

Adapting the Medicine Wheel Model to Extend the Applicability of the Traditional Logic Model in Evaluation Research

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Background of ACL

The overall vision of the Administration for Community Living (ACL) is that all people, regardless of age and disability, live with dignity, make their own choices, and participate fully in society. To achieve this ACL, works to develop a comprehensive, coordinated and cost-effective system of long-term care that helps older adults and individuals with disabilities to maintain their dignity in their homes and communities. As part of the Administration for Community Living, the Administration on Aging (AoA), the principal agency of the U.S Department of Health and Human Services designated to carry out the provisions of the Older Americans Act of 1965 (OAA), as amended, focusses on promoting the well-being of older individuals. The strategic priorities of AoA are to empower older people and their families to make informed decisions about, and easily access health and long-term care options; and to enable seniors to remain in their own homes through the provision of home and community-based services, including supporting the rights of older people and preventing their abuse, neglect and exploitation.

The Older Americans Act Title VI Tribal Grants Program

In 1978, the OAA was amended to include Title VI which established programs for the provision of nutrition and supportive services for Native Americans (American Indians, Alaska Natives and Native Hawaiians). Through this Title of the OAA, ACL/AoA provides grants to eligible Tribal organizations to promote the delivery of home and community-based supportive services to American Indian, Alaska Native, and Native Hawaiian elders. These programs, which include nutrition services, caregiver support services, and a range of other supportive services, help to reduce the need for costly institutional care and medical interventions, are responsive to the cultural diversity of

Native communities, and represent an important part of the communities' comprehensive services. In recognition of the rich cultures among Native American Tribes, the Act specifies that "*older individuals who are Indians, older individuals who are Alaskan Natives, and older individuals who are Native Hawaiians are a vital resource entitled to all benefits and services available and that such services and benefits should be provided in a manner that preserves and restores their respective dignity, self-respect, and cultural identities.*"

Evaluation at ACL

Through program evaluations, ACL/AoA seeks a better understanding of the reach, outcomes, and impact of its key programs. With respect to its Title VI Tribal Grants Program, ACL/AoA is interested in documenting the value of the Title VI programs for individuals, families, communities, and Tribes/Tribal Organizations. ACL/AoA's first step towards an evaluation of the Title VI program was conducting an evaluability assessment to answer the following questions:

1. Overall, what do grantees do, and how do they operate?
2. Are the programs/program services stable, distinct, consistent and established?
3. What are the outcomes and impact of Title VI programs for Tribal elders and Tribal communities?
4. What are the critical pieces of information to be learned from an evaluation from Federal and Tribal stakeholders' perspectives? How will different stakeholders use information learned from an evaluation to guide, inform, and improve Title VI program activities?

As the program is designed to respect the varied cultures and traditions among Native Americans, ACL's evaluation work must also be conducted within a framework that both values and accurately reflects the cultures of the individuals and programs under study. Researchers studying racial and ethnic minority populations are often faced with unique challenges such as language barriers and cultural sensitivities. Native American tribes and communities are distinguished from other ethnic and cultural groups in part by the magnitude of historical trauma that they have faced and in part by the diversity across tribal communities (Fisher and Ball 2003). Conducting research within tribal communities is complex and a series of methodological issues must be addressed during the process of conceptualizing the evaluation, including the consideration of cultural and social norms in the design, the impact of cultural differences on program operations and outcomes, community experience with evaluation, including historical mistrust of researchers, and lack of culturally appropriate research methods (Salois et al. 2006). This paper focuses on the approach adopted by ACL/AoA to ensure inclusion of important cultural concepts, such as spiritual well-being, in an outcome evaluation and to operationalize measurement of those concepts

