



Getting sustainability right in Canadian health care: *an art and science approach*

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Abstract

Sustainability is being increasingly acknowledged as a critical factor in the ability of the Canadian health care system to cope with future demands, as well as a driver of both environmental and economic benefits. This article provides an overview of factors influencing trends in sustainable health care delivery in Canada, and discusses the growing importance of two aspects of sustainability: greening of the supply chain, and utilities optimization. It examines the potential benefits of these types of initiatives for Canadian health care organisations and highlights a number of common challenges and risks relating to their implementation. An “Art and Science of Transformation™” framework is proposed as the most effective approach to overcoming the challenges and ensuring that sustainable supply chain management and utilities optimization produce a good return on investment for the health care system, as well as generating environmental benefits and contributing to improved health outcomes.

Key Words: greening, health care, supply chain management, sustainability, transformation

Discussion Paper Series

The Canadian Coalition for Green Health Care (CCGHC - the Coalition) is an alliance of committed Canadian health service organisations, associations and environmentally focused business associates that promotes the adoption of environmentally friendly and sustainable health care service delivery to complement the compassionate delivery of health care.

We encourage the adoption of resource conservation, pollution prevention principles and effective environmental management systems to reduce the Canadian health care system’s ecological impact while protecting human health.

The Coalition collaborates with health care organisations, facilities, and professionals, governments and non-governmental organisations, the private sector and others to raise awareness of this issue and to increase the capacity of the health care sector to address its environmental issues.

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INTRODUCTION

Although Canadian health care leaders are gradually responding to the need to focus more on sustainability, the sector is lagging in the implementation of strategic sustainability programs that offer organisational as well as environmental benefits. Other pressures on time and resources in health care management, and a lack of sufficient guidance about how to integrate sustainability into business strategy and operations, may be acting as barriers to the uptake of sustainability initiatives. In the face of rising costs and increasing demands on health care resources, however, the sector cannot afford to neglect the potential of strategic sustainability as a means of improving efficiency and cost-effectiveness, as well as reducing the adverse environmental and social impacts that are a by-product of health care provision.

In this article, I discuss an *Art and Science of Transformation* concept as a recommended approach to the implementation of sustainability programs in health care organisations, which is likely to maximize the prospects for achieving measurable organisational benefits, as well as reducing

the environmental footprint. In order to illustrate this, and to highlight areas of health care delivery in which a focus on sustainability can generate significant early benefits, I discuss two specific types of sustainability project: sustainable supply chain management and utilities optimization.

Background

The *2011 Sustainability & Innovation Global Executive Study* (Kruschwitz & Haanaes, 2011) found that a larger number of respondents than ever before, across many sectors and countries, now have sustainability on their business agendas. Moreover, those who have incorporated sustainability into their core business strategy are benefiting from outcomes including reduced costs and risk, process efficiencies, enhanced employee satisfaction, and an improved record on recruitment and retention (Kruschwitz & Haanaes, 2011; Kiron et al., 2011).

Within the Canadian health care sector, there is a growing focus on sustainability, driven in large part by the work of the Canadian Coalition for Green Health Care and other North American and international organisations which have provided tools and other guidance to support sustainable health care, but little evidence as yet of the strategic sustainability that is driving these positive outcomes in other sectors.

Health care delivery has a very high environmental footprint, and ironically causes harmful indirect effects on human health as well as the environment from energy use and the hazardous materials and chemicals found in many medical devices, cleaning products and buildings (Gerwig, 2012; World Health Organisation and Health Care Without Harm, 2009). One study has estimated that the use of conventional energy in hospitals in the U.S. alone results in an additional US\$600 million every year in increased health costs arising from respiratory disease and other illnesses (World Health Organisation and Health Care without Harm, 2009). With the rising costs of energy and projected future increases in demand related to the ageing



of the population, there is an urgent need to identify potential savings. In Canada, government spending on health services has already been increasing faster than GDP every year since 1975, and was forecast to reach \$200.5 billion in 2011 (Canadian Institute for Health Information, 2011). Within Ontario and Quebec, provincial spending on health reportedly accounted for more than half of all total revenue last year (Skinner & Rovere, 2011).

