



# Journal of Regional Medical Campuses

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DOI: <https://doi.org/10.24926/jrnc.v5i1.4485>

Journal of Regional Medical Campuses, Vol. 5, Issue 1 (2022)

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# Native Americans into Medicine: A Program Focused on Developing Representation and Diversity in Health Care

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## Abstract

The Center of American Indian and Minority Health (CAIMH), housed in the University of Minnesota Duluth Medical School, aims to reduce American Indian and Alaska Native (AIAN) health disparities by increasing the numbers of AIAN physicians, increasing awareness of AIAN health care, and conducting AIAN health-related research. For the past 50 years, CAIMH has held a summer enrichment program, Native Americans into Medicine (NAM), with the goal to increase the number of AIAN students who successfully matriculate to and graduate from health professions programs. Prior to 2018, the program focused on improving math and science aptitude. To respond to persistent AIAN health disparities, minimal research on AIAN health disparities, and low AIAN representation in nearly all health professions, including medical research, CAIMH changed the NAM focus. The program now provides research training and increases AIAN students' science and math aptitude through statistics education. CAIMH teaches skills that enhance students' standing as applicants to health professions programs and in future careers. The training benefits AIAN communities by increasing the numbers of Tribal members aware of research standards in Indigenous communities. The NAM curriculum highlights best research practices to use when working with AIAN communities.

## INTRODUCTION

American Indian and Alaska Natives (AIAN) experience higher rates of chronic illness, lower life expectancy, and increased rates of high-risk behaviors than other races.<sup>1,2</sup> Despite these disparities, health research in AIAN communities is limited. AIAN distrust of research and healthcare systems significantly limits the ability to study health interventions in AIAN communities.<sup>3-6</sup> The distrust stems from a consistent exclusion of involvement of Tribal members in the development, implementation, and evaluation of research projects in their communities; a history of controversial and stigmatizing research publications

regarding AIAN people; and a lack of Tribal oversight of research within AIAN communities.<sup>5,6</sup>

One strategy to expand both the involvement of Tribal members and the capacity for Tribal community-led health research is to increase the number of AIAN researchers and health care providers with research training. Walters and Simoni<sup>5</sup> state that interest, responsibility, and motivation are enhanced when AIAN researchers conduct research in their own communities, which facilitates heightened awareness and ability to listen to community-identified needs and minimizes mistrust. Research is more likely to have a persistent impact and to be sustained when it is conducted by AIAN

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researchers, who are more likely to have or to develop long-term relationships with communities with whom they are working.<sup>7</sup> Stronger relationships can prevent “helicopter research,” in which researchers take information and data from the community and fail to disseminate findings to the community, leading to a lack of meaningful results and understanding of such research.

Increasing the number of AIAN researchers and health care providers requires sufficient numbers of AIAN students interested in and adequately prepared for graduate programs that lead to biomedical research and health professions careers. In 2019, 14% of American Indian students who took the American College Test (ACT) college readiness assessment met college readiness benchmarks in math and 13% met college readiness benchmarks in science, compared with 39% and 36%, respectively, of all students.<sup>8</sup> Only 13% of AIAN students who completed the ACT met all three college readiness benchmarks in English, reading, math, and science.<sup>8</sup> Fifty percent of AIAN students entering college require remedial coursework.<sup>9</sup> In 2016, the 6-year graduation rate for the 2010 entry cohort of first-time bachelor’s degree-seeking AIAN students was 39%, versus 64% for first-time White students.<sup>10</sup> Clearly, increasing the number of AIANs entering health care and research professions will require additional academic enrichment and support programming for AIAN students in high school and college.

