Innovating a New Way for Measuring the Health of Aboriginal Communities

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Community Health Indicators
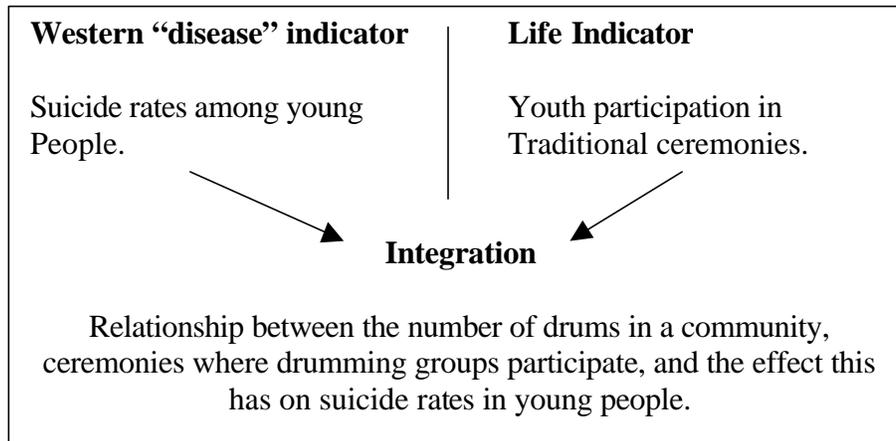*An aboriginal perspective on community health indicators*

It is clear that Aboriginal people in Canada do not enjoy the same level of health as other Canadians do. Government, academic and media reports continually underline the high suicide rates, solvent abuse and crime that are evident in Aboriginal communities. What is not described, or analysed in these reports is the joy and integrity present in these communities. Instead, modern "health studies" focus only on the illness of our communities, not their health.

Certainly, we cannot ignore the important impacts that environmental deterioration and contaminants have had on the health of our people. Bad drinking water, poor housing and insufficient land for hunting are but a few of the issues faced by our communities. Our concern, however, is that the sole focus placed by Western society on disease and dying does not identify a way forward – solutions to the challenges that our communities face. Another problem with Western approaches to measuring "health" is that they require large numbers of people, dramatic and concrete symptoms and clearly established parameters of health for the study population. Aboriginal communities are often small, the symptoms of wellness in these communities are often diffuse and expressed in social and other community functions, and the basic medical parameters of Aboriginal people are unknown.

The purpose of this paper is to discuss the thinking behind a new way for measuring the health of Aboriginal communities. It is a "work in progress" or "ongoing innovation" led by the Institute of the Environment at the University of Ottawa and the Mohawk Council of Akwesasne, Department of Environment. At the outset of this paper, we will address the challenges presented by measuring health in Aboriginal communities. We then outline the theoretical grounding of the new approach developed by our project. In conclusion, we briefly address some of the concrete indicator measurement being conducted in the phase of the project, and discuss the way forward for our work. The work described here is done in collaboration with the Little Red River Cree Nation (Alberta), the Mohawk Community of Akwesasne (Ontario/Quebec) the Miawpukek First Nation (Newfoundland), the Maliseet Nation in Tobique (New Brunswick), the Opasquayak Cree Nation (Manitoba) and the Kinkcome Inlet First Nation (British Columbia).

Addressing the Challenges

The challenge that we are trying to address in this project, then, is to develop a new way of looking at health indicators in Aboriginal communities. The methodology and indicators presented here, and developed by the project are based on a Aboriginal worldview that makes sense to Aboriginal communities and on a need for quantitatively based measurements that can then be analysed and compared with other communities. Furthermore, the challenge we have addressed is to develop a method for integrating Western indicators of death and disease with the measurement of health and life in Aboriginal communities. An example of this integration is provided below.

Western "disease" indicator	Life Indicator
Suicide rates among young People.	Youth participation in Traditional ceremonies.

Integration

Relationship between the number of drums in a community, ceremonies where drumming groups participate, and the effect this has on suicide rates in young people.

In order to accomplish this, there is a need to turn the focus of health studies away from the standard Western model of measuring "health" in specific populations. This Western model places great stress on the community, isolates symptoms from causes, does little to develop the capacity of communities to measure their own health, and often identifies problems only after those who are affected by illness have no recourse to preventative measures. Instead, we need to turn towards community participatory research studies, where health effects are determined by small groups of concerned residents initiating discussion and research throughout the social, economic, political and spiritual networks present in their community. With this approach to measuring health, concerns are more readily identified, their connections to broader social (etc) issues are addressed, and the community develops a capacity to monitor their own health.