Ironically, surveys have identified a lack of funding or cost considerations as barriers to the adoption of sustainability programs within health care (Johnson Controls, Inc., 2012; Thomson & Jackson, 2007; Warner & Ryall, 2001), suggesting health care organisations are not approaching sustainability in ways that are being used successfully in other sectors to reduce costs and improve efficiency.

The available evidence indicates there is considerable potential for this within the health care sector, with one source suggesting the implementation of sustainable energy and waste reduction management programs may lead to cost reductions of between 40 and 70% (SOS Partners, n.d.). In the U.S., the California-based health care consortium Kaiser Permanente has saved more than US\$10 million annually through its green building efforts, according to a published case study (Vijayaraghavan, 2012).

But the literature also emphasizes that such benefits are only possible if sustainability is introduced in a strategic, holistic way, requiring in the health care context the need for a complete review of functions and activities including procurement, equipment and materials usage, energy consumption, waste management, catering and transportation. Despite the increasing availability of sustainability guidance and tools tailored to the health care sector, it is likely that the prospect of introducing major sustainability programs is overwhelming for many health care leaders and managers, especially when they are grappling with pressing day-to-day issues and demands on their time and resources. The conventional “silo” nature of health care with its rigid distinctions between and within clinical and non-clinical areas (Johnson Controls, Inc., 2012; Kersch, Laanen, Wabnegg & Abhimanyu, 2011), presents a further barrier to be overcome when considering the implementation of organisation-wide strategies and programs. Although there may be a genuine interest in and commitment to introducing a sustainability strategy, actually doing so often falls further and further down the executive “to do” list as new problems and issues arise demanding immediate attention.

However, by preparing the organisation for strategic sustainability using an art and science approach, and then introducing one or two initial programs likely to generate clear, measurable benefits within a relatively short timeframe, it will be possible to achieve a more sustainable approach to health care delivery while strengthening the ability of the organisation to deal with other demands and challenges.

The Art and Science of Transformation

It is becoming increasingly clear from the business and management literature that the successful implementation of organisational change projects and programs requires a mix of what might be called “art” and “science” (Figure 1). The science has largely been formalized in project

Management standards and guidance such as the Project Management Body of Knowledge (PMBOK) (Project Management Institute, 2008), and consists of established methods, tools and techniques for use in the planning, implementation and management of projects, regardless of their purpose or scale, as well as specialist knowledge and expertise from relevant subject areas.

With a growing emphasis on project-based working in all sectors, the last few decades have seen a major growth in project management as a profession but despite this apparent increase in expertise, project failure rates are reported to be high. For example, a study by the U.S. Office of the National Coordinator for Health IT reported a 50% failure rate for Electronic Healthcare Record implementation projects, similarly to the frequently quoted rate of 46% of projects generally that fail to complete on top, exceed their budgets or don’t meet functional requirements (Standish Group, 2006).

Project failures have been attributed in many studies to a lack of adequate attention to the cultural and people-related aspects of change, such as changing employee attitudes or providing strong leadership (e.g. Economist Intelligence Unit, 2009; McKinsey & Company 2010), suggesting that the knowledge of project management tools and techniques gained through formal training is not enough to ensure that projects achieve their goals.

“health care organisations are not approaching sustainability in ways that are being used successfully in other sectors to reduce costs and improve efficiency.”

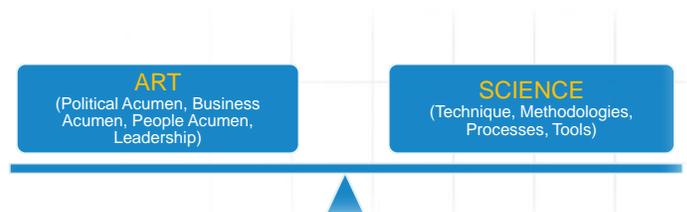


Figure 1. The Art and Science of Transformation

The Art and Science of Transformation approach is based on the understanding that both art and science are needed for successful organisational transformation. While it is important to have project and program managers who are trained and experienced in project management techniques, the ability to apply these effectively in everyday contexts requires other, more intangible skills and abilities which are not so much learned on formal courses but are related to personal attributes acquired from experiential learning over time. For example, these include the ability to lead and motivate people, to think holistically and strategically, and be flexible and adaptable in response to unanticipated events while remaining focused on project goals. The art of transformation also includes those intangible but valuable personal abilities often described as business acumen, political acumen or emotional intelligence. One way of thinking about the distinction between art and science is in terms of “right brain” and “left brain” thinking respectively, as illustrated in Figure 2.

