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Authors

Becker, Thomas M.
Dunn, Esther
Tom-Orme, Lillian
et al.

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Cancer Control Research Training for Native Researchers: A Model for Development of Additional Native Researcher Training Programs

THOMAS M. BECKER, ESTHER DUNN, LILLIAN TOM-ORME, AND JENNIE JOE

Although Native populations suffer a disproportionate cancer burden, studies of risk reduction for cancer incidence among Native peoples have not been strongly supported by federal or private funding sources, and few published data are available to assess the success of cancer control efforts among Native community members. Furthermore, cancer etiologic investigations and cancer control studies in Native populations have not commonly included Native researchers in principal roles. This lack of involvement is related primarily to the low numbers of Native researchers who have adequate training and experience to address Native cancer problems. Although numerous social and biological scientists who have Native status are engaged in productive research careers, the encouragement that has been offered Native students to formulate career goals devoted to cancer etiology or cancer control in Native peoples has had limited success.

To address cancer-related challenges adequately and to implement successful cancer control programs in Native communities, more well-trained, culturally competent researchers are required. The Native Researchers' Cancer Control Training Program (NRCCTP) was designed to address this

Thomas M. Becker, MD, PhD, is professor and chair of the Department of Public Health and Preventive Medicine at Oregon Health and Science University in Portland, Oregon, and director of the CDC-funded Prevention Research Center, the Center for Healthy Communities, at OHSU. He has worked with tribal groups for twenty years. Esther Dunn, BA, is a senior research assistant at Oregon Health and Science University. Lillian Tom-Orme, PhD, is a research assistant professor at the Health Research Center, University of Utah. Jennie Joe, PhD, MPH, is a professor of family and community medicine and director of the Native American Research and Training Center, University of Arizona.

need. The present essay provides a description of our training program and a summary of the NRCCTP from 1995 to the present.

PROGRAM OVERVIEW

The Native Researchers' Cancer Control Training Program is an innovative grant-funded project, sponsored by the National Cancer Institute (NCI) (R25 CA083646 Cancer Control: Capacity Building for Native Researchers and U01 CA86098 American Indian Alaska Native Initiative on Cancer). The goal of the NRCCTP is to prepare American Indians, Native Hawaiians, Alaska Natives, and American Samoans to conduct cancer research in Native communities. The initial three-week training program covers: epidemiology, cancer epidemiology, data analysis, data management, how to conduct surveys and focus groups, cultural considerations relevant to research in Native communities, Institutional Review Board (IRB) issues, grant writing, and how to find funding opportunities.[1] The NRCCTP also offers optional courses to those trainees who have completed the initial training program and who wish additional training. These seminars include numerous "hands on" exercises to enhance skill building and are customized to meet the needs of each group of trainees. Thus far they have covered: data analysis and management (in-depth computer applications), qualitative data analysis, program evaluation, and manuscript writing. The NRCCTP staff and faculty also continue to offer support, advice, and mentorship to all trainee alumni.

Under funding from the NCI, NRCCTP began in 1995 (R01 CA64454). Since the implementation of the grant, ninety-five trainees have completed the program. The Mayo Clinic, the University of Arizona, the Centers for Disease Control and Prevention (CDC), the Northwest Portland Area Indian Health Board, the Indian Health Service (IHS), and Oregon Health and Science University all collaborated to create the training programs and to meet the needs of Native researchers.

Since financial constraints are often a barrier to attending this type of training, the NRCCTP offers an all-expenses-paid scholarship to qualified candidates. A per-diem meal allowance and the cost of travel, lodging, books, and all other classroom materials are provided to the trainees.

SELECTION OF TRAINEES

Applicants to the NRCCTP were evaluated based on their current professional position, stated support (from employer and community), education, written communication skills, and ability to apply new knowledge (i.e., conduct a cancer control project in a Native population). Ten to fifteen trainees were accepted in each cohort. Tables 1 and 2 below provide our trainees' ethnic and education background.

Table 1
Ethnic Distribution of Trainees in Four Cohorts (n=52), 2000–03

Ethnic affiliation	Year: 2000	Year: 2001	Year: 2002	Year: 2003	Total Number	Percentage represented in program
American Indian	8	7	11	11	37	71%
Alaska Native	1	0	0	0	1	2%
American Samoan	0	0	1	0	1	2%
Native Hawaiian	1	4	2	1	8	15%
Non-Native	0	2	1	2	5	10%

Table 2
Education Summary of Trainees in Four Cohorts (n=52), 2000–03

Education level	Number (%)
Doctoral degree	10 (19%)
Master's degree	24 (46%)
Bachelor's degree	18 (35%)

THE FACULTY

Many of our faculty have substantial experience both in cancer control activities and with health-care problems among Native peoples. Several are national leaders in addressing cancer control issues in Native communities. Members of the faculty are available to trainees to provide on-site assistance with cancer control program development, implementation, and evaluation, as well as technical expertise with applying for grants, writing manuscripts, and other tasks necessary to carry out cancer control activities successfully.

