KEYNOTE PRESENTATION

Straw into Gold: Lessons Learned (and Still Being Learned) at the Manitoba Centre for Health Policy

Changer la paille en or : leçons retenues (et qu'on continue d'apprendre) au Centre des politiques de santé du Manitoba

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Abstract

What lessons have we learned at the Manitoba Centre for Health Policy (MCHP) about knowledge translation (KT) over the past 20 years, and what is our vision for the future? How does that KT interrelate with our other activities – research and the Population Health Data Repository? Who first noticed that "there's gold in them thar hills," and what did they do about it? How did we weave administrative database "straw" into gold, how have we panned for gold and how do we look for the pot of gold in the future? This paper describes how MCHP began with an integrated KT research relationship with government, and through *The Need to Know Team*, extended KT to regional health authority planners. It describes the various push–pull KT mechanisms that MCHP has used, including dissemination of research to planners through interactive workshops, and to other researchers through Web-based resources.

Résumé

Quelles leçons ont été retenues au Centre des politiques de santé du Manitoba (Manitoba Centre for Health Policy) au sujet du transfert des connaissances au cours des 20 dernières années et quelle est la vision pour l'avenir? Comment le transfert de connaissances est-il lié aux autres activités du Centre, c'est-à-dire la recherche et le registre de données sur la santé de la population? Qui ont été les premiers à voir qu'« il y avait de l'or » et qu'en ont-ils fait? Comment a-t-on changé la « paille » des données administratives en or? Comment a-t-on extrait l'or et comment cherche-t-on les marmites d'or pour l'avenir? Cet article décrit comment le Centre des politiques de santé du Manitoba a établi une relation de recherche intégrée en transfert de connaissances avec le gouvernement et, grâce à l'équipe *Need to Know*, a élargi le transfert de connaissances aux planificateurs des autorités sanitaires régionales. L'article décrit les nombreux mécanismes de transfert de connaissances qu'a employés le Centre, notamment la diffusion de recherches aux planificateurs grâce à des ateliers interactifs, et à d'autres chercheurs grâce à des ressources en ligne.

When I was first challenged to think about the history and vision of knowledge translation at the Manitoba Centre for Health Policy (MCHP) in conjunction with its 20th anniversary celebrations entitled "Going for Gold," I began by recalling all the possible phrases that come to mind when I think about the word "gold": going for the gold; digging for gold; pot of gold; gold standard; there's gold in them thar hills; Olympic gold; golden nuggets; straw into gold.

The 20th year of MCHP is a great vantage point from which to review the past, identify what works in the present and dream about the future. MCHP was built on the research creativity of Les and Noralou Roos when they arrived in Canada nearly 40 years ago (in the early 1970s). That's when they realized "there's gold in them thar hills" (although I'm sure they were much more articulate and grammatically correct). That phrase resonates with all of us. Gold has an enduring quality, and is looked upon as something of great value. But gold in the hills implies that there's work to do if we want to tap into the value. You have to dig for that gold, refine it and use it to purchase other valuable commodities.

In Manitoba, the "hills" could refer to government and the "gold" to the electronic administrative records upon which the government relied to run the basic universal healthcare system. Why focus on these data? Well, in the words of Jessie James, when asked why he robbed banks, "Because that's where the money is!" Those hills are where the data are, and not just any data, but population-based data, that is, data that has recorded healthcare transactions of virtually every person deemed a resident of Manitoba. Now that's gold, just waiting to be dug out. Once dug, the "gold" needs refining into great research, and the research needs to be translated into currency, that is, action that ultimately improves the health of the population.

According to our mission statement:

> MCHP is a research centre of excellence that conducts world-class population-based *research* on health services, population and public health, and the social determinants of health. MCHP develops and maintains the comprehensive population-based data repository on behalf of the Province of Manitoba for use by the local, national and international research community. MCHP promotes *a collaborative environment to create, disseminate and apply its research*. The work of MCHP supports the development of policy, programs and services that maintain and improve the health of Manitobans.