The role of logic models in evaluation practice

Program theory is defined by Chen (1990) as, "a specification of what must be done to achieve the desired goals, what other important impacts may be anticipated, and how these goals and impacts would be generated." The quality and validity of a program's theory largely determine that program's effectiveness and without a well-defined program theory it is difficult to assess a program's implementation, outcomes, and ultimate effectiveness, since it is not clear that the interventions enacted are appropriate for solving the problem targeted or achieving the goals desired (Chen, 2003). According to Savaya and Waysman (2005), the main reasons for the absence of program theory are the time and resources needed for its creation and the relative difficulty of translating concrete actions and tacit knowledge into abstract concepts. Lacking theory, evaluators may focus on outputs and outcomes, such as the number of people served or the number of people satisfied with the program, which are relatively superficial and which fail to identify a wider range of positive and negative impacts. The absence of theory may also make it difficult to explain a program's results, thereby limiting the potential of formulating recommendations to stakeholders for developing the program further or applying it to another context (D'Agostino, 2001). A logic model is a systematic and visual way to present and share an understanding of the relationships among the resources available to operate a program, the activities that are conducted, and the desired changes or outcomes. Because a program logic model links outcomes (both proximal and distal) with program activities/processes and the theoretical

assumptions/principles of the program, it helps to make the theory underlying the program explicit (W.K. Kellogg Foundation, 2010). A further benefit of the logic model process is that clarifying the program theory among program stakeholders can help stakeholders reach consensus on a program evaluation process (Chen, 2005). Because ACL/AoA is ultimately interested in knowing the extent to which the Title VI Tribal Grants Program is meeting its goals of helping American Indian, Alaskan Native, and Native Hawaiian elders to maintain their dignity, self-respect, cultural identities, and remain in their homes and communities, a logic model is an important tool to ensure a shared understanding of the cumulative resources and activities intended to meet these goals and the extent of implementation of these efforts. The process of developing a logic model helped ACL/AoA to jointly explore, with its Tribal advisory group, the theory of how program activities contribute to the dignity, self-respect, and cultural identity of tribal elders and communities.

Challenges for evaluation of Tribal Programs

Traditional evaluation models, particularly those with “outside expert” approaches, have proven to be poorly suited to for studying tribal populations. Research by Stanfield (1993) suggests that “Dominant Western research paradigms suppress Indigenous Knowledge Research through imposing Eurocentric paradigms on research involving Indigenous peoples” and, therefore, can only provide an incomplete and or superficial picture of Native experience. Further, “[c]hallenges to conducting research with Native American communities include a long-standing, well-founded distrust of research that, at times, has represented yet another means of oppression by the predominant culture” (Salois et al., 2006). Fisher and Ball (2002) note that researchers often lack a historical understanding of Native American communities. Centuries of shifting and destructive federal policies have resulted in intergenerational trauma that remains evident today in Native American families and communities (Duran & Duran, 1995; Stubben, 2001). Without a historical perspective, there is the possibility of underestimating the role historical trauma continues to play in Native American communities, further compounding the potential for misunderstanding and misinterpretation of evaluation findings (Fisher & Ball, 2002; Hendrix & Winters, 2001; Stubben, 2001). As Walker (2001) has written, “a balanced understanding of Indigenous epistemologies is essential to the validity of research projects.”

The evaluation approach that has been most successful with Native populations is one that integrates Native Americans communities and their members as full and equal partners in all phases of the research process—Participatory Action Research (PAR) (Salois et al. 2006; Holkup et al. 2004). PAR originates from the work of Lewin (1946), who coined the term “action research.” It refers to an “iterative process of interplay between researcher and participants in which activities shift between action and reflection (Brown & Tandon, 1983; Wisner, Stea, & Kruks, 1991). PAR is an approach to research in communities that emphasizes participation and action, collective inquiry and experimentation grounded in experience and social history. Advocates of PAR have stressed the inclusion of community members throughout the research process (Greenwood, Whyte, & Harkavy, 1993; Reason & Bradbury, 2008). More specifically, the term ‘participatory’ implies “a political commitment, collaborative processes and participatory worldview” (Kendon et al, 2007: 11). Values and beliefs that are indigenous to the community should form the central core of interventions designed to produce social change and inform our measurement of the outcomes of those programs (Fisher and Ball 2003).