## BACKGROUND

The Center of American Indian and Minority Health (CAIMH)<sup>11</sup>, housed within the University of Minnesota Medical School Duluth Campus (UMMSD), strives to improve the health status of AIANs by recruiting and educating AIAN medical students, increasing awareness of AIAN health, and conducting research with AIAN communities. CAIMH’s intensive recruitment and support of AIAN medical students has contributed to UMMS graduating the second highest number of AIAN physicians in the United States.<sup>12</sup>

As part of the work to train AIAN health professionals, CAIMH conducts a summer enrichment program called Native Americans into Medicine (NAM) for AIAN undergraduate college students interested in

pursuing health careers. NAM began in 1973 as a way to enhance the academic success of AIAN undergraduate scholars and prepare them for medical school, with the hope that many of the students would eventually serve AIAN communities. Over the past several decades, NAM has recruited and mentored AIAN undergraduate students as a way to improve some of the academic disparities detailed earlier. The program’s curriculum had focused on academic skills development, particularly in math and science. Ultimately, NAM is a program that aims to increase AIAN representation in health professions and research careers and to increase awareness and practice of culturally sound research regarding health in AIAN communities.

CAIMH revised the NAM curriculum in 2018 to focus on AIAN or Indigenous-informed research knowledge and skills and to promote the academic success of future AIAN health professionals. Early exposure to research offers students more varied health-related career opportunities, from research to direct care; both areas will benefit from increased numbers of AIAN professionals. The new Indigenous-informed research curriculum incorporates best practices in research when working with and for AIAN communities. This article describes the process for recruitment of NAM participants, the new curriculum, and important lessons learned from this program. The curriculum spans 2 summer sessions.

Dr. Mary Owen, a Tlingit physician and director of CAIMH, teaches Native American health. These lessons are similar to or the same lectures she gives to UMMSD students during the school year. The rest of the curriculum is collaboratively developed by the NAM team, which consists of the CAIMH research coordinator and UMMSD and University of Minnesota Duluth faculty. Collectively, the instructors contribute years of experience in teaching, research, and work with Indigenous communities. NAM is supported by the University of Minnesota library system and information technology (IT) department.

## IMPLEMENTATION OF THE RESEARCH-FOCUSED NAM PROGRAM

### *Recruitment of Undergraduate and Medical Students Into NAM Summer Program*

NAM recruited students by disseminating flyers and emails through CAIMH's network of academic institutions and community partners, as well as through social media (sample flyer available upon request).

In addition to changing NAM's focus to research, there were efforts made to develop more focused, rigorous curriculum content; support better team development by improving management of conflict; and more closely monitor students' progress. One way these goals were accomplished was by limiting program eligibility to college sophomores and juniors. We also required a demonstrable connection to Native communities, via a personal essay, because the focus of the new curriculum was AIAN research methods and connections with Tribal communities. These changes resulted in fewer applicants than the previous program; therefore, we decided to accept all applicants the first year. Additionally, students are offered a weekly stipend, and on-campus apartments are provided for those who do not live in the area. The first cohort of 17 students participated in the revised NAM curriculum at the University of Minnesota Duluth campus during summer 2018 and summer 2019. Each summer session lasted 6 weeks, for a total of 12 weeks over the course of 2 summers. The second cohort of 11 students during summer 2020 and summer 2021 participated virtually due to the COVID-19 pandemic, and these sessions also comprised of a total of 12 weeks of programming. More participants were female ( $n = 20$ ; 71%); participants' average age was 23.04 (range from 18 to 45). More were sophomores (15; 52%) and attended a public higher education institution (22; 76%; see Figure 1).

### *Curriculum and Implementation*

Curriculum that promotes academic success while teaching AIAN-focused research skills and methodologies was central to the revised NAM program. Appendix 1 provides a sample syllabus and curriculum plan. The overall objectives of the NAM curriculum were to:

1. Enhance AIAN student skills and academic success;
  2. Introduce students to qualitative and quantitative research methods;
  3. Introduce students to Indigenous research methodologies; and
  4. Develop and maintain relationships with AIAN communities to support NAM student learning.
- To meet the first objective, students completed daily scientific paper readings and written reflections to improve their understanding of Western and Indigenous scientific methods and writing skills. For objective 2, students received didactic and hands-on lessons in qualitative and quantitative methods, epidemiology, and statistical software. Meeting objective 3 included mentoring on research methods focused on principles of community-based participatory research,<sup>13</sup> the gold standard for research in and with AIAN communities.<sup>14-16</sup> Students were also introduced to both university and Tribal Institutional Review Board protocols and completed Health Insurance Portability and Accountability Act (HIPAA) and ethics training as a way to meet objective 4. Students presented results of their final research project to a Tribal community to maintain accountability to the community and gain experience in presenting their work.
- Throughout the course of the summer program, students worked in small groups, allowing NAM faculty and staff to monitor progress and adjust the curricular content as needed. Students practiced leadership informally and through rotations in the role of group coordinator, in which they were accountable for group tasks. They strengthened their communication skills by developing social contracts in small groups. Finally, participants received individual mentorship throughout the 6-week sessions and following the conclusion of the program. AIAN health professionals also mentored the students through presentations about their work, cultural values and practices, and academic paths. Two first-year AIAN medical students also mentored the first cohort, teaching them about Indigenous-informed research models. Faculty from other University of Minnesota health, nursing, pharmacy, and veterinary programs, along with external faculty, presented information about programs.
- Cultural programming, which is key to NAM, did not change significantly when the curriculum focus

switched to research. CAIMH leadership has always recognized that embedding culture in the program is important for promoting AIAN students' academic success.<sup>17</sup> CAIMH's director, Dr. Mary Owen, presented lessons from a UMMSD Native Health Seminar series throughout the 6-week course, covering cultural identity, social determinants of health, boarding schools, current events such as missing and murdered Indigenous women, and other factors that impact AIAN health. Students met with several AIAN elders and practiced traditional games taught by a local Indigenous organization specializing in this area.

#### *COVID-19 Adaptions*

A strong sense of community and support was embedded throughout the 6-week sessions, although it was more challenging during the second cohort due to COVID-19 pandemic restrictions. The summer 2020-2021 NAM program was 100% virtual, pushing faculty and staff to be nimble and adjust how they supported students. Laptops were sent to all participants, meeting times were changed to accommodate time zone differences, and mentor meetings were smaller and more frequent. Being more creative with forming relationships between students and with the students was necessary. For example, pizza was delivered to each participant's home for a Zoom-facilitated dinner meeting. The NAM program sponsored beading sessions and designing T-shirts. The pandemic negatively impacted recruitment of medical students to participate in cohort 2, but NAM faculty and staff were able to connect NAM students to other students and mentors to facilitate relationships and provide role models. Recognizing that students were probably new to the virtual format and feeling the stress of living through a pandemic, the faculty began each week with a check-in and syllabus review. Students were also offered the opportunity to provide feedback regularly, and NAM faculty made adjustments accordingly. For instance, to reduce students' time spent video-conferencing, discussion boards were set up for student posts; the students responded that they preferred and needed the virtual interaction. Therefore, most of the discussion boards were changed to "in-person" discussions.

#### *Communication*

A persistent presence and an investment in student success and well-being are essential, so NAM staff

maintained communication with both cohort 1 and 2 students through email and text messaging throughout the academic year and promoted group cohesion through social gatherings via teleconferencing. The contacts during each academic year allowed rapid response to students' needs during the pandemic; NAM program staff were able to fill in the gaps to ensure students did not become lost in the transition to virtual education and to minimize disruption of learning as much as possible.

## LESSONS LEARNED

The revised NAM curriculum was successfully implemented with 2 cohorts over the course of 4 summers; the second cohort's participation was completely remote. Lessons were learned from the sessions with the two groups of students, including regarding recruitment and retention, curriculum development, student support and empowerment, and flexibility.

- *Recruiting and retaining students.* Although a 2-summer program is a big commitment for students, 12 weeks offered significantly greater opportunity to impact student outcomes. Due to conflicting educational and family obligations, 5 students who participated in year 1 of cohort 1 did not return for the second year. Four new students joined the group in cohort 1's year 2. The additional students each brought something unique to the group; ensuring that they were at the same level as students who had been involved the previous year was challenging for everyone. Therefore, in cohort 2, CAIMH decided not to add students to the second year. All cohort 2 students returned for the second summer session.
- *Curriculum.* Meeting all of the NAM objectives while giving students time for reflection and relationship building requires more than 6 weeks per summer. NAM would like to expand the curriculum to include more research basics. Additionally, as noted earlier, we had last-minute obstacles that required a change in direction, and, with only 6 weeks each summer, developing alternative plans

was challenging. NAM has been limited to 6 weeks each summer to accommodate faculty schedules. In future cohorts, we plan to extend the curriculum to 8 weeks, creating a 16-week program over the course of 2 years.