The Concept of Hierarchy

Aboriginal people look at impacts on their communities, as ripples in a pool, ever expanding out from the central cause. Each of these ripples can be described as levels of a hierarchy. These levels have different characteristics and parameters. Each level is directly related to the one above and the one below but the relationship between all levels can be viewed as a holistic approach to the cause and effect theorem.

Conceptual Diagram of Cause and Effect Hierarchy
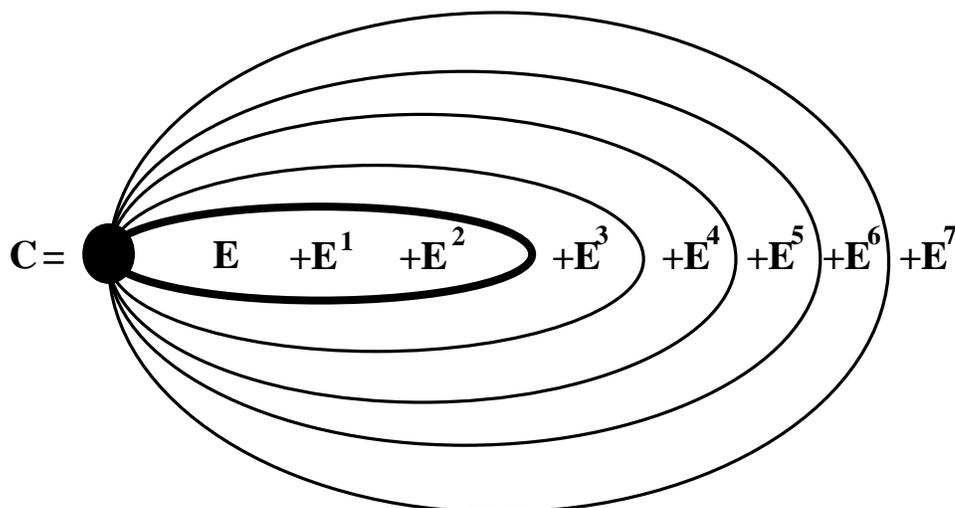
$$C = \quad E \quad +E^1 \quad +E^2 \quad +E^3 \quad +E^4 \quad +E^5 +E^6 +E^7$$

E = The sum of the effects in the hierarchy

2

The hierarchy can also be translated into scientific terms by defining each of the levels. Some of the characteristics are outlined in the figure below.

Diagram of Model Hierarchy

$C =$	E	$+E^1$	$+E^2$	$+E^3$	$+E^4$	$+E^5$	$+E^6$	$+E^7$
HIEARCHY	SUB CELLULAR	CELLULAR	INDIVIDUAL	GROUP FAMILY	COMMUNITY	NATION	CONFEDERACY	SPIRITUAL
HUMAN DEVELOPMENT	EGG & SPERM	EMBRYO	BIRTH	CHILD	ADOLESCENT	ADULT	AUNTIE UNCLES	ELDERS
REACTION TIME	MICRO-SECONDS	SECONDS	MINUTES	HOURS	DAYS	WEEKS	YEARS	DECADES
POPULATION	<1	<1	1	<100	<10 K	<100 K	>100 K	INFINITE
AREA OCCUPIED	MICRONS	MILLIMETERS	10'S METERS	10 KM	<100 KM	<1000 KM	GLOBAL	UNIVERSAL
VARIABLES	10	10^2	10^4	10^8	10^{16}	10^{32}	10^{64}	10^{128}
CHAOS THEORY	CHAOS INCREASES					CERTAINTY DECREASES		

The Sub-cellular Level is the smallest level of physical existences which Aboriginal people perceived in the environment. This level was inferred from the cellular level.

The Cellular Level was understood by Aboriginal peoples as being to level at which most basic reaction took part in the body. It was too small for the human eye to see directly, but could be observed by the reactions of the body. Aboriginal people understood that there were different types of cells in the body and that these cells acted differently in the body. The environmental impacts also affected the cells and the body differently. Fungi, bacteria and virus were all defined and treated differently.

The Individual Level was viewed as the association of cells in a body which integrated the well being, the physical and spiritual. The Individual level was seen as being more complex than the cellular level with many more variables or characteristics in the system. Internal systems like respiration and circulation were viewed as part of the individual, influenced at all levels both physical and spiritual. A single animal or plant was seen as being important in and of itself and as an integral part of the world.

When individuals came together in groups, Families, Clans and other associations were seen as having very different characteristics from individuals but the individuals had to work together in order to protect themselves. The group had to have rules and customs that enhanced cohesion in

the group but the group also required similar resources as the individual and all the lower levels. The need for food, shelter and knowledge in order to survive was acquired by being able to coordinate the actions of the group.