Project managers who possess good art and science skills play a pivotal role in organisational change projects, but this is not enough – there is also a need to promote an art and science focus throughout the whole organisation to underpin successful transformation. On the one hand, a systematic approach to change is needed in which progress towards project goals are monitored and measured, providing important motivational feedback and also highlighting gaps in performance that need to be address. On the other hand, organisational members need to be receptive to new ways of thinking and doing things, which often requires a significant shift in organisational culture. The science of change can help promote this: performance measurement systems can be used to demonstrate beneficial outcomes, or highlight any gaps or weaknesses that need to be addressed to achieve these. Having firm data on progress in sustainability is likely to help engage organisational members in achieving goals, and will help drive the cultural changes necessary to underpin the sustainability efforts.

Right Brain - the “art”	Left Brain - the “science”
Random Intuitive Holistic Synthesizing Subjective Looks at wholes	Logical Sequential Rational Analytical Objective Looks at parts

Figure 2. Left Brain Versus Right Brain Thinking

“Both art and science are needed for successful organisational transformation”

Sustainability Initiatives

Use of the art and science approach to review the organisation’s preparedness for sustainability, including in particular its strengths in art and science skills, is an invaluable first step towards the ultimate success of a sustainability program, and can help health care leaders tackle the sometimes daunting prospect of implementing such as program, since appropriate individuals can be identified at an early stage to take responsibility for overall program management.

The availability of relevant expertise should be a key consideration in determining which areas of sustainability to focus on in the early stages of the program, since every project will require a different combination of art and science skills, depending on factors such as the need for specialist input and the numbers and characteristics of stakeholders who will need to be involved (Figure 3). However, the program should also be focused in its early stages on those areas which are likely to generate measurable early benefits.

High	Simple Multi- stakeholder Project or Program <i>The initiative requires significant involvement of stakeholders in the decision making, in addition to fairly straight forward methodologies and procedures.</i>	Enterprise Wide Program <i>Stakeholders across the organization want and need to be intimately involved in the transformation process.</i>
ART	Single Simple Project	Single Stakeholder Highly Complex Project or Program
Low	<i>The initiative is a relatively familiar one and does not require very much stakeholder consultation or contact.</i>	<i>The initiative requires high levels of customization, creativity and innovation – coupled with a relatively low degree of stakeholder interaction.</i>
	Low	High
	SCIENCE	

Figure 3: Relationship between Art and Science Skills and Types of Projects

“It makes most sense to focus initially on projects which are likely to have the greatest impact not just in environmental terms but in relation to measurable organisational benefits such as cost reduction”

“Making fundamental changes in these core areas can be high-risk, requiring an art and science approach to ensure the risks are effectively identified and managed, and that projects are designed and implemented in ways that promote optimum outcomes.”

Once it has been confirmed that the appropriate skills and organisational pre-conditions are in place to support particular types of projects, it makes most sense to focus initially on projects which are likely to have the greatest impact not just in environmental terms but in relation to measurable organisational benefits such as cost reduction. This will often require changes in key organisational processes or functions; a common mistake is to try to minimize the costs and risks of a sustainability project by marginalizing it in non-critical areas of activity, such as non-hazardous waste recycling, or catering. By incorporating sustainability into critical functions and demonstrating significant improvements in these areas, this will provide the evidence needed to drive ongoing organisational culture change and to justify further investment in the sustainability program.

Studies have shown that the environmental footprint of health care organisations is largely concentrated in two areas: the supply chain, and energy utilization. A study conducted in England, for example, found that 60% of this footprint is related to the goods and services procured by the National Health Service, while a further 22% is accounted for by energy use in buildings (cited in Naylor, 2006). Addressing either of these has been shown to result in dramatic reductions in the carbon footprint of health care delivery, while also generating significant cost savings for health care organisations. However, making fundamental changes in these core areas can be high-risk, requiring an art and science approach to ensure the risks are effectively identified and managed, and that projects are designed and implemented in ways that promote optimum outcomes. Some examples of how the art and science approach is important in green supply chain and utilities optimization projects are discussed below.



