A B S T R A C T

We begin with a discussion of some vitally important conceptual and methodological issues. These issues concern our understanding of community, of health, of population health and its determinants, of the concept of 'measurement' and the values that underlie it, and our reasons for wishing to measure these constructs. We then present a framework for indicator categories, propose some criteria for indicator selection and suggest an initial set of core indicators. This indicator set reflects not simply health status – no matter how broadly defined – but also the environmental, social and economic determinants of health and the "healthfulness" of the community itself. Our most important conclusion is that if the information that is contained in the data of the indicator set is to be transformed into knowledge that can empower and emancipate the community, it has to be developed in consultation with the local community and local users of the information.

A B R É G É

Nous débutons avec une discussion sur des questions conceptuelles et méthodologiques d'importance majeure. Ces questions touchent notre compréhension de la communauté, de la santé, de la santé de la population et de ses déterminants, du concept de « mesure » et des valeurs qui le sous-tendent, et des raisons que nous avons de vouloir mesurer ces éléments. Nous présentons ensuite un cadre pour les catégories d'indicateurs, proposons quelques critères pour la sélection d'indicateurs et suggérons une première série d'indicateurs principaux. Cette série d'indicateurs reflète non seulement l'état de santé – peu importe la globalité de sa définition – mais aussi les déterminants environnementaux, sociaux et économiques sur la santé et la « salubrité » de la communauté en tant que tel. Notre conclusion la plus importante est que si l'information contenue dans les données de la série d'indicateurs doit être transformée en connaissances qui peuvent renforcer et émanciper la communauté, elle doit être développée en consultation avec la communauté locale et les utilisateurs locaux de l'information.

Indicators that Count! Measuring Population Health at the Community Level

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We begin with a discussion of some vitally important conceptual and methodological issues that underlie this topic. These issues have to do with our understanding of community, of health, of population health and its determinants, of the concept of 'measurement' and the values that underlie it, and our reasons for wishing to measure these constructs. We then present a framework for indicator categories, propose some criteria for indicator selection and suggest an initial set of core indicators.

Conceptual and methodological issues

A 'community' can be both spatial and non-spatial, but for the purposes of the development of community indicators we are concerned mainly with spatial communities, and particularly geo-political communities such as municipalities. Moreover, and particularly within the context of larger cities, we are interested in the spatial communities known as neighbourhoods, although their boundaries are not fixed and are as much psychological and social as they are physical.¹ This makes the development of indicators a complex process, but since such neighbourhoods often serve as the base for social and political action with respect to issues that affect the health, well-

being, quality of life and environment of communities, it makes the development of indicators at this level important and worthwhile.

We take the view that health is much more than the measurement of death, disease and disability, it also encompasses mental and social well-being, quality of life, life satisfaction and happiness. Our ultimate goal as a society and as members of communities surely is to maximize human development and the achievement of full human potential. On the basis that "you get what you measure," we need ways to measure health and the quality of life – in its broadest meaning – at the community level; and, moreover, in ways that make sense to the community and not just to policy makers and academics.

A third important conceptual issue relates to the determinants of the health of a population. The determinants are very broad, and certainly include but go beyond the factors identified in the CIAR's population health models² – although the epidemiological evidence relating the broad range of determinants that are relevant to population health at the community level is not necessarily (yet) available. Broadly speaking, the determinants of the health of a *population* (as opposed to the determinants of the health of individuals) relate to meeting basic needs for all, achieving adequate levels of economic and social development, nurturing social relationships that are mutually supportive and respectful, and ensuring the quality and sustainability of the environment.

A fourth important issue is what is meant by "population health", particularly at the community level. We take the position that population health is much more than simply the aggregate of the health of

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This paper is abstracted from a lengthy report prepared by the authors for the Knowledge Development Division, Health Canada. The views herein do not necessarily reflect the views or opinions of Health Canada or the Government of Canada. The full report is to be published by the Centre for Health Promotion, University of Toronto, and ParticipACTION.

the individual members of the population, important though that is. Population health also must include the distribution of health across a community (and thus, inevitably, must address issues of inequalities in health and inequitable access to the determinants of health). A further aspect of "population health" at the community level has to do with how well the community functions, whether the community *as a whole* is "healthy".

There is growing evidence that the well-being of the individuals in a community depends upon how well the community functions, not only in terms of ensuring equitable distribution of the determinants of health, but in terms of the processes of governance in the community such as the degree of participation, the degree of social cohesion and the extent of "civiness".^{3,4} This reflects the definition of health promotion as "the process of enabling people to increase control over, and improve their health,"⁵ where the process of empowerment and participation is seen as fundamental to good health. Measures of such attributes of a well-functioning community should also be a component of an assessment of population health at the community level.

Thus the key elements of an assessment of population health at the community level include:

- the aggregate of individual death, disease, disability, behavioural and positive health status (population health outputs)
- the pattern of distribution of such status across the community – inequalities in death, disease, disability, behavioural and positive health status (inequalities of outcomes)
- key indicators of environmental, social and economic determinants of health (population health inputs)
- the distribution of such determinants across the community – inequalities in access to the determinants of health (inequalities of opportunity)
- the healthfulness of the community's processes of governance (participation, social cohesion, civiness, etc.) – inequitable distribution of power, participation, etc.