Groups of people came together to form <u>Communities</u>. Communities were seen as having a concrete concept of place. Specific knowledge or occupation also created a community of ideas. A community of place could be a village or town, which formed for long or short periods of time. A community of ideas could be a council of elders that were discussing important concerns of the Elders. A community had rules and regulations that assisted the families and individuals in the community, helping them feel wanted and needed. Aboriginal people understand that communities can be affected the same way as an individual can be affected. Communities can have diseases, the same way as individuals can have disease. The characteristics of these diseases may look much different from individual disease but can be just as destructive.

As Communities came together, <u>Nations</u> were formed. These nations were characterized by different languages, customs and rituals. They had to protect their communities, families and individuals from harm and the individuals, families and communities had a responsibility to care for and be responsible to the Nation. The resources of a nation are similar to the lower levels of the hierarchy in that a Nation requires material or physical resources as well as the mental energy of its people. If these resources are compromised, then Nation states manifested disease like symptoms. A balance was believed to be the healthiest state for nation.

When nations came together, they formed themselves into a <u>Confederacy</u>. Confederacy is a union of nations to protect and maintain the basic needs of the nations for Respect, Power and Peace. As the individuals have responsibilities to the Family, nations have a responsibility to the Confederacy. The Confederacy creates a place for the nations to discuss common problems and to find solutions for these problems. When the power of the Confederacy is used to create disharmony in the world, the Confederacy could be said to be ill.

The <u>Spiritual</u> Level of the hierarchy enfolds and manifests itself at all levels of the hierarchy. The spiritual level is the place in which all the energies of the lower levels are accumulated and enhanced. The spiritual level of the Universe is understood only through years of study and work, trying to understand all the other levels of existence. As the hierarchy reflects the growth of a person from sub-cellular to a person in the confederacy it also defines the importance of Elders in the Aboriginal culture. Elders are people who have spent their whole lives trying to understand the world and universe.

In order to understand the concept of community health indicator, it is important to understand the hierarchy of the world around us, as Aboriginal people see it. It is also important to understand the different approaches to understanding health concerns in a Aboriginal community from the western *health* approach and from the community participatory approach.

The *Health* Model

First Nation Communities have suffered from environmental impacts from the time of first contact with non-Aboriginal people. Destruction of the natural environment, contamination of food stocks and reduced access to natural resources have had a serious impact on our communities. These impacts have been expressed as dysfunction within our nations, communities and families. The ability of the community to understand these impacts has been largely discounted by the scientific community in favour of a *health* model of environmental impact.

The *health* model has concentrated on disease as the end point to community dysfunction and only recently has acknowledged that dysfunction can extend from individuals to family and community. The *health* model tends to be reactive and concentrates on specific symptoms of dysfunction while ignoring the collapse of the community or nation. It tends not to respect the knowledge of the community but rely on scientific or external expertise for answers to the question of impacts. There is a heavy reliance on exposure and risk analysis but almost no analysis of how the community feels.

Within community the development of the *health* model seems to follow distinct phases.

1. Preliminary Evaluation

   The preliminary evaluation phase usually is initiated by a small number of people who believe they have been impacted. The medical community is usually not educated enough to evaluate environmental health impacts and can not make community wide assessments. Public Health systems are heavily over taxed and at best can only offer limited help to the individuals. The complaining individuals are usually viewed as troublemakers and people who are only "in it for the money". The impacted individuals have to become expert in all manners of health, environment and law.

2. Secondary Search

   As the initial group continues its work, more people become concerned. Some are drawn to the cause for personal reasons e.g. family who suffer. Some are drawn by a sense of injustice and others by a need to be involved. As the network grows, more and more people are drawn into the debate. Health experts are asked for advice and local health professions are seen as "friend" or "foe" depending on their responses to questions and issues. The impacts and the alliances are seen as a confrontation between them and us. As the search continues more and more experts are drawn into the debate.

3. Health Studies

   At this stage, the community has amassed enough political and social power to call for a "health study". The community is told that "health studies" must be left to the experts. Outside experts in which the community is seen as little more then an annoyance carry out the design and implementation of the study. The initial group has been excluded or

disillusioned by now and very few take part in the work. The "health study" usually ends up being a literature review with the authorities finding very little impact. The community is now thoroughly divided into people who support the issue and those that oppose the issue. Depending on who has most power, investigation of the issue can continue or it will stop.