Green Supply Chain Management

The environmental and social aspects of achieving sustainability in the supply chain generally involve ensuring that a health care organisation's suppliers meet agreed sustainability standards, relating for example to the use of hazardous materials in their products, safe waste disposal, or the provision of safe and ethical employment conditions. It requires the incorporation of sustainability principles in the identification of potential suppliers, the procurement process and ongoing contract management and monitoring.

Sustainable procurement has been defined as “a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimizing damage to the environment” (DEFRA, 2006, p.10). Since supply chain-related expenses are reportedly the second largest expense for hospitals, after labour, the potential impact of cost savings in this area are tremendous. One source estimates that an average hospital spends nearly a third of its operating budget on supply chain functions (SOS Partners, n.d.)

Life-cycle management is a key concept in relation to supply chain sustainability, attention to which can help generate considerable cost savings for health care organisations. In the past, it has largely been the current costs of products such as pharmaceuticals and medical equipment which have determined purchasing decisions. This can result in false economies once the energy-related costs of using a product, and the costs of safely disposing of it, are factored into the equation. The science of sustainable supply chain management therefore involves knowledge and understanding of life-cycle management and the ability to calculate and compare true product costs using this approach. It also involves the ability to incorporate sustainability considerations into the procurement process, by designing appropriate criteria or using standardized tools, and using these to effectively evaluate potential suppliers and purchases. Sustainability metrics and reporting systems will also need to be formulated for monitoring and measurement of sustainability performance and contract compliance. Although the use of life-cycle management techniques requires science skills, replacing conventional procurement practices with this more innovative, holistic approach to procurement decisions also requires the type of strategic, holistic approach associated with a more art-focused organisation.

Additionally, sustainable supply chain management directly calls for good interpersonal and people-management skills, which are needed to raise supplier awareness of sustainability and secure their co-operation with the program. In practice, health care organisations will often have large ongoing contracts or framework agreements with existing suppliers, and the achievement of sustainability in the supply chain will involve introducing codes of conduct or other requirements on firms to demonstrate evidence of their performance in relation to social and environmental criteria, requirements which may be seen as intrusive or an unwelcome burden. Even in the case of new procurements, there will often be a need to educate or raise awareness of the sustainability requirements, and help ensure that potential suppliers fully understand these and what is required in terms of information about their sources and manufacturing processes. Previous research has found that implementing shared responsibility for sustainability, by greening of the supply chain, is often hindered by a lack of understanding and awareness about the very concept of sustainability (Morali & Searcy, 2011).



Understanding the perspectives and interests of stakeholders and what is likely to motivate them to comply with requirements, when they may perceive these to be of little direct relevance to them, is a crucial art skill, along with the use of specific incentive techniques, such as sustainability scorecards which rate suppliers according to their performance against environmental and social criteria. Excellent communication skills are also important, including the ability to draft clear, understandable material for inclusion in RFPs and procurement contracts, and to communicate more informally with suppliers, both verbally and in writing, in ways which engage their interest, address their concerns and secure their commitment to the sustainability program.

¹ For example, the Kaiser Permanente Sustainability Scorecard, available online for general use.

Utilities Optimization

Optimization of utilities should be an important aspect of any strategic sustainability program in the health care sector, not only because more efficient energy use can significantly reduce the carbon footprint of hospitals and other health care organisations, but because this can result in major cost savings that can be easily quantified and used to demonstrate the benefits of the program. It has been argued that utilities optimization can result in energy reductions of up to 20% (Chambers, 2011) with return on investment being achieved within four years (SOS Partners, n.d.). A published case study of the utilities optimization program of Gundersen Lutheran Health Care Network in Wisconsin cites improvements in energy efficiency of 25% within two years, and resulting cost savings of \$1.25 million annually (Kaplan, 2011).