Measurement of the health of a population is far from simple, for a variety of reasons. To begin with, measurement, curi-

ously enough, is not an exact science. What we choose to measure, how we choose to measure it and the significance we attach to the results have more to do with philosophy, values and politics than with science – or more precisely, perhaps, science is a reflection of our philosophy, values and politics and not a neutral and objective practice that exists outside of these frameworks. The understanding of what constitutes "evidence" thus varies from scientist to politician to citizen. The process of measurement is further complicated because we are dealing with perceptions of health and its determinants as much as with 'objective reality' – and both are valid in their own way.

The very act of measurement implies some sort of assessment, and certainly, if repeated, assumes the measurement of change – either for better or for worse. Most indicator projects are undertaken in order to track change, to measure progress. But this in turn implies that we have a sense of what it is that we are progressing towards, that there is a "good" out there that the community and/or the society – or some segment of it – considers desirable. In the absence of such goals, assessment of change becomes relatively meaningless, since we have no way of judging whether such change is beneficial or harmful.

What indicators represent, in their purest form, is *data*,* and in such a form it

is chiefly of interest to researchers. When that data is analyzed and interpreted, it becomes *information*, which is of value to policy makers, program managers and other decision makers. When that information is translated into a form that is useful to the community – and even more important, when the definition of the information to be collected, as well as the analysis and interpretation, is in the hands of the community – that information becomes useful *knowledge*, and the process of acquiring and using that knowledge helps to empower the community. Finally, it is to be hoped that the distillation of that data, information and knowledge will result in wise choices and the "right use" of knowledge. Ultimately then, indicators should contribute to our *wisdom* and to our ability to make the right choices – not just for ourselves but for generations as yet unborn.

The final issue is whether knowledge has an impact. What sort of information influences policy makers, interests the media and empowers the community? Understanding these issues is crucial if indicators are to count, if measurement is actually going to matter. Yet Starr⁶ suggests that the effects of official statistics on decision making and on society as a whole "are so diffuse and illusive that valid generalizations may be few." In particular, he points out that just because data or information is cited in a decision-making process does not mean that it caused that decision, which may have been made for other reasons – "use never proves effect." Or as Innes⁷ so succinctly puts it:

"When it really comes down to it, there is not much that can be said with confidence about how knowledge influences policy."

A framework for indicators

The key conceptual issue in indicator development is the framework that is used to organize the components. Of course, all models are wrong, in that they present a necessarily simplified version of reality. Nonetheless, they also represent a perspective on reality that discloses the values and concepts of those who propose them.

The basic framework that we have chosen to use (Figure 1) is one that has been

* Innes (1990) presents definitions of the key terms used here, based on Webster's *New Collegiate Dictionary* (8th edition, 1977) as follows:

- *data* is "factual information (as measurements for statistics) used as a basis for reasoning, discussion or calculation." In other words, notes Innes, "data have no meaning in themselves, but only in relation to the context of argument, where the arguer assigns them meaning."
- Innes considers *information* to be "a higher order concept: ...information is data organized to have a meaning and a purpose, which may be to change ideas or actions."
- Innes considers *knowledge* to be an even higher-order concept, defined by Webster's as "the fact or condition of knowing something with familiarity gained through experience or association" and "the sum of what is known." For Innes, knowledge includes but goes beyond "the specific quality of information to an understanding of a whole ensemble of data, information, and experience."
- *Chambers Twentieth Century Dictionary* (1972) defines *wisdom* as the "ability to make right use of knowledge."

TABLE I
Indicator Categories

A: DETERMINANTS	Conviviality Family safety and security Sense of neighbourhood Social support networks Charitable donations Public services Demographics	Governance Voluntarism/associational life Citizen action Human and civil rights Voter turnout Perception of government leaders and services Healthy public policy
Sustainability Energy use Water consumption Renewable resource consumption Waste production and reduction Local production Land use Ecosystem health	Equity Economic disparity Housing affordability Discrimination and exclusion Access to power	C: HEALTH STATUS
Viability Air quality Water quality Toxics production and use Soil contamination Food chain contamination	Prosperity A diverse economy Local control Employment/unemployment Quality of employment Traditional economic indicators	Quality of life Well-being Life satisfaction Happiness
Livability Housing Density Community safety and security Transportation Walkability Green/open space Smoke-free space Noise pollution	B: PROCESSES	Mastery/Self-esteem/Coherence
	Education Early childhood development Education/school quality Adult literacy Lifelong learning	Health-promoting behaviours
		Disability/Morbidity Stress/anxiety Other morbidity/disability measures Health utility index
		Mortality Overall mortality rate Infant mortality rate Suicide rate

other authors. The basic framework links what have been described as the elements of the ‘three-legged stool’ of community sustainability and well-being (community, environment and economy) while paying attention to the links between these three spheres. It also focuses attention on the desired outcome, health. Furthermore, if health is interpreted broadly as human development and community is understood more broadly as society, the model also serves to integrate the “four capitals” – human, social, ecological and economic – that are at the root of the growing interest in alternative economics measures^{9,10} and which are sometimes used in Canada as an organizing structure for community-level quality of life indicators (e.g., Edmonton Social Planning Council’s LIFE – or Local Indicators For Excellence – project).