4. Epidemiological Studies

    If the community is still concerned and has enough political or social power, then an epidemiological study will be initiated. This study, of necessity, will be done by external experts with non-local people. The community will be seen as subjects to be studied and a report will be written and most often not even reported back to the community. These studies most often have three results. Many of them report no significant dysfunction directly associated with the impact. Various excuses are given: small population numbers; smoking; bad nutrition and other community problems. At this point it seems that only significant numbers of dead people can confirm any problem. Communities who have done epidemiological studies are usually not satisfied with the results.

5. Litigation

    Litigation, whether class actions or individual tort cases seem to be the last resort of people who have been affected. If the case is strong, then the case is settled out of court and the people move. If it is not strong, then the case is drawn out until the plaintiffs go broke or in some case die. If the case is won, it is usually appealed and only after decades is justice achieved.

6. Community Destruction

    The final outcome of this "health model" process is not a strong vibrant community but one that is torn apart by internal strife. Properties are devalued and many people who lived in the community have either moved or died. Love Canal and many of the "super fund" sites in the US suffer from this problem. The Sydney tar ponds (Nova Scotia) are a classic example in Canada.

The usual period of time needed from the Preliminary Evaluation to some type of conclusion is about 10 to 25 years.

Community Participatory Research Studies

Over the past twenty years, community participation in health studies has been viewed as crucial to the successful resolution of a community environmental health issue. More and more communities that are concerned about environmental health issues are doing their own research and studies to clarify the issues and the impacts surrounding specific problems. Experts are integrated into the community's research plan rather then the other way around. Six major stages make up the community participatory research effort.

Small Number Stage

During this stage a few people in the community perceive that there is a problem in the environment. They begin to research and find problems associated with the natural environment. A canvas of animals and plants usually point to an anomaly in the environment. These anomalies are usually spatial and located in specific areas.

Community Expert Stage

Local people concerned with the environmental issue canvas local experts concerning changes in the environment. Fisherman, hunters, gathers, farmers, housewives and the elders are asked about the changes in the community. Very quickly this information tends to broaden the areas of concern.

Community Concern Stage

At this time, the environmental problem has become important to a growing number of people. It is usual for the local authorities to respond to the people's concerns with less then enthusiastic concern. If there are no noticeable deaths then it is very difficult for local authorities to respond easily. The community activists who by now have collected vast amounts of material on environmental concerns that becomes a valuable resource to the people of the community. Scientific and academic experts may be asked to join the discussion at this time. Community meetings will help to disseminate the information to the community. Effective use of familiar communication systems within community will help the community understand the issues.

Community Health and Testing

Community health and testing becomes possible when the community health professionals and the community become convinced of a problem. Scientific and community members work together to design research and testing strategies that clarify the environment and the health issues associated with the impacts of concern. Classic epidemiological work coupled with community health profiles help health professionals understand the community and the community to understand the health professionals. Results of the environmental impact can be wide-ranging and not just confined to the medical health of the community. Sociologists, economists, political scientists may be needed to evaluate primary, secondary and even tertiary impacts on the community.

Solutions Stage

While very few Aboriginal communities in Canada have reached the solution stage, many indications are seen in the urban renewal movement within cities. The communities feel empowered with their newfound understanding and look for means to solve the problems. Partnerships between governments, citizen groups, industries and other NGO's look for solution to the impacts of the environmental problems.

Community Participatory Research Studies are not confined to strictly health studies but many use other indicators of environmental health and well being. Health professionals will use only the tools that have been taught to them while the community maybe see many other effects not included in the medical health and disease model. The methodology developed by this project is intended to help "bridge the gap" between the two models.

Community Indicators of Health

As mentioned above, Western models of "health measurement" focus only on the symptoms of disease, and not on the connection between illness and broader social, economic, political or spiritual imbalances present in the community. The indicators developed by this project focus on wholistic measurements of complex, interconnected impacts felt by a community on its health. The basis for these indicators is shown in the Community Life Indicators Wheel illustrated below. The circle or wheel has many meanings for aboriginal people. It represents the circle of life, the prayer wheel and the medicine wheel. Each of these wheels or circles is sacred to all First Nations.