By the fifth and sixth weeks, NAM students were focused on their final projects and did not necessarily have the mental or emotional energy for additional detailed or difficult conversations. NAM staff adjusted the curriculum accordingly after the first cohort and placed difficult lessons and conversations earlier in the 6-week period. Students will also receive the curriculum prior to the beginning of the first summer session to alert them to the academic rigor and expectations.

Incorporating books on Indigenous science not necessarily related to students' research project was a great way to not only teach critical reading but also connect with broader issues and examples of resilience in the greater community. For instance, students in the first cohort read and responded positively to *Research Is Ceremony*<sup>15</sup>; therefore, the book became required reading for following cohorts. The second cohort read *Research Is Ceremony* during the first summer and *Plants Have So Much to Give Us, All We Have to Do Is Ask*<sup>18</sup> in the second summer. That same summer, 2 local AIAN scholars who wrote children's books were invited to speak; each student received a copy of the books, providing a much-needed diversion that was fun and culturally relevant. Students told NAM staff many times that they had not had opportunities previously to talk with other students and educators about their identity as AIAN students.

- *Student support.* During the second cohort, developing relationships and community via online curriculum was challenging, but the program did meet this goal. While NAM is best provided as an in-person experience, accommodations due to the COVID-19 pandemic that forced the program to switch to a virtual format allowed the program to explore online opportunities that may have previously been overlooked. For instance, this change allowed for virtual meetings throughout the academic year and broadened

access to AIAN professionals and mentors. The program will continue to include virtual guest speakers and incorporate virtual connections during the academic year.

Stages of team development should be considered throughout the learning process and support of students for a cohort model.<sup>19,20</sup> Tuckman's five stages of team development—forming, storming, norming, performing, and adjourning—provide one way to think about team development.<sup>18</sup> The level of direct oversight needed for teams varies according to a team's developmental stage. It was important to keep these stages in mind, particularly with cohort 1 and the introduction of new students the second summer, which led to the need to revisit group rules and establish new groups and trust. In the second year of cohort 1, the first 3 developmental stages were revisited during the first few weeks; students needed guidance to move forward and perform together. As with any group, balancing different personalities is a continual process. Each summer, students were invited to establish expectations and rules for conflict resolution. Conflict still occurred, but student involvement in governing helped smooth the process. Meeting the students where they were at was vital, as was focusing on growth potential rather than current academic status and other factors. Recognizing individual needs through the application process allowed the NAM team to identify and serve students who required more intense support and mentoring while maintaining a cohesive team of students who could meet the program's objectives.

- *Student empowerment.* Too often, cultural knowledge, particularly AIAN cultural awareness and experience, is not recognized and acknowledged. Throughout the 6 weeks, Dr. Owen, an Alaska Native physician, held regularly scheduled sessions focused on AIAN health to educate students about a given AIAN topic and to empower students by allowing them to share their expertise on the topics. During the discussions, AIAN students spoke about what they had seen and experienced, shared their frustrations, and voiced their pride in institutions and practices within their communities. For instance, when AIAN health care institutions were discussed, students

related their negative experiences and the resiliency-building programs promoted by these same health care clinics or hospitals. Small-group discussions worked well to broach difficult yet important subjects such as identity and racism in medicine. These small groups also let students develop their sense of confidence and personal empowerment.

- *Modeling flexibility.* As with all research, flexibility within the curriculum and schedule was key; the development of back-up plans was necessary given that student sessions were only 6 weeks. Ongoing conversations with Tribal members and leaders facilitated the development of alternative plans and problem-solving. During the first cohort, the visit to a Tribal community for data collection was cancelled 2 days before the event, meaning that travel and accommodations were impacted. The CAIMH director quickly reached out to another community with whom she had an established relationship. As a result, students were still able to conduct interviews for their research project in a different community. The rapid pivot in plan and scheduling was difficult for the students, given the typically regimented structure of classrooms to which they were more accustomed. Tension between students resulted from the last-minute change in plans, a reminder to introduce the idea that uncertainties are inevitable in research. Throughout the project, NAM faculty and staff had frequent check-ins to discuss the projects, setbacks, and solutions. The check-ins were helpful for NAM staff as they were also impacted by the rapid changes and needed to model both flexibility and a healthy response to the changes.