Adapting the logic model to represent ACL’s Title VI Tribal Grants Program

As discussed earlier, a key benefit of a logic model is that it becomes a reference point for everyone involved in the program (Centers for Disease Control and Prevention, 2003) and can serve as a foundation for development of an evaluation plan and evaluation instruments (Helitzer et al., 2010). But, this can only happen if all of the program stakeholders, or participants, agree on the message that the model communicates about how their program works (inputs, activities and outputs) and its value to individuals and communities (outcomes). For this reason the development of the logic model as part of the Title VI evaluability assessment utilized a PAR approach “to ensure that research is anchored in the cultural context of the people.” (Salois et al., 2006). ACL viewed PAR as a

mechanism to “rebuild trust in the research process” (Salois et al., 2006) and, ultimately, to produce and evaluation design that will yield more useful, complete, and accurate data.

Logic model development

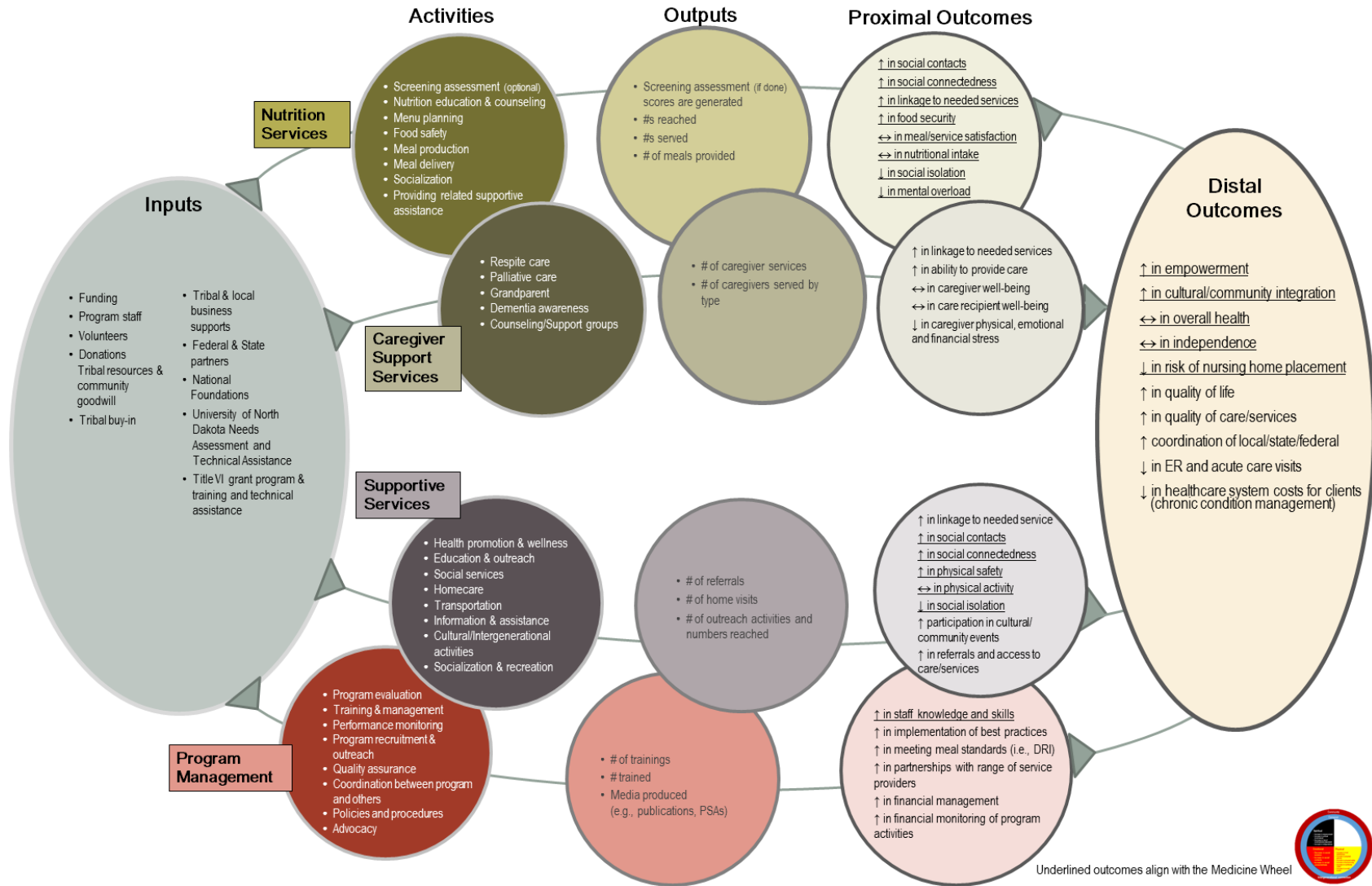
Adhering to a PAR approach, development of a comprehensive Title VI Logic Model was heavily informed by a 20-member stakeholder advisory group, consisting of representatives from the National Indian Council on Aging, the National Resources Center on Native American Aging, as well as Title VI grantees. Stakeholders were asked to provide information for the following categories:

- a. **Title VI Inputs and Resources:** Monetary and non-monetary resources used by the program such as equipment, personnel, and time;
- b. **Title VI Program Activities:** Tasks completed by program staff and volunteers such as delivering meals, providing transportation, educating caregivers;
- c. **Title VI Program Outputs:** Measures of the the level of activity such as the number of meals delivered, the number of rides provided, and the number of caregivers educated;
- d. **Title VI Proximal Outcomes:** Direct results for those served such as improved nutrition/food security, reduced social isolation, and reduced caregiver stress; and
- e. **Title VI Distal Outcomes:** Longer term results for those served such as improved health, independence, quality of life, and cultural/community intergration.

The logic model (Exhibit 1) outlined the expected activities and outcomes of Title VI Programming and was divided by service area (Nutrition, Caregiver Support, Supportive Services, and Program Management) (EA Final report, 2015).

Traditional, linear logic models, though, may not represent all of the elements critical to prevention efforts in tribal communities. To address potential limitations and to ensure that the guiding evaluation framework is anchored in and reflective of the cultures, values, and traditions of Native communities receiving Title VI Program funds, an additional model of the Title VI Programs was developed—the Title VI Medicine Wheel. The Title VI Medicine Wheel was developed to supplement the traditional logic model by incorporating additional dimensions of emotional, physical, mental, and spiritual well-being identified by the Title VI Evaluability Assessment advisory group as important. For example, when asked whether the logic model, which represented all of the program elements specified in official descriptions of the Title VI program, accurately reflected the program as they experience it, the stakeholder group noted that the issue of spirituality and spiritual well-being was not explicitly represented. Spirituality was also identified as a critical component during key informant interviews with Title VI grant program staff. This concept was further explored by ACL to understand where and how this construct may be integrated into understanding program outcomes and impact as spirituality is commonly seen in a holistic way as many Native Americans hold to a contemplative rather than a utilitarian philosophy with religious aspects introduced in to all areas of one’s life and are an integral part of each day (Mosley-Howard, 1995). But, while the stakeholders could agree that spirituality and spiritual well-being are important concepts to Native American people and the communities reached through Title VI Program, they could not agree upon how it should be operationalized or measured. For example in one of the key informant interviews a respondent said *“Spiritual, emotional, physical wellness: It is not something you would collect data on (inappropriate). Typically they do not collect data on spirituality. Focus groups or talking circles are a sharing space, but they don't document them.”*

Exhibit 1. Title VI Program Logic Model



Understanding the Medicine Wheel

The medicine wheel is an ancient symbol used by almost all the Native people of North and South America (Lane et al., 1984). It is a universal symbol of a circle (representing perfection as well as infinites since the circle has no beginning or end) divided into four quadrants (Oxendine, 2014). The concept of the medicine wheel is originally based on rock formations found throughout the Canadian Shield. The rock formations are comprised of large circles of rocks divided by lines into sections similar to a bicycle wheel (Gone, 2011).