Community Life Indicators Wheel
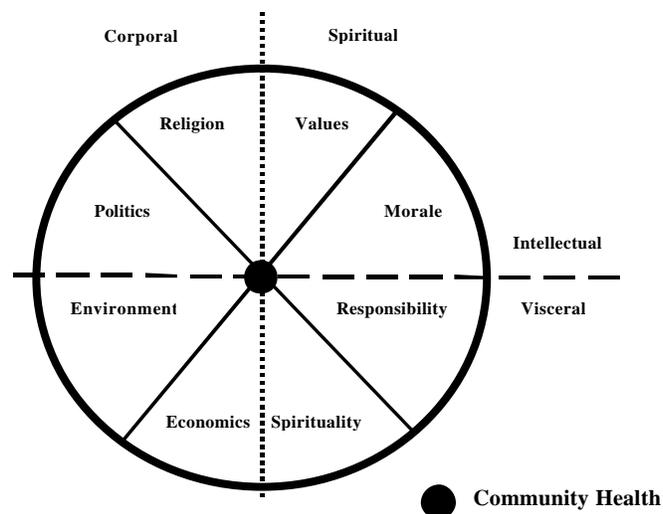
For the purposes of Community Health Indicators, the wheel is first divided vertically. The right half of the wheel is said to represent the spiritual side of the model. The left side represents the corporal or physical world. If the circle is then divided in half horizontally, the upper half represents the intellectual aspect of the community while the lower half represents the visceral or bodily aspects of the community. The health of the community will be the balance point in the center of the circle and may be measured by community life indicators. In order to keep disease indicators in balance, the community must maintain a balanced approach to life, as represented by the life indicators. In this way, all aspects of the world are represented on the wheel. This interpretation is similar to the traditional prayer wheels.

Around the wheel, the different aspects of community are placed within the sector that they resemble most closely. Thus, *Values* and *Morale* are seen as the intellectual and spiritual aspect

of the community; *Responsibility* and *Spirituality* are seen as the visceral and spiritual aspects of the community; *Politics* and *Religion* are seen as the corporal and intellectual aspect of the community; and *Environment* and *Economics* are seen as the corporal and visceral aspects of the community.

Corporal Section

The Corporal Section of the wheel can be defined as the concrete and practical section of the health paradigm. It is the reflection of the spiritual aspect of Aboriginal lives. *Environment, Religion, Politics* and *Economics* are the four major health aspects, which are very rarely integrated into health studies but have immense impact on community people. In the field of health research, the single largest factor influencing disease outcomes is economic status.

Environment is defined as the complex of physical, chemical and biotic factors that affect the community. Environmental factors can have a major impact on human and community health. Thus, any assessment of the well-being of the community requires an environmental profile which includes information from members of that community.

Religion is defined as an institutional system of religious belief and attitudes held within a community. Spiritual values and beliefs are manifested in the institutions that the community supports. Great churches and small chapels are indications of a community's commitment to its spiritual well-being. A community with no obvious religious structures may keep sacred areas for ceremonial or sacred assemblies with designated sites for rituals. The community health researcher must be aware of these sites and their significance since this is an important factor that influences community health.

Politics is defined as the form of governance practiced by the community. A community with no form of governance is neither a stable nor a creative community. Communities with corrupt forms of government may not be pleasant to live in, but such places are usually dynamic. Power and opposition generate community tension that can stimulate community growth that may eventually lead to a better system. Abusive communities usually have no concrete form of government, only imposed structures. A vibrant community will be constantly challenging its government and creating new institutions to cope with changing concerns and issues.

Economics is defined as the production, distribution or consumption of goods and services that govern the financial well-being of a community. In a creative and stable community, the 'hidden' economy may be far more important than the open market. Barter and trade for services is the backbone of a small community economy. Traditional reliance on environmental resources makes the good hunters, farmers, trappers and gatherers vital as primary suppliers of the community. Secondary production such as food storage and preparation, also depends upon the primary suppliers. Political and religious differences are put aside when the lives of the people in the community depend upon each other. The analysis of a community's economic system is vital to understanding a community's health. While economic life is considered the prime driver of modern society, it is rarely integrated into human health studies.

Spiritual Section

The Spiritual Section of the wheel can be defined as the intangible aspects of community health. Our physical institutions are reflections of the things we believe, but are not limited to the simple definitions that we place on them. There are many examples of intangible aspects in human health that are rarely acknowledged as part of the health paradigm. The placebo effect can produce symptomatic relief even when there is no apparent curative agent. Likewise, communities can exhibit a placebo effect by the very spirit they generate during a crisis.

Values are defined as the principles, standards and qualities that the community regards as worthwhile or desirable. Stories, legends and myths are told which enshrine examples of model behaviour. Rituals and ceremonies help people to enunciate the values that they believe. Every community has a good idea of what correct behaviour is but this may differ from community to community.

