An Environmental Scan of Behaviour Change Campaigns: Recommendations for the Canadian Patient Safety Institute

July 2016

Executive Summary

Background

In January 2014, the Canadian Patient Safety Institute (CPSI), in conjunction with key healthcare stakeholders, formed the National Patient Safety Consortium to create an Integrated Patient Safety Action Plan. The action plan identified four priority areas: safe surgical care, medication safety, home care safety, and infection prevention and control.

A strategy to advance a National Infection Prevention and Control (IPAC) action plan was the focus of a November, 2014 IPAC Summit, co-hosted by the Canadian Patient Safety Institute (CPSI) and the Public Health Agency of Canada (PHAC). A major theme arising from the summit was culture and behaviour change. This theme stemmed from summit participants' acknowledgement that healthcare providers often "know" what to do, but, for whatever reason, they don't do what they are supposed to do. To achieve action within this theme, participants voiced the need to move away from traditional approaches of education and knowledge translation and focus more on behavioural change. As such, the action plan identified the goal of improving IPAC through a national campaign, focusing on raising awareness and promoting behaviour change. The first step towards achieving this goal was to conduct an environmental scan of infection prevention and control behaviour change campaigns (IPAC Action Plan, 2015).

The Problem

Healthcare-associated infections (HAIs) continue to take a heavy toll on the health of patients, the general public and our economy. The healthcare system is challenged with existing hospital-acquired pathogens, while new emerging disease agents continually appear. In Canada, approximately one in nine patients (200,000 people) acquires an infection each year as a result of a hospital stay (Zoutman *et al,* 2003). Additionally, an estimated 8,000 to 12,000 of these patients die each year from such infections at a cost of over $100 million (Zoutman *et al,* 2003, Rhodenizer-Rose, 2015). As a result, eliminating HAIs has become a key priority for quality and patient safety programs (Steed *et al*, 2011).

Despite the evidence and best efforts of many organizations and associations, IPAC practices are not improving. The healthcare system continues to "struggle with epidemics of HAIs, where antibiotic resistant organisms are on the rise and rates of hand hygiene by healthcare workers continue to be low; while at the same time, efforts to improve are caught in the rigidity trap of: this is how we have always done things" (IPAC Action Plan, 2015). It has become increasingly apparent that evidence-based practices alone are not enough. Improving healthcare workers' infection prevention and control practices by focusing of behaviour change is critical to improving patient safety and reducing HAIs.

Purpose

The purpose of the *Environmental Scan of Infection Prevention and Control Behaviour Change Campaigns* is to examine the complexities of changing healthcare workers' behaviour and to better understand how the use theories, models and strategies can be used to bring about behavioural change.

Methods

A systematic search of electronic databases and websites was used to review academic, business and popular literature. International, national and provincial culture and behaviour change literature, campaigns,

and strategies, were included in the review. Key search terms were broad in scope in order to capture as much detail as possible and included the following terms: behaviour change in healthcare, behaviour change campaigns, organization change, culture change, seatbelt legislation, smoking cessation, road safety, and bicycle safety. A total of 75 articles and publications were included based on their relevance to the topic. Articles that did not have any relevance to improving awareness and promoting behaviour change were excluded.

Stakeholder engagement occurred by way of consultation with behaviour change experts and stakeholders to identify frameworks of behaviour change interventions. Stakeholders included targeted participants of the 2014 IPAC Summit, as identified in the IPAC Action Plan, along with provincial, territorial and professional organization representatives.

Analysis of more than 20 behaviour change campaigns related to Patient Safety, IPAC, Antimicrobial Resistance and general non-healthcare initiatives was undertaken. Campaign success was determined based on the presence, and extent to which, the following elements were attained: identification and achievement of readily identifiable goals and targets, (e.g. raising awareness of a specific issue); the establishment of a shared purpose and strengthened partnerships; growth in participation and momentum; the extent of spread from the original scope (i.e. expansion to other organizations, provinces or countries); a formal and completed evaluation; impact of the campaign; and whether there was a theoretical framework used to guide the development of interventions.

Behaviour Change: Theories, frameworks and strategies

Behaviour Change

Behaviour change can be defined as coordinated sets of activities designed to change specified behaviour patterns (Michie *et al*, 2011). Behaviour change encompasses a broad range of activities and approaches, which focus on the individual, community, and environmental influences on behaviour. Behavioural and subsequently cultural change facilitates the adoption of new practices and/or technologies. Improving the implementation of evidence-based practice in order to make patient care delivery safer depends on behaviour change (Michie *et al*, 2011).