However, the model as originally developed does not adequately represent several important dimensions of community health and well-being. Specifically, education – a key driver of human development – is not in the model, nor are various aspects of governance. Accordingly, we have added another dimension to the model, which we refer to as the “processes of change.” The two key “drivers” of this process are education and governance,

developed and tested over a number of years;⁸ has proven itself to be empirically useful and conceptually strong, and has

been used in official reports (e.g., Royal Commission on the Future of the Toronto Waterfront, 1992) and by a number of

which in turn encompasses communication, participation, empowerment, civil rights and government performance. These elements, when in place and working well, independently enhance human health, as well as increase the likelihood that individual, community and political decisions in the three spheres, and their links, will result in the outcome of improved health.

The indicator categories that emerge from this model are congruent with the categories used in a wide variety of community indicator projects that are focussed on health status, healthy communities, 'state of the environment reporting', community sustainability and quality of life issues (and are reviewed in some detail in the full report).

We thus suggest 10 categories of indicators arranged in 3 sets, as follows:

1. The six key determinants (inputs)
 - environmental quality/ecosystem health
 - economic activity
 - social cohesion/civicsness
 - equity (including power)
 - sustainability
 - livability
2. The process by which all this is achieved
 - education
 - participation, empowerment and civil rights
 - government performance
3. The outcome – health status

Each of these 10 categories in turn has a number of sub-categories, yielding a total of 58 indicator sub-categories (see Table I). From these sub-categories, a core set of indicators is suggested (see full report).

This set of indicators is broadly consistent with and reflective of other proposed community-level indicator sets, in particular the set identified in a CMHC/Environment Canada report on sustainable community indicators software¹¹ which, in turn, was based on the Environment Canada "State of the Environment Report" framework and CMHC's "Community Oriented Model of the Lived Environment" (COMLE) indicator sets.

Criteria for indicator selection

The following considerations have directed our selection of indicators. We

also believe that such considerations are important in guiding communities in their own selection of indicators.

- Local involvement in selection of indicators: this helps to sustain action in the use of the indicators, to interpret their significance under conditions of inter-community comparisons and to ensure that indicators are consistent with key normative values, including some explicit statement of a preferred social and ecological future.
- Use of multi-stakeholder processes in their development: that is, the indicators are developed and overseen by people representing a variety of interests and knowledge.
- Ease of audience interpretation: the indicators both are, and measure, concepts that are easily understood, relevant and salient to the general public and others, and are within the "normal" range of policy makers' and the public's experiences, while still challenging this experience somewhat by the novelty of the information they represent.
- Measurement of conditions that are significant, comparable and amenable to direct citizen or indirect policy change: that is, the indicators address substantial problems, are useful in guiding action from the individual on up and have specific policy purposes in areas where there is already a public commitment to action.
- Disaggregatable down to at least the geopolitically defined community level and broadly representative of the area or condition: that is, they "should not reflect the problem from the perspective of only a relatively narrow aspect or population group."¹²

To conclude, we return to the key theme of our report – indicators are only useful if the process of developing and using them engages the community as a whole in examining what it wants to be, where it wants to go and what its values are; if the process provides useful and usable information to the community; and if the process increases the community's knowledge and power. The development of indicators should be looked upon as an opportunity for increasing public and political education and awareness as to health and

its determinants, and for exploring ways of creating healthier, more sustainable, more equitable, safer, more livable and prosperous communities.

While there is some merit to the development of a reasonably standard set of core indicators that can be used for comparison purposes nationally and even internationally, it is more important that the community select measures that matter if indicators are to count (have an impact) in the life of the community. It is also important to stress yet again that our focus is on the use of indicators by local citizens, community organizations and agencies and local governments, rather than national and/or provincial policy makers or researchers, except to the extent that policy development and research facilitates the development and use of indicators at the community level.

Next steps

We believe that the most effective strategy for the federal government – and particularly Health Canada – to pursue is to build upon and further expand the indicators process that is currently being developed by CMHC and Environment Canada. This model allows for the development of scientifically valid, broad-based indicator sets in a process of consultation with some of the key users (municipal politicians and staff) and yet delivers a product that, while providing a nationally standardized set of indicators, also provides both an educational program for users (including the community) and considerable flexibility in tailoring the indicator set to local needs. Accordingly, Health Canada should become a partner with CMHC and Environment Canada in the further development of this indicator software package.

In addition, Health Canada should work closely with other national, provincial and community-level indicator projects, including those identified in our report, to ensure that there is better linkage among these various projects, and to avoid overburdening communities with multiple, overlapping and uncoordinated indicator projects. Finally, Health Canada should utilize its (currently rather tenuous) links to the Healthy Communities networks in

Quebec, Ontario, BC and other provinces, so as to engage them and to benefit from their considerable experience in indicators development.

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