Morale is defined as the strong sense of enthusiasm and dedication to the goals of the community. The morale of a community can be measured by looking at the activities that the community does for itself and others. Volunteerism is the first thing to suffer in an unstable and uncreative community. In a vibrant community, dinners, picnics, festivals and charities are very important to its morale. The health of the community is very dependent on morale. The rate of teenage suicides in a remote community is likely to be connected to the community's morale.

Responsibility is defined as the ability to meet obligations to the community and the environment. Communities that have a strong sense of collective responsibility usually have little need for resort to the law. The concept of individual rights needs to be balanced with the sense of responsibility in order for the community not to become institutionally rigid and to remain flexible in its changing circumstances.

Spirituality is defined as the state or quality of being spiritual. Of all the aspects in the wheel, spirituality is the hardest to define, but it is probably the most important. Spiritual community is one that is connected to the 'Good Mind' and through this mind to the universe. Good thoughts and deeds are manifested for their own sakes rather than for some logical reason. 'Random Acts of Kindness' are examples of the spirituality of a community. Spirituality is not merely the fulfilling of our obligations to religious institutions, but the performing of our responsibilities to the creator and world.

These aspects can be used to define good community health if kept in balance. Religion can be used to persecute others if spiritual values are not followed. The spiritual values of a community may be corrupted if the religious institutions are given absolute control. Economics can lead a society to become inhumane if the values of the community are not used as a counterpoint. The dynamic energy needed to balance these aspects leads a community to become creative and stable. While this may seem to be a contradiction in terms, creativity in a community is the ability of the community to look for new solutions to problems and issues. Stability in a community means that peaceful and proper behavioural attitudes are maintained for the families and individuals, and respect is upheld for the Nation and Confederacy.

Community Health Indicator Methodology – Applying the Life Indicators Wheel

In order to use the life indicator wheel, the concept of balance and harmony must be explored in relation to the model. If the center of wheel is considered to be the health of the community, then anything that unbalances the wheel will be detrimental to the health of the community. Hence an indicator can be constructed by using the opposite sides of the wheel as denominator and nominator to determine the rate indicator.

An example can be constructed from the Religion and Spirituality. It is assumed that there is a relationship between the religious spaces and the spirituality of a community. This relationship can be manifested in many ways. If researchers are looking to construct a community health indicator from this area a good example may be the number of religious spaces in a community, compared to the number of people attending institutions.

<p align="center">**Community Health Indicator Matrix**</p>

<p align="center">**<u>Community Health Indicator</u>**</p>

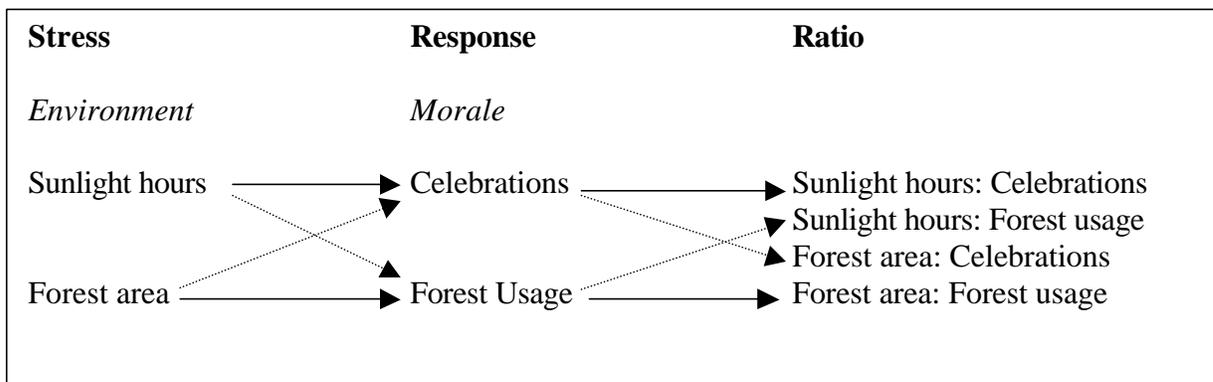|	High Attendance	Low Attendance
High # Religious Spaces	**X 1**	**X 2**
Low # Religious Spaces	**X 3**	**X 4**

Using the simple four way – high / low matrix above, if a community has a high number of religious spaces and many people attending these institutions, X1, then the research implies that the community is stable and creative. A community that practices its ceremonies and uses its religious spaces is one that cares for the well being of its people. The situation found in X2, in which a community has a high number of religious spaces but a small attendance may be that show a community that is losing faith. The faith or will of a community may be difficult to incorporate into a standard health study, but it is one that is very important to community health. A community that has few religious spaces but many people attending, X3, shows a community that is quite stable and creative.