Theories

Increasingly, the application of theories or frameworks in intervention design and evaluation is becoming widely recognized for its potential to facilitate behavioural change in health settings (Michie *et al,* 2011, Zimmerman *et al,* 2013). A recent study exploring healthcare worker compliance with IPAC practices found that understanding the determinants of healthcare worker behaviour is fundamental to developing effective and sustained behaviour change interventions (Shah *et al,* 2015). For the purposes of this environmental scan, the following three behaviour change theories were reviewed: Theory of Planned Behaviour, Social Cognitive Theory and Complexity Theory (refer to Appendix A for a summary of these theories). These behaviour change theories were chosen for their positive implementation and outcomes in introducing change in healthcare and for providing a useful framework for implementing healthcare worker behaviour change.

Models, Frameworks, Platforms

In addition to specific behaviour change theories, there are change models, frameworks and platforms which have also been widely adopted to change behaviour. Research suggests that leaders who seek wide scale change are more likely to be successful when theory is incorporated into a change model. There are a number of change models identified in literature to guide and instruct the implementation of major change in organizations. The four models explained in this environmental scan are: Kotter's Strategic Eight-Step Model for Transforming Organizations, the NHS Change Model, Front-line Ownership (FLO) and Change Platforms.

Strategies and Interventions

Selecting and applying the most appropriate strategy or intervention increases the likelihood of changing a targeted behaviour. While a plethora of behaviour change interventions exists, it is not clear how to best link an intervention to a specific behaviour (Michie et al, 2011). The environmental scan provides a glimpse into the various strategies and interventions available to help achieve behavioural change such as campaigns, legislation, improvement collaboratives, incentive programs, social marketing, learning programs and education. "The Behavioural Change Wheel" (Michie et al, 2011) is an innovative emerging framework for characterizing and designing behaviour change interventions.

An In-Depth Exploration into Campaigns

Campaigns

A health campaign is the process of promoting health by disseminating messages through mass media, interpersonal channels and events. Comprehensive health communication campaigns aim to: inform, persuade or motivate behaviour change; work at the individual, network, organizational and societal levels; target relatively large, well-defined audiences; provide non-commercial benefits to society; take place during a given time period; include a combination of media, interpersonal and community events; and involve an organized set of communication activities (National Collaborating Centre for Methods and Tools, 2010).

Environmental Scan of Campaigns: Findings

To explore the value and implications of campaigns as a behaviour change strategy, 20 behaviour change campaigns related to patient safety, IPAC, antimicrobial resistance and general health and safety were reviewed (refer to Appendix B for a summary of the campaigns reviewed).   A campaign's effectiveness is largely determined by the presence of and extent to which the following elements are observed:

- a theoretical framework is used to guide the development of interventions;
- an analysis of the situation and the specific problem is completed;
- a vision for the future is articulated;
- a shared purpose is established and partnerships strengthened;
- goals and targets are identified;
- detailed plan of action outlining approaches and initiatives with responsibilities and targets assigned;
- target audiences are identified and a stakeholder analysis is completed;
- a communication strategy is established;
- a resource mobilization strategy is completed to map available and required resources;
- scaling-up strategy is established to support the campaign spread i.e. growth in participation, momentum and scope.
- exit strategy is outlined to determine when and how the campaign will end
- a formal evaluation is conducted to assess if impact and document learnings (National Collaborating Centre for Methods and Tools, 2010; Raab *et. al.*, 2015).

Most of the campaigns reviewed were successful in achieving goals and targets, growth in participation, expansion of scope, and the creation of a shared purpose. Furthermore, the reviewed campaigns were successful in demonstrating an observable impact, however there are concerns regarding the sustainability of that impact. Despite the overall success of the campaigns reviewed, there was limited evidence of the use of models or theoretical frameworks to guide the work and formal campaign evaluations were not readily identified.

Changing healthcare workers' behaviour is difficult. Understanding why one engages in any behaviour is complicated and multifactorial, and consists of a multitude of internal factors such as attitudes, beliefs,

motivation, ability, perceived threat, self-efficacy, social norms, and sociocultural contexts, to name a few (Corace and Garber, 2014). No one behaviour change theory, model or framework is more successful than another. Strategies used either separately or in combination provide the building blocks for behaviour change, supporting the development of future initiatives. Predicting healthcare workers behaviour and targeting interventions to elicit behaviour change provide useful frameworks and blueprints for implementing recommendations. It is paramount that the IPAC and patient safety communities take steps to move beyond education and knowledge acquisition, and work towards behaviour change and the creation of strong patient safety cultures. The application of well-validated behaviour change theories, models, platforms and strategies should be considered essential components of future IPAC and patient safety campaigns and interventions (Corace, 2015; Pittet, 2010; Pittet et al, 2008).