The symbolic medicine wheel, based on these rock formations, represents a widespread belief among Native Americans that all aspects of life are interconnected (Lane et al., 1984). It is a symbol of wholeness that has different meanings for different tribes. For example, depending on the tribe, the medicine wheel can represent the four directions (east, south, west, north); the four seasons (spring, summer, autumn, winter); the four colors of humankind (white, black, red, yellow); the four heavenly beings (sun, moon, earth, stars); as well as the four elements of life (earth, fire, water, wind) (National Museum of American Indian, n.d; Oxendine, 2014). Many Native Americans today use the medicine wheel as a symbol of their adherence to native values and teachings (National Museum of American Indian, n.d.).

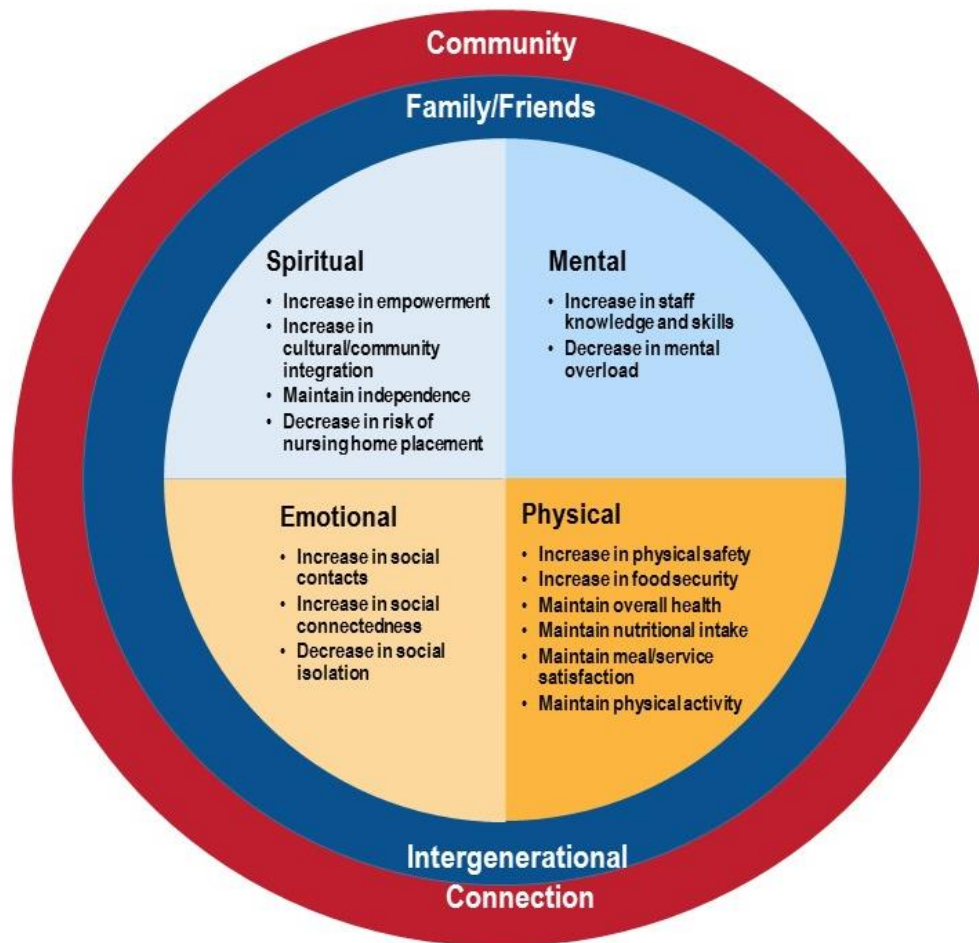
Among various indigenous traditions, the medicine wheel has been interpreted as a tool of healing and inner understanding (Atlantic Council for International Cooperation 2008; Hengen 2013). It has been used as a conceptual framework and integrative approach in the fields of health and health care to study a variety of issues including nutrition, dietary habits, and chronic conditions (Kattelman et al., 2010); therapeutic approaches within a substance abuse treatment center (Gone 2011); and palliative care at the end of life (Clarke and Holtslander, 2010). The medicine wheel reflects the holistic approach to viewing and understanding ways of being and the impact of programs and initiatives on the individual, family, and community in tribal settings (Atlantic Council for International Cooperation, 2008). It presents complex issues of health and wellness and highlights key components of these issues to support culturally grounded evaluation frameworks (Dapice, 2006). According to Dapice (2006) no one aspect of health is complete without the others. The medicine wheel combines Eastern philosophies, which are cyclical and suggest change cannot occur, with Western philosophies, which assume a linear cause and effect mode and often use an interventionist approach, providing a holistic framework that suggests that change can and will occur (Dapice, 2006). Thus, whether someone remains healthy depends on balance within and among all four components of the medicine wheel (Anderson and Olson, 2013). Finally, the medicine wheel holds the potential to bridge the gap between differing worldviews held by outside evaluators (or researchers) and Native people (Salois et al., 2006). Once developed, Medicine Wheels can promote storytelling and make complex issues more understandable and usable for Native people involved in research and evaluation (Atlantic Council for International Cooperation 2008). Similarly, they may provide the opportunity for researchers to understand and incorporate these complex issues into more formal inquiry into outcomes of service programs. The use of the traditional medicine wheel is successful in studies, such as these, because it provides a conceptual framework that is culturally grounded and also supported by solid scientific research (Dapice, 2006). For this project, the medicine wheel is divided into four quadrants that represent the physical, mental, spiritual, and emotional aspects of health and well-being.