THE CURRICULUM

The training curriculum is modified slightly each year based upon needs assessments submitted by the trainees prior to their first two weeks of training. In general, however, the core curriculum does not change and includes the modules listed in table 3.

Table 3
Core Curriculum and Course Topics

Core Curriculum	Additional Course Topics
Epidemiologic methods	Traditional Indian medicine
Design and implementation of cancer intervention studies	Native Hawaiian health
Data management and data analysis	American Samoan health
Grant and manuscript preparation	Public health demography
Study design, bias, and confounding	Cancer registries
Questionnaire and survey design	Successful interventions in Indian country
Use of Medline database and various software programs for library searches	Community health assessment
Human subjects protection	Ethics of research among Native people
Grant funding agencies and potential funding sources	Cancer screening
Grant budget management	Cancer mortality
Software relevant to cancer control activities	Tobacco control examples
Use of national databases	Diet and disease assessment

Each course provides ample opportunity for in-depth interaction with faculty.

We also have offered additional one-week courses in data analysis and data management, program evaluation, and qualitative data analysis and manuscript writing to trainees who completed the initial three-week training. Ten to fifteen trainees attended each seminar. The course offerings were based on needs assessments of NRCCTP graduates.

EVALUATION

Immediate trainee progress is evaluated based on pre-course and post-course tests. Both tests ask trainees how they would approach various cancer control problems in specific communities. In all cohorts, trainees have shown considerable improvement in their problem-solving skills from pre-course to post-course. Dr. Mark Dignan at the University of Kentucky's Practice Research Collaborative has served as the program evaluator since the beginning of the NRCCTP. After the initial two weeks of the training program, all class evaluations as well as the pre- and post-tests are sent to Dr. Dignan. He then provides a report detailing strengths and weaknesses in trainee progress and in the curriculum. Modifications to the curriculum are made based on these reports. Should his evaluation reveal any lack of conceptual understanding, this would be addressed during the follow-up week of training.

SMALL RESEARCH TRAINING PROJECTS

In the second year of the second funding cycle of the grant, NCI provided funds in amounts ranging from $5,000 to $10,000 to program participants who developed a proposal for small community research projects that could serve as pilot projects to attract other grant funding. Participants chose pilot grant topics that included community assessment of cancer knowledge, attitudes, and beliefs; nutrition assessment; behavioral risk-factors assessment; and secondary data analysis of cancer-related data. These funds assisted in meeting transitional expenses immediately after the training and prior to obtaining large funds in excess of $20,000. Proposals were reviewed by NCI staff, one of whom was a former trainee and working for NCI under an institutional personnel agreement. The pilot-grant awardees worked closely with a mentor and community leaders.

Through additional supplemental funds awarded by the NCI, we provided funding to other interested trainees who sought support for investigator-initiated projects. For this funding source, graduates of the NRCCTP were allowed to compete for grants of approximately $20,000 per project. Proposals were evaluated and ranked by three NRCCTP faculty. The final funding decision was made by the principal investigator (PI) of the grant. The intended duration for each project was one year, although several have had to extend their projects to two or three years. Over the course of three years and three supplemental awards, eighteen projects were funded. Through these projects, trainees were able to put classroom theory into practice and obtain "real-life" research experience.

OUTCOMES

In a recent follow-up phone and email survey of eighty-one trainees (the most recent cohort of fourteen was not included), we evaluated trainee progress in cancer control since their participation in our program. The tables below show the results.

Table 4
NRCCTP Trainee Publications

Cohort	No. level 3 publications	No. level 2 publications	No. level 1 publications
Cohort 1 (1995)	0	2	6
Cohort 2 (1996)	1	7	10
Cohort 3 (1997)	0	3	1
Cohort 4 (1999)	0	1	2
Cohort 5 (2000)	1	2	5
Cohort 6 (2001)	0	6	9
Cohort 7 (2002)	1	3	1
All cohorts combined	**3**	**24**	**34**

Level 3 publication: fliers, educational or program brochure, article in newsletter

Level 2 publication: professional abstracts, book chapters, co-author of article published in peer-reviewed journal

Level 1 publication: first or second author of article published in peer-reviewed journal

Table 5
NRCCTP Trainee Presentations

Cohort	No. level 3 presentations	No. level 2 presentations	No. level 1 presentations
Cohort 1 (1995)	0	16	1
Cohort 2 (1996)	0	10	1
Cohort 3 (1997)	0	0	0
Cohort 4 (1999)	0	0	0
Cohort 5 (2000)	15	3	7
Cohort 6 (2001)	15	9	3
Cohort 7 (2002)	2	6	4
All cohorts combined	**32**	**44**	**4**