Recommendations

Based on the environmental scan, the following recommendations are identified:

a) Expand current initiatives, building on the success of current and past CPSI initiatives such as the successful STOP! Clean Your Hands Day, Canadian Patient Safety Week and *Safer Healthcare Now!*. The tools and resources currently available should serve as the foundation to develop, support and promote further strategies, partnerships and improvement efforts.

b) Design targeted interventions based on theory, change models or theoretical frameworks. In particular, use of Michie's "Behaviour Change Wheel", focusing on the nine intervention functions and seven policy categories involving three essential conditions: capability, opportunity and motivation, will enable the development of successful interventions and policies (Michie *et al*, 2011).

c) Create a shared purpose in the development and implementation of strategies and interventions by involving leaders, clinicians, providers, patient advisors, patients and families to identify shared goals and values. The work should leverage models which emphasize ownership as it is crucial to igniting the energy for change that will ultimately lead to successful behaviour change initiatives (Bevan, 2015).

d) Use mass media and social marketing strategies to target and deliver key messages to healthcare workers. This has been very effective at a population level, and can contribute to successful campaigns in healthcare. These marketing approaches have immense potential to affect major behaviour change initiatives and should be used and expanded upon to influence health behaviours.

Conclusion

This environmental scan has explored the application of behavioural change theories, models and frameworks to help explain healthcare worker behaviour. The development of interventions guiding change processes at both an individual and system or organization level are complex. Successful IPAC and patient safety campaigns focus on engaging leadership, frontline clinicians and individuals, and enabling behaviour change through local implementation (Leape et al, 2009). Affecting patient safety change is difficult under the best of circumstances, and without a strong leadership and a strong culture of patient safety learning and improvement and conscious decisions to do the right thing all of the time, sustained change will not occur (Shah et al, 2015; Zimmerman et al, 2013). It is crucial that future initiatives aimed at reducing HAIs and promoting patient safety employ or apply theoretical frameworks and change models to design and implement evidence-based interventions (Corace, 2015; Pittet, 2010; Pittet et al, 2008).

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July, 2016

# Appendix A: Summary of Behavioural Change Theory

As organizations, people and processes transform in order to keep up in an increasingly turbulent world, change is required in order to adapt. Culture and behavioural change facilitates the adoption of new practices and/or technologies as major strategic shifts, process re-engineering, mergers, and restructures occur. In the healthcare context, improving the implementation of evidence-based practice depends on behaviour change (Michie *et al*, 2011). The environmental scan of behavioural change campaigns and strategies has revealed three change theories, specifically Social Cognitive Theory, Theory of Planned Behaviour and Complexity Theory, which are applicable in the healthcare context, and could play a key role in the development of behaviour change campaigns targeting HCWs. A summary of each theory is provided below.

Social Cognitive Theory:

Bandura developed and defined the Social Cognitive Theory (SCT), which proposes that people are neither driven by inner forces nor automatically shaped and controlled by external stimuli (Bandura, 1986). Rather, human functioning is explained in terms of a model of triadic reciprocal determinism (see Figure 1) which can be visualized as an equilateral triangle, with behaviour, cognitive, and other personal factors and environmental events all operating as interacting determinants of each other. The major self-regulative mechanism operates through principal sub-functions which include self-monitoring of one's behaviour, its determinants, and its effects; judgment of one's behaviour in relation to personal standards and environmental circumstances; and affective self-reaction. The nature of a person's behaviour is thus defined within this triadic perspective. Therefore, SCT postulates that human behaviour is extensively motivated and regulated by the ongoing exercise of self-influence (Bandura, 1991).

SCT has been used to examine health promotion and disease prevention in the past (Bandura, 1998). Models of health promotion and disease prevention using SCT have undergone several generational changes, shifting from trying to scare people into health, to rewarding them into health, to equipping them with self-regulatory skills to manage their health habits, to shoring up their habit changes with dependable social supports. These transformations have evolved into a multifaceted approach that addresses the reciprocal interplay between self-regulatory and environmental determinants of health behaviour. A comprehensive approach to behaviour change and/or health promotion requires changing the practices of social systems that have widespread detrimental effects on health rather than solely changing the habits of individuals. People's beliefs in their collective efficacy to accomplish social change, therefore, play a key role in the policy and public health approach to health promotion and disease prevention (Bandura, 1998).