Health care facilities are reported to be the second most energy-intensive type of commercial building and compared with office buildings use twice the amount of energy per square foot (Chambers, 2011). Utilities costs are one of the biggest expenses for health care organisations. According to a study by the U.S. Energy Information Administration in 2003, the health care sector was spending \$8.3 billion on energy annually; this is likely to have increased significantly given rising energy costs. Lighting reportedly accounts for around 43% of all energy consumption in health care, closely followed by heating and hot water usage (Jarousse, 2012). Despite the potential for improved efficiencies in this area, recent Canadian research has revealed that few health care organisations monitor their utility bills or have conducted a recent energy audit (Centre for Environmental Sustainability in Healthcare, n.d.). With the increase in sustainability programs as well as rising concern about energy costs this is likely to change: the 2011 Energy Efficiency Indicator conducted in the U.S. found that

organisations are devoting more attention to energy efficiency than ever before (Johnson Controls, Inc., 2012), and an international survey carried out by CIMA, CICA and the AICPA reported energy usage to be the most frequently measured aspect of sustainability (2010).

On the face of it, utilities optimization may appear to be an entirely science-focused activity. Indeed, compared with sustainable supply chain management, there is a heavier requirement for science in the implementation and management of a utilities optimization program. There is a need, for example, to map and assess current energy usage, identify inefficiencies and opportunities for cost savings, determine the costs and benefits of various alternative scenarios for energy use, carry out feasibility and risk assessments, and develop utilities optimization models, all of which require specialist skills and expertise. Knowledge of and the ability to use standardised tools for measuring energy consumption, such as the Global Health and Safety Initiative's audit tools and Eco-Health Footprint Toolkit, developed in collaboration with Practice Greenhealth, will be valuable. Leaders of a sustainability program will need to ensure that they either have these skills and knowledge available in house, or make arrangements to secure them through the use of external contractors.

“Major energy efficiencies can be achieved by promoting cultural changes which encourage changed habits.”



“It is essential to have visionary leaders who understand the importance of strategic sustainability and are prepared to support the cultural changes and the investments necessary to underpin this.”

The art of utilities optimization can be easily overlooked, but there are two key ways that an art-focused approach to sustainability can help generate substantial savings and efficiencies in energy usage. The first relates to the concept of product life-cycle management discussed earlier in the context of the supply chain, which requires the ability to think holistically when making decisions about purchases. In order to optimize the efficiency of utilities usage within a health care facility, there is a need not only to consider the direct costs of energy usage, but to identify and understand the full range of influences on these, over time and in different functional areas, and also to incorporate energy-use criteria within sustainable procurement and supply chain management. Addressing life-cycle considerations and their overall costs to the health care organisation as well as the long-term environmental impacts, is an important aspect of utilities optimization.

Second, major energy efficiencies can be achieved by promoting cultural changes which encourage changed habits in terms of energy usage. One case study reports that extensive staff education about the environmental impacts of their actions resulted in savings of US\$705,000 annually from just turning off computers at the end of each day, and US\$1.2 million annually from turning off unnecessary lighting (Kaplan, 2011). However, the potential savings from such simple measures are not likely to be realized unless new ways of thinking are embedded in the organisation, and this requires both art and science. Organisational members need not only to understand how their daily actions have an environmental and a cost impact, but need to be fully engaged in and committed to the sustainability program in order to change these. That will require extensive education and awareness-raising efforts, including discussion of sustainability issues in staff meetings as well as regular updates and communications about the program. It will also require hard evidence of progress based on sustainability performance metrics, and the incorporation of sustainability criteria into individual and team performance appraisal systems, to provide a real incentive for organisational members to buy into the program.

Four Main Drivers of Success

Drawing conclusions from the art and science of transformation approach, and from the key findings of recent literature on sustainability, it is possible to identify four main drivers or pre-conditions of successful sustainability programs:

Commitment and Involvement of Top Leadership

Studies (e.g. DEFRA, 2006) report that a lack of commitment or direction from senior leaders is a major barrier to the successful implementation of sustainability programs. Given the extensive cultural changes often needed to support sustainability, as well as the required level of initial investment necessary to generate longer term savings, it is essential to have visionary leaders who understand the importance of strategic sustainability and are prepared to support the cultural changes and the investments necessary to underpin this. Seeing that the CEO is committed to the initiative is one of the most important motivators for organisational members.