So MCHP has three pillars – research, the Repository and knowledge translation (KT). Yet the more I think about it, the more I realize that we can't isolate the concept of knowledge translation – it is interwoven with everything else we do within MCHP. So to understand the KT pillar, we need to understand the research and Repository pillars, too.

Research at MCHP

The birth of MCHP in 1990 was the birth of a sustainable research centre dedicated to digging out the gold by doing population-based research of international renown while maintaining its feet (or miner's boots?) on the ground. The novel idea of situating MCHP within the University of Manitoba's Department of Community Health Sciences in the Faculty of Medicine while obtaining ongoing, renewable core funding from the provincial government's department of health (Manitoba Health) combined the idea of academic freedom, intellectual curiosity and a high degree of research skills with the idea of grounded research that was relevant to the questions of top-level decision-makers. Government input continues to be integral to the process of deciding upon the five research projects funded through Manitoba Health annually.

This participatory model has been called "integrated KT" (Graham et al. 2007, 2009; CIHR 2010), in which users of the research are involved at the outset in a participatory model. If those people who are waiting for the answers are also involved in helping frame relevant questions together with (a) experienced researchers who know the limitations of the data, the scope of the research literature and what has already been done in the area and (b) the most valid and reliable way to analyze the data, it is no wonder that the research lends itself to KT. Not only does the research have its feet on the ground, but it begins to walk just by the very nature of the people involved. The findings are disseminated, through the natural interest of the decision-makers involved, to the various programs or policies. Although we are aware that research evidence is not the only influence on policy (often other pressures, such as economic or political realities, override the evidence), the research must be understood by policy makers and planners, and is one of the players sitting around the table during decision-making. MCHP's relationship with decision-makers reflects the model described by Lomas and Brown (2009) as a researcher–government interaction that enables evidence-informed policy development. Moreover, a high degree of involvement of users, combined with valid and appropriate research methodologies, may result in the greatest impact in the realm of policy, program or clinical research uptake (Martens and Roos 2005; Martens 2010).

Some people have questioned MCHP about the involvement of users in the research

process from start to finish. What if they bias the results? What if they ask the wrong questions? What if they don't like the results? What if…? (Insert your own worst nightmare!) I think such questions echoed our fears in the 1990s, but we have maintained a balance between a grant relationship with government vis-à-vis an embedded written guarantee of our academic freedom and our ability to take an idea and run with it. Through a combination of our research funded from government (which we call our "deliverables") and our external grant-funded research from granting agencies such as the Canadian Institutes of Health Research (CIHR), the Manitoba Health Research Council and others, we have learned over the past 20 years that the best questions come from an exchange of ideas, both among researchers and between researchers and users of the research. The Canadian Health Services Research Foundation (CHSRF) describes this integrated process as follows: "Knowledge Exchange occurs through 'linkage and exchange' – the interaction, collaboration and exchange of ideas. At every step in the research process – conception, investigation and dissemination of results – the Foundation encourages linkage and exchange between researchers and decision makers to get the best possible result for health services." (CHSRF 2010)

So, that pretty well says it all. "Going for gold" Olympic-style in the health services and population health research world takes a combination of individual and teamwork skills, and the individual may not (and probably would not) have all the skills, understanding, context, bird's-eye view or networking capability to get the questions right, to make the analysis meaningful, to contextualize the findings and to put the results into practice. Besides discussions between MCHP's director and the deputy minister of health to generate ideas for research, each deliverable also has expert input from advisory groups. These groups meet periodically with the research team to suggest ways to understand the data, provide insight into the clinical realities or give contextual wisdom that may lead to further analyses to untangle complex findings. Advisory groups on deliverables often include clinicians, healthcare or social services experts, provincial planners, policy makers, regional health authority representatives from urban and rural Manitoba, other researchers who are experts in the area of study and non-governmental groups with an interest in that particular topic. Many of our MCHP research scientists are themselves products of the experiential side of health services or public health, coming to research after a rich career of on-the-ground involvement in healthcare. And then there are scientists originally from the research world who now work in close collaboration with the experiential side, including clinicians, educators and planners in early child support programs or services for older adults.