Measuring spirituality using the Medicine Wheel

Application of the Medicine Wheel to an evaluation framework necessitates that all quadrants of the wheel are incorporated into the evaluation of the Title VI Program including the spiritual. Discussions with ACL's Tribal Advisory Group and Title VI grantees illuminated the need to integrate this component of health and wellness as a key component in ACL's evaluation research design. While ACL was prepared to adjust the evaluability study and resulting evaluation to fit the needs of tribal communities, it was less clear initially that the spiritual would be something that needed to be included in all phases of the research. However, sacred aspects of Native being (or spirituality) are often not incorporated into Western research and evaluation (Walker, 2001). Spirituality is a complex concept and attempts to incorporate spirituality into research on health and well-being have been critiqued

for the lack of distinction with religion (Frey, Daaleman, & Peyton, 2005) or confusion with well-being in general (de Jager Meezenbroek, Garssen, van den Berg, van Dierendonck, Visser, & Schaufeli, 2012). Although it may prove challenging to develop agreed upon definitions within and across Title VI Program tribes and communities, the evaluation advisory group members repeatedly noted that spirituality is an important component and concept for Native American communities in general and for understanding the implementation and outcomes of the Title VI Program specifically. To bridge the two models, the advisory group went through an exercise of brainstorming what the terms in each of the four quadrants of the Medicine Wheel meant to them and then placing the outcomes listed in the traditional logic model (Exhibit 1) into the Medicine Wheel model (Exhibit 2). In doing this, they defined spirituality within the context of the Title VI program as including: empowerment, cultural/community integration, independence, and an ability to remain in the community (listed as a reduced risk of nursing home placement). The next step will be to use this list to develop specific indicators or measures that will require pretesting and piloting to determine their value as proxies for spirituality or spiritual well-being. Tribal members will be involved in this effort to ensure the best fit or approach for understanding this aspect of the overall health and wellness of Title VI service recipients.

Exhibit 2. Title VI Program Medicine Wheel



The value of the Medicine Wheel to this Evaluation Design

In this study, the process of mapping the traditional logic model to the medicine wheel was used to orient the proximal and distal outcomes across the traditional quadrants of indigenous practice: Spiritual, Mental, Emotional, and Physical. Each quadrant further housed within the context of the individual, family, community, and intergenerational connection—highlights the importance of each to the spiritual, mental, emotional, and physical well-being of indigenous communities and Elders (EA final report, 2015). The use of the Medicine wheel model and a PAR approach will help ACL to get buy in for an evaluation from stakeholders, including Tribal leaders, line staff, and service recipients. By presenting the evaluation in terms that are understood by the community and program stakeholders, ACL expects to be able to collect rich data that is more grounded in the experiences, traditions, and values of peoples reached through this program. This approach will also reduce “translation” error because, although, this study does not rely heavily on language translations, it does involve translating perspectives. By using a framework that is reflective of those who will participate in the research, the research questions are more likely to make sense to study participants and the findings will represent the experiences and outcomes of Tribal elders and program staff more accurately and less superficially. This approach is designed to simultaneously respect program participants’ cultures and provide information needed by ACL to demonstrate the full scope of the program’s value.