Level 3 presentation: local community settings, workshops, health fairs

Level 2 presentation: Tribal Health Board, IRB, tribal or regional conference, workshop

Level 1 presentation: presentation accepted through abstract solicitation for national conference

Table 6
NRCCTP Trainee-funded Projects and Grants

Cohort	No. level 3 grants	No. level 2 grants	No. level 1 grants
Cohort 1 (1995)	1	0	2
Cohort 2 (1996)	6	1	1
Cohort 3 (1997)	6	1	0
Cohort 4 (1999)	2	1	3
Cohort 5 (2000)	6	3	2
Cohort 6 (2001)	4	4	0
Cohort 7 (2002)	4	3	0
All cohorts combined	**29**	**13**	**8**

Level 3 grant: local foundation, trust (amounts <$50,000)

Level 2 grant: multiyear national foundation, trust, fund; entry-level federal grant (e.g., IHS, R21, K01, K03); co-investigator on federal grant (R25, R01, P01)

Level 1 grant: PI or co-investigator for a Department of Health and Human Services mechanism (e.g., National Institutes of Health, Department of Defense, CDC, Agency for Healthcare Research and Quality)

Table 7
NRCCTP Trainees Education Advancement

Cohort	No. level 3 education		No. level 2 education		No. level 1 education	
	Completed	In progress	Completed	In progress	Completed	In progress
Cohort 1 (1995)	0	0	1	0	1	1
Cohort 2 (1996)	0	0	0	1	4	1
Cohort 3 (1997)	0	0	4	0	1	1
Cohort 4 (1999)	0	0	0	0	0	2
Cohort 5 (2000)	0	0	0	1	0	2
Cohort 6 (2001)	0	0	2	1	0	1
Cohort 7 (2002)	0	0	2	3	0	1
All cohorts combined	**0**	**0**	**9**	**6**	**6**	**9**

Level 3 education: bachelor's degree

Level 2 education: master's degree

Level 1 education: doctoral degree

DISCUSSION

The NRCCTP is not without limitations. Although we are beginning to see progress among our graduates in attaining advanced degrees, winning grant funds, and establishing community and national awareness of cancer issues among Native people, we cannot definitely attribute this to the training program. In addition, we are unable assess the impact our trainees have had on their communities. Although the ultimate and long-term goal of this program is to reduce the cancer burden among Native peoples, funding and time limitations have not allowed for this type of tracking.

The NRCCTP is designed to build core capacity, that is, to create a cancer control research infrastructure that will serve Native populations. Ideally we would train doctoral-level researchers who would be poised to win National Institutes of Health–funded grants within a year or two of completing our training program. However, the infrastructure needs of Native communities are such that research training is needed at the master's and even the post-baccalaureate level. Our graduate trainees at this level of education have frequently been responsible for implementing screening programs and building community support for additional cancer control interventions. This not only helps communities but also inspires our trainees to apply to graduate programs. We encourage all of our predoctoral trainees to pursue additional education and have played a major role in many of their academic careers. According to the Association of Schools of Public Health's 2002 *Annual Data Report*, although the number of minority graduates has increased 136.8 percent since 1992, American Indian and Alaska Native graduates have decreased 23.1 percent between 1991 and 1992 and between 2001 and 2002. Of the 17,933.5 students enrolled in the schools in 2002, only 0.8 percent were American Indian or Alaska Native. According to the US Department of Education, National Center for Education Statistics, 2,676 people received doctoral degrees in a health profession or related science from 1999 to 2000. Of these, only eight were American Indian or Alaska Native. A 1998 US Department of Education study found that 85.1 percent of full-time instructional faculty and staff at United States universities are white, non-Hispanic, while 0.7 percent are American Indian or Alaska Native and 5.8 percent are Asian or Pacific Islander. Clearly, efforts to build the proportion of educational leaders from Native communities must begin at the predoctoral level.

Although our efforts during the past ten years have helped to increase the numbers of Native researchers involved in cancer control, a clear need still exists to provide more encouragement and training opportunities for Native people to become involved in Native communities' diverse cancer problems. The continued development of opportunities to gain training and experience in cancer prevention and control and in cancer research techniques will provide one mechanism for Native people to become more involved in cancer control efforts in their own communities and may eventually serve to decrease cancer morbidity and mortality among diverse Native groups in the United States and its Pacific Island territories.

We suggest that researchers and educators with expertise in other public health topics of great concern to Native communities—such as diabetes,

injury, cardiovascular disease, and obesity—consider developing programs similar to our cancer control research training program. Our program may serve as a model to help guide the development of new training initiatives and can ultimately place more Native researchers into community-based research environments where they can effectively address disease control challenges.

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NOTE

1. See Thomas M. Becker et al., "Training for Cancer Control Research: A Curriculum for Native Researchers," *Journal of Cancer Education* 14, no. 4 (1999): 233–37.