## FUTURE DIRECTIONS

A robust evaluation plan based on community-based research, utilization of American Indian evaluation, and Indigenous research principles is needed to better identify components of the program that are more successful and others that need to be revised or deleted.<sup>21</sup> Measuring whether individual student goals

and mid- and long-range program goals were reached will inform program development and support the program's sustainability. Development of an evaluation protocol is underway and will be piloted during cohort 3. Current academic status and preliminary outcomes suggesting that the program has been successful will be incorporated into the plan.

The short-range outcomes achieved by cohort 1 students include the following:

- The 2 medical students are in their fourth year of medical school.
- One undergraduate student is completing her first year of medical school.
- Two students have been accepted to medical school.
- One student began a biomedical sciences PhD program.
- Three students are completing applications for postgraduate programs (medical and/or graduate school), with one applying for a post-baccalaureate program.

The short-range outcomes achieved by cohort 2 students include the following:

- One is applying for research positions.
- One has been accepted to medical school.
- Two are applying to medical school.
- One is applying to graduate school.

Students' qualitative feedback indicated that they had a meaningful and challenging experience. Students wrote that they enjoyed "discussions about pathways and discussions about research, especially with Dr. Owen." They liked opportunities to ask questions and conduct research, as well as "learning more about Indigenous history." One student wrote, "I enjoyed working with other students on a research topic and meeting/connecting with other Indigenous professionals." Another wrote, "I am grateful for how much I have learned! It was an empowering experience to listen and relate to the stories people shared in Dr. Owen's seminar. I enjoyed our discussion sessions the most."

As part of an award application, one student wrote the following:

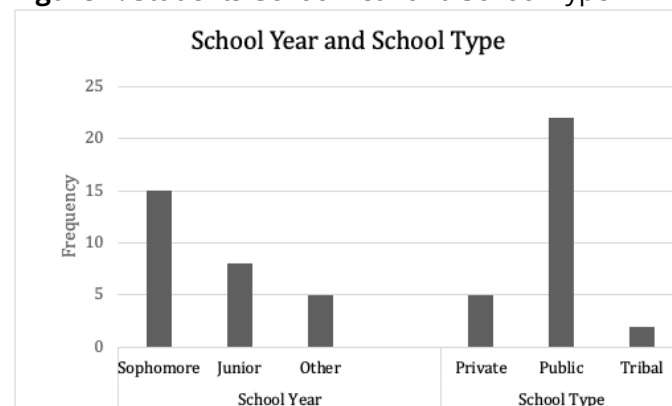
The Center of American Indian and Minority Health (CAIMH) has changed the course of my life in various ways. Their two-year cohort summer research program, Native Americans into Medicine (NAM), catalyzed my interest in medicine and dedication to work with Native American communities and underserved populations. This program enriched my connection with my Ojibwe heritage and taught me more about my culture through traditional practices and the significance of Indigenous research methods. The friendships and networks I have established throughout NAM are irreplaceable. They have touched my heart with their never-ending kindness and support. I could not have asked for a more fulfilling program to engage in as an undergraduate. CAIMH brought me these research opportunities, career goals, special relationships, cultural reconnection, and a greater sense of identity. I bolstered personal and professional growth that I never would have thought possible. I became so connected with this community that I could not imagine my career in medicine starting anywhere else. I applied to the University of Minnesota Duluth Medical School and was recently accepted into their class of 2025. It is an honor to spend the next chapter of my life surrounded by a community that I trust and that I know will always be here to support me in any way they can.