But what about return on investment (ROI) in health research, golden music to the ears of any treasury department or granting agency? Do we turn our research gold into action, or hoard it away in a vault? Do we contribute towards a GDP of research use (GDPRU)? Steven Lewis, Louis Barré and I wrote a report in response to a request from the Treasury Board of Manitoba, and this report became the basis of a published paper on conceptualizing ROI from the perspective of a health services/population health research unit (Lewis et al. 2009). Since its inception, MCHP has demonstrated ROI in various facets, including cost savings to government (such as a reduction in use of a pharmaceutical), capital cost avoidance (such

as the decision not to build), improved cost effectiveness (such as showing anomalous rates in a region, thereby encouraging planners to look more carefully at the situation) and attraction of top research scientists, grants and salary awards to increase the capacity of the University of Manitoba. Moreover, as argued by Lewis and colleagues (2009), creating new awareness in decision-makers – including changing the anecdotally driven culture to evidence-informed decision-making – is an area in which MCHP has excelled, both at the provincial and regional planning levels (and sometimes at national and international levels, as well). The reader may well wish to read the full report for a more complete discussion of MCHP and its ROI.

The Repository

In their book, *Connected: The Surprising Power of Our Social Networks*, Christakis and Fowler (2009) describe the beginning of the vital statistics office in Britain in 1836, originally intended to ensure proper transfer of property rights of the landed gentry. Dr. William Farr, appointed to oversee this office, used his knowledge and creativity to see "gold in them thar hills," setting up not only the first national vital statistics system in the world, but using these data in unexpected ways to study mortality rates by occupation, by healthcare providers (insane asylums) and even by various social determinants of health (e.g., marital status). The authors state that "vital statistics were to Farr what the Galapagos finches were to Charles Darwin: an inspiration for a whole new science, and the key to a variety of seminal insights about the human condition" (Christakis and Fowler 2009: 81). Similarly, Noralou and Les Roos saw their own version of Galapagos finches in the electronic files of Manitoba's universal healthcare system. They developed expertise in using linkages between administrative databases, which spawned the Population Health Research Data Repository ("the Repository") housed at MCHP.

Going with golden analogies, let's hearken back to the famous phrase "turning straw into gold" from the fairy tale "Rumpelstiltskin" (Grimm and Grimm 1812), in which the king demanded that the miller's daughter spin straw into gold. The concept of turning straw into gold may be very apt in describing the Repository. People usually think of straw as being nearly useless – unless, of course, they come from a rural background. Straw is immensely practical on the farm. It's used as bedding for animals, insulation for crops such as strawberries and when building houses or protecting wells from freezing over winter, mulching into the soil to add tilth and protecting soil by preventing erosion in the fall and spring prior to planting. Straw is not useless; it is, however, commonplace. Turning straw into gold, then, is turning something with daily, not particularly high value into something that is much more desirable, and much more valuable in the commodities market. That's really what Noralou and Les did with the administrative databases they discovered in Manitoba – they turned the straw of daily government record keeping and bill paying into the gold of population-based health research.

MCHP continues to turn straw into gold as we become custodians of more and more de-identified ("anonymized") but linkable databases housed in the Repository (see Martens 2010 for more detailed information). As of December 2010, there were over 97 annually updated data files, and many more are brought in on a one-time project basis. When you think about it, this is a form of KT; the knowledge that can be obtained through one data-

base alone is straw in comparison with the gold that can be obtained from linking both across other databases and across time, and more importantly, at the individual level (by linking to the health registry files for demographic information and geocoding). This Repository yields golden research opportunities to advance the understanding of complex relationships between population health and the use of health and social services. Current research projects that link existing Repository data with various clinical databases include ICU data (e.g., to study long-term outcomes beyond hospital walls), paediatric diabetes databases (e.g., to study long-term outcomes in childhood type 2 diabetes beyond what is normally studied within a paediatric practice), immunization databases (e.g., to study long-term outcomes of receiving childhood or adult immunizations, including H1N1). And on the social database front, we have the opportunity to study the effects of social programs and policies, such as the use of public housing by those living with mental illness, or the use of early child and family support programs funded through Healthy Child Manitoba, looking at subsequent health and social outcomes of the children and families involved. Definitely straw into gold.