Situation X4, low number of religious spaces and a few people attending is a community with self-esteem and little care for the spiritual needs of the people. Professional caregivers should be

concerned about this type of community. The definition of religious spaces can be quite broad, taking into account many secular beliefs (see table of indicators in Appendix 1).

This example shows that it is possible to develop quantifiable measurements of a community's participation in spirituality. Using the Life Indicator Wheel described above, it is possible, then, to develop ratios of responsibility: politics; environment: morale, economics: values; and religion: spirituality for one community that give results which can be compared with the same ratios in other communities.

These measurements are also useful because they enable us to quantify the **stresses** and **responses** of a community for a broad range of interconnected issues. For example, if we examine environmental stress and the response of morale in a community, we can develop a series of ratios from a relatively small number of indicators. The example below illustrates this.

Stress	Response	Ratio
Environment	*Morale*	
Sunlight hours	Celebrations	Sunlight hours: Celebrations
		Sunlight hours: Forest usage
		Forest area: Celebrations
Forest area	Forest Usage	Forest area: Forest usage

This example also illustrates two different kinds of measurements: one that is **objective** (sunlight hours and forest area) and one that is **subjective** (celebrations and forest usage). Although this does not affect the validity of the ratio, it does underline the fact that **subjective** measurements are influenced by the context of the measurement: time, place, social conditions etc., whereas **objective** measurements are independent of the context in which they are taken (ie: the number of sunlight hours per week is not affected by the humour of the researcher taking the measurements).

Following the examples above, the indicators below have been identified for the purposes of testing the methodology. The number of indicators identified here are limited in order to establish the functionality of the methodology described above. The indicators have been shown according to their role as a **stress** or a **response**. This allows us to see the potential pairing of the indicators for the development of ratios.

Stress	Response
Politics – Responsibility	
Seats on council Number of non government organizations	Voter turnout for elections Number of "care" resolutions Number of council resolutions
Economics – Values	
Hunters Ungulate population	Catch rate Vegetable intake Welfare spending
Environment – Morale	
Sunlight hours Forest Area	Celebrations Forest Usage
Religion – Spirituality	
Number of drums Number of religious spaces	Number of drumming occasions Attendance/use of religious spaces

These indicators are described in Appendix 1 in greater detail.

For the purposes of this phase of the project, and in order to standardize measurements, we have identified the following measurement frequency for the variables listed above. To facilitate ongoing measurement, the indicators described above are divided into four groups: measurements that should be taken 1) once a year; 2) once a season; 3) monthly; and 4) weekly or daily.

Once a year	Once a season
Number of drums in community Seats on council Non-government organizations Voter turnout Forest Area	Hunters in community Catch rate for ungulates Vegetable intake Ungulate population Forest Usage
Monthly	**Weekly/Daily**
Drumming occasions Religious spaces Council resolutions/"Care" resolutions Welfare investment Celebrations Sunlight hours	Attendance/use of religious spaces

Future plans

The objective of this project is to develop community health indicators based on the organic knowledge and valid requirements of aboriginal communities. It is a collaborative effort between the Assembly of First Nations, six Aboriginal communities, the Community Health Programs Directorate (Research and Development/Environmental Contaminants) of Health Canada, and the Institute of the Environment at the University of Ottawa.

In its first year (2000-2001) the Project accomplished all its objectives. All three participating communities: the Mohawk Council of Akwesasne (Ontario/Quebec), the Little Red River Cree Nation (Alberta) and the Miawpukek First Nation (Newfoundland), continue to support the project in the second year and three other First Nations communities have joined the process in November and December of 2001. These three communities are: Maliseet Nation in Tobique (New Brunswick), Opasquayak Cree Nation (Manitoba) and Kingcome Inlet First Nation (British Columbia)

The project has led to the development of a methodology for assessment of the current state of community health as described above, provided a basic methodology of indicator design, and prepared a methodology for the selection of indicators and their measurement in communities.

The second year of the project (ongoing) has as its goals the following:

− **The testing of the methodology and health indicators** developed during the first year of the project in the six participating First Nations communities;

− **The selection of health indicators by participating communities** to help them in assessing the extent of health problems caused by various social, cultural and economic impacts;

− **An exploration of how to integrate current Health Canada/Statistics Canada** databases with the data being generated by this project;

− **The development and measurement** of 6 -12 health indicators that will identify and measure the impact of environmental contaminants on First Nations communities; and

− **The continuing cooperation with communities** including the preparation of a toolkit for the development of indicators for healthy aboriginal communities.

Successful achievement of these objectives will further advance the development of the methodology on which this project is based and lay the groundwork for more ambitious indicator development work in the future.