## CONCLUSION

AIAN health disparities persist despite numerous attempts by researchers to investigate problems and implement solutions. A long history of limited understanding of and limited relationships with AIAN communities has resulted in a significant barrier to AIAN health research. NAM addresses the problem by implementing a strategy to increase the number of AIAN health researchers and health professionals with research experience because they are more likely to serve AIAN communities and to possess the relationships and understanding needed to conduct trusted and necessary research. NAM offers academic enrichment while bolstering the confidence of AIAN students by immersing them in a program that emphasizes AIAN culture, research methodologies, and health care. The program exposes students to AIAN leadership within all of these areas. Changing AIAN health disparities will require more programs

like NAM that promote involvement of AIAN people in their health care solutions by increasing AIAN student academic success through culture, support, and empowerment. This program could be replicated at other institutions by a non-Native faculty member, but only with equal direction and leadership by an AIAN community or faculty member. Before building a program, institutions should have established relationships with the community they are hoping to serve. Doing so will help them identify the appropriate partners and community programming to supplement the curriculum for students. Additionally, each institution should assess the number and size of cohorts to best meet their funding and faculty resources. NAM does not have funding or capacity to run more than one cohort at once. Doing so would limit the attention we could give to each student.

**Figure 1.** Students' School Year and School Type



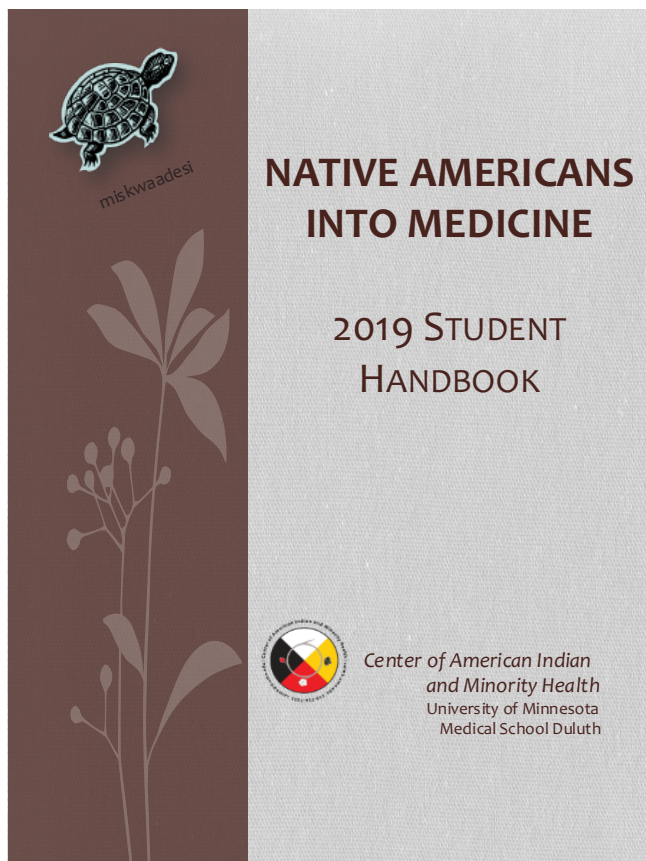
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Appendix 1. Student Handbook



The Seven Teachings



**WISDOM** (*Nibwaakawin*). Symbolized by the beaver. To cherish knowledge is to know wisdom. Wisdom is given by the Creator to be used for the good of the people.



**LOVE** (*Zaagi'idiwin*). Symbolized by the eagle. Is to know peace; is to know love. Love must be unconditional. You must love yourself in order to love another.



**RESPECT** (*Minwaadendamowin*). Symbolized by the buffalo. To honor all of Creation is to have respect. You must give respect if you wish to be respected.



**BRAVERY** (*Aakode'ewin*). Symbolized by the bear. Is to face the foe with integrity. In the Anishinaabe language, this word literally means "state of having a fearless heart." To do what is right even when the consequences are unpleasant; the moral courage to do the right thing.



**HONESTY** (*Gwayakwaadiziwin*). Symbolized by Wilderness Man. Honesty in facing a situation is to be brave. Always be honest in word and action. Be honest first with yourself, and you will more easily be able to be honest with others.



**HUMILITY** (*Dabaadandiziwin*). Symbolized by the wolf. To know yourself as a sacred part of Creation. To think things through carefully and to know your place. Can also be translated as "calmness," "meekness," "gentility" or "patience."



**TRUTH** (*Dabwewin*). Symbolized by the turtle. Truth is to know all of these things. Speak the truth. Do not deceive yourself or others.