Bogart fans may recall the 1948 classic movie, *The Treasure of the Sierra Madre*, and the famous line, "I know what gold does to men's souls." Fill in the blank: what do you think gold does to people's souls? _____. Did you think – makes them greedy, mean, isolated, suspicious? So, what do you think having the Repository (i.e., the gold) housed at MCHP would do to the scientists associated with MCHP? The truth is… exactly the opposite of what you might expect. Les Roos is a prime example of someone who shows a great desire to share the gold. His work on MCHP's Concept Dictionary and Glossary in the mid-1990s was (and continues to be) a renowned example of sharing the wealth. He has worked diligently to ensure that documentation was created and shared universally through MCHP's website (www.umanitoba.ca/faculties/medicine/units/mchp). Les Roos's efforts are a prime example of a researcher-to-researcher KT initiative. Other researchers can read about, and even request, the statistical coding for various concepts that were derived using administrative data – such as how we define "continuity of care," an "episode of care," "comorbidity" or "completed high school" – and this accessibility continues to grow. Both Les Roos and the two most recent associate directors of the Repository – Lisa Lix and, currently, Mark Smith – have continued to expand the documentation through a grant from the Lupina Foundation. This has not only turned straw into gold; it is actually multiplying the potential of the gold by investing in the futures market (future research and future scientists).

Knowing now how MCHP's research and Repository are integrated with KT itself, let's explore other KT initiatives within MCHP.

Knowledge Translation Models at MCHP

> [K]nowledge translation is a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system. This process takes place within a complex system of interactions between researchers and knowledge users which may vary in intensity,

> complexity and level of engagement depending on the nature of the research and the findings as well as the needs of the particular knowledge user. (CIHR 2010)

CIHR's vision of KT involves both end-use KT (disseminating the message to the appropriate audience in a tailored way) and integrated KT (user involvement from start to finish).

At MCHP, do we make the users of our research dig or pan for gold, hoping that somehow, somewhere, the research is out there and applicable to their situation – if they can just find it? Or do we facilitate the digging and the panning, in settings and situations where we know the gold exists? There continues to be "push," "pull" and "exchange" approaches, to use the terminology of Lavis (2006). MCHP scientists are eager to "push" the results of their research through typical dissemination modalities – reports, publications, briefings to government and other stakeholders, Web-based versions, four-page summaries in easily understood language, briefings, media interviews, abstracts and oral presentations at conferences. As well, through MCHP's use of one-day workshops with high-level planners and decision-makers to help them access and understand new research studies (described in greater detail below), there is constant "pull," as MCHP scientists are often called upon to supply research summaries or studies when a question arises that needs immediate answers. This "pull" often comes in the form of questions from government, regions and media. Finally, there is "exchange" with policy makers and MCHP, in which certain topics of high policy relevance and great research interest can be explored through the negotiation of annual deliverables.

MCHP has established highly successful Rural and Northern Healthcare Days annually (with attendance of around 180–200 people), as well as annual Winnipeg RHA Days and Manitoba Health Days. These are one of the key "push" activities of MCHP. All three events are based upon an interactive model of roundtable discussions focusing on one or two major MCHP reports, with encouragement to look for the stories in the data. Top-level planners, policy makers, CEOs, VPs of planning, members of boards of directors for the RHAs, front-line workers, MCHP research scientists and data analysts, graduate students involved in health services research training from the Western Regional Training Centre, and other interested groups annually participate in these workshops. Key to these workshop days is the presence of MCHP scientists to explain how to read the reports (e.g., the meaning of statistical significance; the way in which indicators are defined and how this might relate to practical use by the RHAs). I recently read a book called *In Arabian Nights* by Tahir Shah (2008), in which the author tells about his father explaining the importance of stories to him as a child. "'Stories are a way of melting the ice,' [his father] said gently, 'turning it into water. They are like repackaging something – changing its form – so that the design of the sponge can accept it'" (Shah 2008: 298). This is a crucial concept when telling research stories. Until we turn our staid, clinically written research reports into stories by explaining how to read the graphs, how to look for connections or how to relate data to real-life settings, the research remains ice. Research needs to be repackaged to suit the audience (the sponge) and be understood and incorporated into the audience's way of thinking.