Conclusion

Although the challenges to changing ways in which the health of Aboriginal communities is measured are great, the methodology described above has great potential. As its development

unfolds in the future, Aboriginal communities will begin to have greater control over the measurement of their health, and will be able to more readily identify "ways forward" for their own peoples.

Although beyond the scope of this paper, discussing the application of this work outside Aboriginal communities may bring new approaches to measuring the health of Canadian communities in general. Arguably, it is just this type of wholistic approach to measuring health and the health of communities that can serve to refocus our health system towards innovative solutions for the future. Much work remains to be done on the methodology described here, and the development of comprehensive, context sensitive indicators for Aboriginal communities. We remain confident, however, that this is the best way in which we can act responsibility for the future of seven generations.

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Appendix 1: Community Health Indicator Measurement

The table below provides a list of the indicators to be measured by this project. The table is divided into several columns:

Indicator – the name of the indicator;

Description – the description of all elements of the indicator that should be included in the reporting; and

Method – an overview of the methods for gathering the indicator information.

	Indicator	Description
Politics – Responsibility	Seats on Council	Total count of council seats for the community. The council for the purposes of this research project is the council recognized by the federal government as the designated government of the community.
	Non Government Organizations	Total number of community organizations which are constituted apart from the community government. These may include, but are not limited to social clubs, hunting clubs, Societies, chess clubs, outdoor clubs, gardening clubs, fishers and lunkers etc. Include organizations that may receive funding from the community or other governments.
	Voter turnout	This is the total of voter turnout for council elections and other community votes (referendum, plebiscite etc).
	# Council resolutions	This is the total count of Council resolutions in one year. It would also be valuable to note how many resolutions of the Council were rejected by DIAND.
	Care resolutions	This is the total count of "care" resolutions passed by Council over the same year as counted above. These resolutions deal directly with the welfare and health of the community members. A budget for example, should simply be regarded as a routine administrative procedure. The decision to fund a language preservation project, build a long house etc are "care resolutions".

	Indicator	Description
Economics – Values	Hunters in community	This is the total count of people which hunt to sustain their family or the community. In order to be "counted" as a hunter, the hunter must have been hunting on a regular seasonal basis for several years. Sport or recreational hunters should not counted separately.
	Catch rate of ungulates	This is the total number of ungulates caught by each hunter: this count should be divided by animal (deer, moose, buffalo etc.). You should also collect information on the total number of days/hours the hunters are spending to catch their animals.
	Vegetable intake	Measurement of total spending in community on vegetables BY THOSE that are receiving government assistance.
	Ungulate population	Total count of ungulate population within the community's hunting area. Take note also of the size of this area (in km^2).
	Welfare investment	The total value of weekly spending by the community on welfare, social assistance, food stamps. This should be broken down into amounts of assistance going to housing, food, child care etc;
Environment – Morale	Celebrations	The total number of community or groups celebrations held in the community over last year. This can include pow wows, community weddings, picnics, socials etc.
	Sunlight hours	The total number of hours of sunlight over the past year.
	Forest area	Total count of forest area which community is responsible for. The total land/water area for which the community is responsible should also be collected.
	Forest usage	This is a count of the different uses of the forest, and the relative percentage of area they represent. For example, how much of the forest is used for logging, medicine collection, berry collection, hunting, spiritual/religious sites, protection of endangered species, preservation of the wilderness.
Religion – Spirituality	Total number of drums in community.	Can be any kind of traditional drum used for ceremonial/sacred/festive events in the community or away from community. Include drums in active use, stored in house/garage/shed, hanging on walls, in storage. Drums in rock bands, marching bands, jazz bands (ie: non traditional) should not be included in count.
	Total number of drumming occasions per year.	Include total count of drumming occasions, including pow wows, community festivals, spiritual ceremonies, traditional socials, ceremonial greetings. Do not count "western" school, teen dances or community dances (unless traditional dancing and drumming was included).
	Total number of "religious spaces" in community.	This includes any and all spaces (including formal permanent buildings, temporary structures, or sacred spaces) indoors and outdoors. Can include, for example, sweat lodge, society house, Christian (or other) church. This count should (if possible) be broken down into indoor and outdoor spaces, formal permanent buildings, temporary structures and sacred spaces.
	Attendance/use of religious spaces	Average attendance/use rates for each religious space. If the ceremony is weekly, then the rates should be measured as the average attendance each week. If the ceremony is monthly or annual, the rate should be monthly averages or yearly average. Make sure to identify whether attendance rates being provided are weekly, monthly or annually.