Strategic and Holistic approach

There is clear evidence from the literature that successful sustainability programs are linked with strategic and operational goals, are supported by a business case based on financial as well as environmental factors, and are integrated into all areas of an organisation. The ability to achieve this requires strong leadership, especially given the need to develop high levels of collaboration and co-operation across areas of the organisation that may operate fairly autonomously and have distinctive cultures, especially the medical and non-medical areas.

Analytical Approach

The use of analytical techniques is necessary in many areas of strategic sustainability. From the outset, it is necessary to systematically review the health care organisation's activities and functions in order to identify opportunities for sustainability improvements and the risks and costs of achieving these. Then systems must be implemented for measurement and reporting of progress against defined project goals using appropriate metrics. This is important to justify investments in the sustainability program, identify areas of weakness so that expertise and resources can be targeted on resolving these, and help promote and maintain the motivation and commitment of organisational members to achieving sustainability goals. Hard data on any cost savings for the organisation will be particularly important, but non-financial measures, such as the percentages of suppliers or bidders meeting sustainability requirements, or evidence of changes in staff attitudes and behavior, should also be incorporated in management reporting systems such as balanced scorecards.

Project Managers and Sustainability Champions

The importance of good project management for sustainability cannot be under-estimated. Successful sustainability projects in health care are typically quite complex because of the large numbers of stakeholders involved, and the need to develop and manage sustainability initiatives across diverse areas of the organisation. Although specialist subject expertise can be brought in as necessary for specific types of analytical work, effective management of a whole project or program requires a fine balance of art and science skills, as discussed in this paper.

Project and project managers will need excellent expertise in best-practice techniques for specifying project requirements and goals, identifying the budget and human resource input necessary to achieve project goals, determining a feasible timeline and key milestones and developing metrics and performance monitoring systems. But they are also likely to come up against challenging people-related issues, such as resistance to the changes needed to support the program, or the need to negotiate for necessary project resources. Overcoming these challenges and securing the necessary engagement and commitment from people to achieve project goals will require strong leadership, the ability to motivate and inspire people, conflict management and negotiation skills and a whole range of other people-related abilities, not to mention a holistic, strategic approach which will be crucial to the effective identification of project-related opportunities and risks.

Related to this, the importance of sustainability “champions” has been highlighted in many studies, and sustainability project managers are ideally placed to play this role. Alternatively, appropriate training about sustainability can be provided to other individuals or teams from across the organisation that have the necessary skills to raise understanding and awareness of the issues and motivate others to work towards achieving project and program goals.

Nurses have been identified in the literature as good sustainability champions, as they have the necessary people-skills to “engage, educate and inspire other employees” (Pyrek, 2011). Middle managers also play an important role; their own commitment to the program is an important pre-condition for ensuring that appropriate messages about its importance are conveyed to staff, individual and team-level responsibilities are defined and the necessary support and resources are made at teams and departmental level.

Conclusion

Health care organisations across Canada and elsewhere can no longer afford to neglect the importance of sustainability programs, not only as a means of reducing the carbon footprint of health care but to ensure that the health sector can cope efficiently and cost-effectively with the increasing demands on it. But introducing sustainability programs into an organisation that is not adequately prepared for them is a risky strategy, which is likely to waste organisational resources and generate few benefits.

In this paper, many organisational factors have been identified as necessary pre-conditions or supports for a sustainability program. These include the right mix of art and science skills and expertise, as well as facilitators of culture-change such as sustainability education, awareness raising tools and strategies, sustainability codes of conduct for suppliers, and staff performance appraisal systems which ensure that individuals are rewarded for contributing towards sustainability goals. Conducting an organisational readiness change assessment to identify what needs to be done in each of these areas to prepare the organisation for a sustainability program, and addressing this, will help to ensure that the expected benefits of the program can be achieved. The art and science approach to sustainability will help yield organisational benefits from initiatives such as sustainable supply chain management and utilities optimization that far exceed their positive environmental impacts, generating considerable value to the organisations concerned and the health care sector as a whole.



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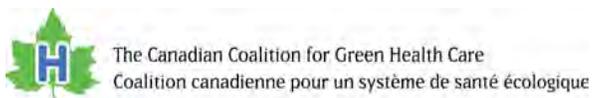
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