One of our key integrated KT strategies at MCHP is The Need to Know (NTK) Team.

It had its origins back in the "push" KT dissemination of our workshop days. In 1994, Charlyn Black held the first MCHP Rural and Northern Healthcare Day, a forum for "push" – sharing results of MCHP studies with top-level planners from government and the various (informal) regions of the province. Manitoba's non-Winnipeg RHAs outside Winnipeg were established in 1997, and thus the Rural and Northern Healthcare Days became geared to CEOs and planners from each of the 11 (now 10) non-Winnipeg RHAs. In 1999, we abandoned the lecture format in favour of facilitated roundtable discussions. These featured the just-released RHA Indicators Atlas (Black et al. 1999). A brief session was held at the start of the day, explaining how to read the graphs (not what the results were), and then each RHA had a roundtable discussion facilitated by an MCHP research scientist, looking at the data from the perspective of that particular RHA. So this was a form of digging or panning for gold, looking for the golden nuggets that relate to the RHAs' need for evidence, yet recognizing the importance of bringing the RHAs to research findings where there was a high probability of finding gold (evidence) for their regions. But the surprise for the MCHP scientists was how much they learned from the RHAs. Regional planners were able to critique the research, suggest better ways of doing it in the future and point out findings that had somewhat debatable face validity. Hence was born our desire for (what is now called) integrated KT models, in which we involve users (RHAs) from the start of the research projects rather than simply rely on end-of-research push mechanisms. This shift led directly to the writing of a grant through the CIHR Community Alliances for Health Research fund, resulting in The Need to Know Team in 2001.

The NTK Team, presently directed by myself and Randy Fransoo, comprises MCHP research scientists and graduate students, up to two top-level planners chosen by the RHA CEOs from each of the 11 Manitoba RHAs and planners from Manitoba Health. It has been described in various publications (Bowen et al. 2005; Martens and Roos 2005), featured as a Promising Practice of the Canadian Health Services Research Foundation (CHSRF) and awarded the CIHR 2005 KT Award for Regional Impact. The NTK Team meets for two-day workshops three times a year, together creating knowledge of relevance to regional planners, building capacity among the partners and devising dissemination and application strategies to ensure uptake of research at the planning level. There is ongoing opportunity for brainstorming new research questions of particular relevance, which is another instance of "digging for gold" or playing the role of the prospector to find that gold. When the NTK Team brainstorms new research ideas, sparks are jumping. It's a viral experience – research ideas are highly contagious, and the infection of enthusiasm and creativity spreads like wildfire in the room as we formulate future research projects. Golden ideas for future prospecting are generated and then refined through the fire of friendly critique.

Not only has the NTK Team produced five extensive research studies using the Repository at MCHP, but we have also researched the integrated KT research process itself. To date, this work has produced three peer-reviewed publications on KT (Bowen and Martens 2006; Bowen et al. 2005, 2009) plus four Web-based reports (available at www.rha.cpe.umanitoba.ca). This research explores user involvement from start to finish, interactive forums with users and evidence-based story telling (which, hopefully, leads to evidence-informed decision-

making). It involves investment of time and money by the research community and the users, shared language, trust and relationship building. Researchers need to let go of their traditional roles as the only experts, and rather learn that they bring one type of expertise to the decision-making table. Decision-makers bring expertise in the arena of policy making, contextualization and political or economic realities. Creating a culture of evidence-informed decision-making also requires capacity building at the decision-makers' organizational level.