References

- Administration for Community Living. Evaluability Assessment Final Report. 2015. Accessed from http://www.aoa.acl.gov/Program_Results/docs/EA-of-TitleVI-v2.pdf on December 3,2015
- Anderson, Karen M. and Olson, Steve, Rapporteurs; Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities; Board on Population Health and Public Health Practice; Institute of Medicine. Leveraging Culture to Address Health Inequalities: Examples from Native Communities: Workshop Summary. 2013
- Atlantic Council for International Cooperation. Medicine Wheel Evaluation Framework. Halifax, NS, Canada. Accessed from http://static1.1.sqspcdn.com/static/f/1590842/20068323/1349103128263/Medicine_Wheel_Evaluation_Framework.pdf?token=aZkebTh2zQOosPUfLAG40gskKk%3D on January 31, 2016.
- Brown, L. David, and Rajesh Tandon. "Ideology and political economy in inquiry: Action research and participatory research." *The Journal of Applied Behavioral Science* 19, no. 3 (1983): 277-294.
- Centers for Disease Control and Prevention. Developing and Using a Logic Model. Accessed from http://www.cdc.gov/dhdsp/programs/spha/evaluation_guides/docs/logic_model.pdf on February 12, 2016
- Chen, Huey T. *Theory-driven evaluations*. Sage, 1990.
- Chen, Huey-tsyh. "Theory-driven approach for facilitation of planning health promotion or other programs." *The Canadian Journal of Program Evaluation* 18, no. 2 (2003): 91.
- Chen, H.T. 2005. Practical Program Evaluation: Assessing and improving program planning, implementation, and effectiveness. Sage.
- Clarke VI, Holtslander LF. Finding a balanced approach: incorporating medicine wheel teachings in the care of Aboriginal people at the end of life. *J Palliat Care*. 2010 Spring;26(1):34-6.

D'Agostino, Jerome V. "Increasing the role of educational psychology theory in program development and evaluation." *Educational psychologist* 36, no. 2 (2001): 127-132.

Dapice, Ann N. The Medicine Wheel Journal of Transcultural Nursing, Vol. 17 No. 3, July 2006 251-260. DOI: 10.1177/1043659606288383

de Jager Meezenbroek, Eltica, Bert Garssen, Machteld van den Berg, Dirk Van Dierendonck, Adriaan Visser, and Wilmar B. Schaufeli. "Measuring spirituality as a universal human experience: A review of spirituality questionnaires." *Journal of religion and health* 51, no. 2 (2012): 336-354.

Fisher, Phillip A. and Ball, Thomas, J. 2002. The Indian Family Wellness project: An application of the tribal participatory research model. *Prevention Science*, 3, 235-240.

Fisher, Philip A. and Ball. Thomas J. Tribal Participatory Research: Mechanisms of a Collaborative Model. *American Journal of Community Psychology*, Vol. 32, Nos. 3/4, December 2003

Frey, Bruce B., Timothy P. Daaleman, and Vicki Peyton. "Measuring a Dimension of Spirituality for Health Research Validity of the Spirituality Index of Well-Being." *Research on Aging* 27, no. 5 (2005): 556-577.

Gone, Joseph P. The Red Road to Wellness: Cultural Reclamation in a Native First Nations Community Treatment Center. 30 October 2010 *Am J Community Psychol* (2011) 47:187–202. DOI 10.1007/s10464-010-9373-2

Greenwood, Davydd J., William Foote Whyte, and Ira Harkavy. "Participatory action research as a process and as a goal." *Human Relations* 46, no. 2 (1993): 175-192.

