still in high school and one student was non-Native. Seven students withdrew by beginning of the program and one student was unable to find transportation to attend. Students arranged and paid for their own transportation, coming from as far away as Florida. Nine of the 21 students were from Minnesota, three were from Wisconsin and one student was from North Dakota. We had five students from the Southwest and one each from Montana, Mississippi and Florida. Several tribal nations were represented including Navajo, Ho Chunk, Sisseton Wahpeton Oyate. Ten students were Ojibwe, including the student from Mississippi. In addition to the students impacted by the program, community members including the Fond du Lac Band member and health professions representatives also learned from their interactions with the students.

Where did this project take place?

The Native Americans into Medicine Program was held on the Duluth campus of the University of Minnesota Medical School. Lectures were held in one of the two medical school class-rooms and

laboratory lessons were held in a classroom of the chemistry building adjacent to the medical school. Students also had a few scattered lessons in different departments such a lesson in the School of Pharmacy and an emergency medical technician led cardiopulmonary resuscitation course.

What was the outcome of the project?

There were several outcomes of the NAM project including increased awareness of health professions, familiarity with and in some cases, improved understanding of scientific concepts, including regenerative medicine, and increased community and therefore resiliency. Over the past few decades that NAM has been in existence, hundreds of students have completed the program and while most have not gone into medicine, many have become professionals in health care for Native people. Though not obvious by the end of the 2017 NAM session, there is no reason to doubt that at least one if not several student participants will also go on to provide a form of health care to a Native community somewhere, influenced by what they learned over the four weeks of the course. Students provided some evidence of this on their evaluations, "I loved my shadowing experience. This was definitely a great experience and makes me want to pursue that field." Regarding the pharmacy lab, "Hands on experience provided me with different techniques/processes of preparing medications."

Again, we didn't expect mastery of any given science discipline or topic, but aimed for confidence in and comfort with approaching science so that either now in the near future students will have an improved chance of successfully completing a health professions program. Course evaluations provided several examples of the confidence gained by students. In reviewing a spectroscopy lecture, one student noted, "The information was very helpful. I didn't know much about the topic but he presented very well. It made the problem solving easier." Another student commented on the same lecture, "The spectroscopy lecture was really cool and interactive. This has helped me review for the MCAT portion. Thank you!" Regarding a lecture on dictyostelium, a student remarked, "It is informative to understand the basis for medical procedures that are in use now. Dictyostelium are helping the study of regeneration, like liver regeneration abilities in humans. Exciting and fun stuff!"

While students were not asked about their feelings on increased community or resiliency, it was clear from their interactions with one another throughout the course and by the end of NAM that they had built long-term relationships. In addition, several students commented to CAIMH faculty and staff that they appreciated the discussions on identify and Native health. This last outcome is probably the most important. While Native students need to be strong academically and need to know about career opportunities, they need even more to learn how to surmount all challenges they face now and in the

future. Current research reveals that Native people benefit from participation in their culture, even to the point of affecting their perceptions of their disease processes. Community is key to all Native cultures. Funding from Regenerative Medicine Minnesota for the 2017 Natives Into Medicine summer program allowed 21 Native college students to come together in community to support one another as they move toward their goals of helping restore health to Indigenous people throughout the United States.

NAM 2017 was a success but there were lessons to take into future programming. For instance, though we value supporting as many students as possible, we recognize the difficulty in teaching to such a diverse array of learners. From now on, we will likely limit the program to two college grade levels. In addition, the scope of education was too broad to get a strong sense of what was learned or quantifiable outcomes. For this reason, we will also refine the curriculum to a single science discipline or project while maintaining the introduction to health professions. Finally, we will include more cultural and leadership training to strengthen the resiliency building component of the program, which as stated above, is likely the most important goal of NAM.

It is clear that most of the student participants of NAM do now have a basic or good understanding of regenerative medicine and will likely share some of what they know with friends, colleagues and family. As in all foreign topics, this is the start. Like many impoverished communities in the United States, Native American people will likely not benefit soon as a group from the wonders of regenerative medicine. When these treatment opportunities do reach our communities however, our students, with the financial support of Regenerative Medicine Minnesota, will now have the capacity to help Native people understand its benefits.