The strong sense of researcher–user collaboration of The Need to Know Team required time to grow from that first meeting in June 2001. The evaluation research found that it took about a year to a year and a half (three or four meetings) to develop trusting relationships and overcome distrust of academic researchers (Bowen et al. 2005). This finding reflects the Balti proverb upon which the title of the book, *Three Cups of Tea*, was based: "The first time you share tea, you are a stranger. The second time you take tea, you are an honored guest. The third time you share a cup of tea, you become family…" (Mortenson and Relin 2006: 150). KT happens best within an atmosphere of ongoing face-to-face relationship building, whether in the realm of policy, planning or clinical practice. This approach requires a great investment of time from the director of MCHP.

The director is the key link between the university research centre (MCHP) and the government of Manitoba. Every two weeks, a teleconference is held between the liaison in government (the executive director of the Health Information Management Branch) and the MCHP director, to share information about ongoing data acquisitions, progress of deliverables, privacy and confidentiality matters regarding data, and any other issues that may have arisen. Every six to eight weeks, the director meets directly with the deputy minister of health to ensure good communication about such matters as new research, upcoming research, ways to ensure KT within Manitoba Health and other government departments, or new databases for the Repository. Depending upon the topic of a deliverable, lead MCHP scientists will also brief Manitoba Health, the deputy minister and the minister of health, and sometimes the Healthy Child Committee of Cabinet just prior to public release of results. The director of MCHP also meets with groups of regional health authority CEOs, as well as the Office of the Ombudsman of Manitoba, at least once a year. Building and maintaining these relationships requires time, but the payoff is that research is understood and applied, ultimately benefiting the health of Manitobans.

MCHP's first decade was characterized by government–university push–pull models. Our second decade, through The Need to Know Team, extended our KT through integrated models with regional and provincial health planners. Thus, 20 years of experience and KT efforts have produced a made-in-Manitoba model, with ripple effects way beyond MCHP. Provincially, we created a more integrated approach to the whole process of community health assessments and five-year strategic planning efforts. It has now become the way of achieving evidence-informed decision-making throughout the province.

Where To from Now? Future Vision of MCHP

We all want that proverbial pot of gold at the end of the rainbow. But in real life, it's rare to

achieve a final goal or result. In the life of a research centre especially, once you find one pot of gold, it just means you need to start pursuing another. So maybe it's really the rainbow that we should look for. Rainbows are bridges, visions. They are like the future, and one way we can "see" rainbows is to strategize, using the best of our knowledge to date and building upon that to create a rainbow of possibilities for the future.

After 20 years, MCHP has a strong understanding of its priorities of research, the Repository and KT. But we also know that we need to expand our abilities to help explain the complex relationships among health, social well-being and the use of services (whether health or social programs). The first Canadian Foundation for Innovation (CFI) funding in 1999 resulted in the building of MCHP's state-of-the-art data laboratory, and in the acquisition of the first "social" databases – social assistance and education. In June 2009, we obtained a second CFI grant in the Leading Edge competition (MCHP's LEADERS Initiative – Leading Edge Access and Data Enhancement Research Strategy). The objectives of this initiative include transforming the research potential of the Repository through further key database acquisitions in the health, social and clinical areas (including such acquisitions as justice data, provincial laboratory data and public housing data) and transforming scientists' access to the Repository by developing and piloting Remote Access Sites (RAS) using innovative, cost-effective, secure database management systems. Preliminary work in these areas has already begun with the attainment of public housing data and the piloting of our first RAS in the Faculty of Pharmacy. Knowing that the RAS model and the acquisition of key clinical and social databases continues to expand our footprint, we are venturing forth on a pathway to understand how to support, mentor and capacitate social scientists and clinician scientists to use MCHP's rich, complex and population-based Repository data.

MCHP has learned lessons on KT through its world-class research and Repository resources. Echoing our mission statement, MCHP's future research will continue to support the development of policy, programs and services that maintain and improve the health of people both provincially and around the world. And that's pure gold.

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