Helitzer, Deborah, Christine Hollis, Brisa Urquieta de Hernandez, Margaret Sanders, Suzanne Roybal, and Ian Van Deusen. "Evaluation for community-based programs: The integration of logic models and factor analysis." *Evaluation and Program Planning* 33, no. 3 (2010): 223-233.

Hendrix L, Winters C. Academic education. Evaluating healthcare information on the Internet: Guidelines for nurses. *Critical Care Nurse* 2001;21(2):62, 64–65, 67–68. [PubMed: 11858441]

Hengen, T. 2013. *Medicine Wheel Model of Mental Health*. Friesen Press. Victoria, BC, Canada.

Holkup, Patricia A., Tripp-Reimer, Toni, Salois, Emily Matt, and Weinert, Clarann. Community-based Participatory Research: An Approach to Intervention Research with a Native American Community. *ANS Adv Nurs Sci*. 2004 ; 27(3): 162–175.

Kattelman, Kendra K., Conti, Kibbe, and Ren, Cuirong. The Medicine Wheel Nutrition Intervention: A Diabetes Education Study with the Cheyenne River Sioux Tribe. *Journal of the American Dietetic Association*. Volume 110, Issue 5, Supplement, May 2010, Pages S44–S51

Kellogg, W.K. *Evaluation Handbook* (2010). Accessed from <https://www.wkcf.org/resource-directory/resource/2010/w-k-kellogg-foundation-evaluation-handbook>, on January 4, 2016.

Kindon, Sara, Rachel Pain, and Mike Kesby, eds. *Participatory action research approaches and methods: Connecting people, participation and place*. Routledge, 2007.

- Lane Jr., P., Bopp, J., Bopp, M., Brown, L., and elders. 1984. *The Sacred Tree*. Four Worlds International. British Columbia, Canada.
- Lewin, K. (1946). Action Research and Minority problems. *Journal of Social Issues*, 2(4), 34-46
- Mosley-Howard, G.S. (1995). Best Practices in Considering the Role of Culture. In A. Thomas and J. Grimes (Ed.), *Best Practices in School Psychology* (pp. 337-345). Washington, DC: National Association of School Psychologists.
- National Museum of the American Indian. N.d. Medicine Wheels. Museum documentation.
- Oxendine, J. K. April 8, 2014. Native American Medicine Wheel: Comparison In Life. Accessed from <http://www.powwows.com/2014/04/08/native-american-medicine-wheel-comparison-in-life/#ixzz3yqMJkAOe> on January 31, 2016.
- Reason, P. and Bradbury, H. (2008) (eds) *The Sage Handbook of Action Research: Participative Inquiry and Practice*. Sage, CA. [ISBN 978-1412920292](https://doi.org/10.1080/14442210802292929).
- Salois, Emily Matt, Holkup, Patricia A., Tripp-Reimer, Toni, , and Weinert, Clarann. Research as Spiritual Covenant. *J Nurs Res*. 2006 August ; 28(5): 505–563. doi:10.1177/0193945906286809.
- Savaya, Riki, and Mark Waysman. "The logic model: A tool for incorporating theory in development and evaluation of programs." *Administration in Social Work* 29, no. 2 (2005): 85-103.
- Stanfield II, J. H. (1993). Epistemological considerations. In J. H. Stanfield II & R. M. Dennis (Eds.), *Race and ethnicity in research methods* (pp. 16–38). Newbury Park: SAGE.
- Stubben JD. Working with and conducting research among American Indian families. *American Behavioral Scientist* 2001;44:1466–1481.
- The Older Americans Act of 1965 (OAA), as amended Accessed from http://www.aoa.acl.gov/AoA_Programs/OAA/oa_full.asp on December 16, 2015
- Walker, Polly. "Journeys around the medicine wheel: A story of Indigenous research in a Western university." *The Australian Journal of Indigenous Education* 29, no. 02 (2001): 18-21.
- Wisner, Ben, David Stea, and Sonia Kruks. "Participatory and action research methods." In *Advances in environment, behavior, and design*, pp. 271-295. Springer US, 1991.