Figure 1. *Model of Reciprocal Determination (Bandura, 1986).*

Figure 1: Bandura's (1977; 1986) Model of Reciprocal determinism
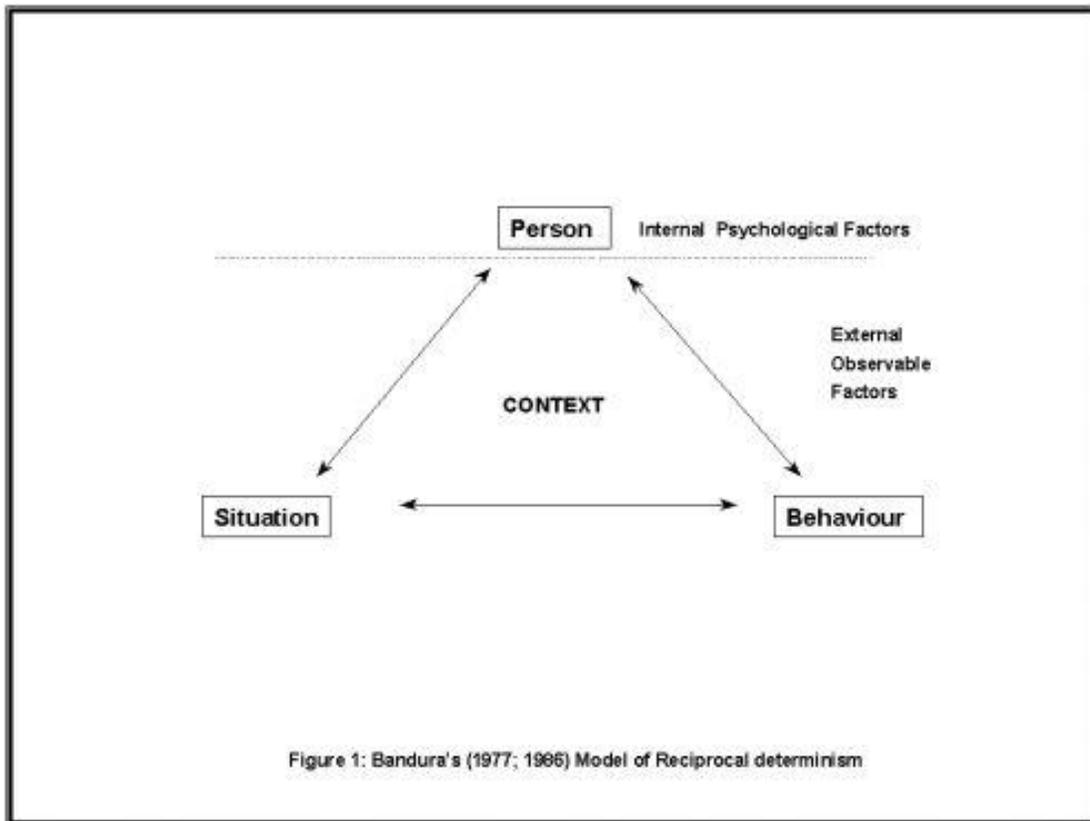
Theory of Planned Behaviour:

Another theory, the Theory of Planned Behaviour (TPB), has been widely applied to the explanation of health and social behaviours based on the premise that behaviours occur through an interplay of cognitive, behavioural and environmental factors, effecting human thought, motivation and behaviour (Stead *et al,* 2005). The TPB outlines factors that determine an individual's decision to follow a particular behaviour and is based on the premise that there are links between beliefs, attitudes, intentions, and behaviours (Armitage and Conner, 1999). Central to this theory is the assumption that behaviours can be predicted through an individual's intention; intentions are the motivations necessary to carry out behaviours. (Ajzen, 1988). Based on this rationale it can be proposed that as an individual's intention to partake in a behaviour increases, so does the likelihood of performing the behaviour (Ajzen, 1991; Armitage and Conner, 1999). According to the TPB model, intentions can be predicted by three concepts: attitudes, subjective norms and perceived behavioural control.

Attitudes are defined as an individual's evaluation of a behaviour as either positive or negative (Ajzen, 1988). Poss (2001) has further described attitudes as favorable or unfavorable feelings towards a behaviour and the evaluation of performing the behaviour as good or bad. Furthermore, a person's attitudes originate from within their behavioural beliefs. Subjective norms are an individual's perception of pressures to perform or not perform a behaviour. Subjective norms can also be described as an individual's perception of what important others expect them to do or not do (Donald and Cooper, 2001; Poss, 2001). Finally, perceived behavioural control is based on the belief that an individual's intention to perform a behaviour is dependent upon the extent to which the individual believes that he/she has control over performing the behaviour (Marks *et al*, 2000).

All three concepts (attitude, subjective norms and perceived behavioural control) are assumed to influence a

person's intention to perform a particular behaviour (see Figure 2). However, it is important to consider the ability of each individual concept to predict behaviour. The strength of each concept to predict intentions will vary according to the behaviour being measured and the individual performing the behaviour (Ajzen, 2001).

Figure 2. *The Constructs within the TPB and their Identified Association to One Another (Ajzen, 2002).*
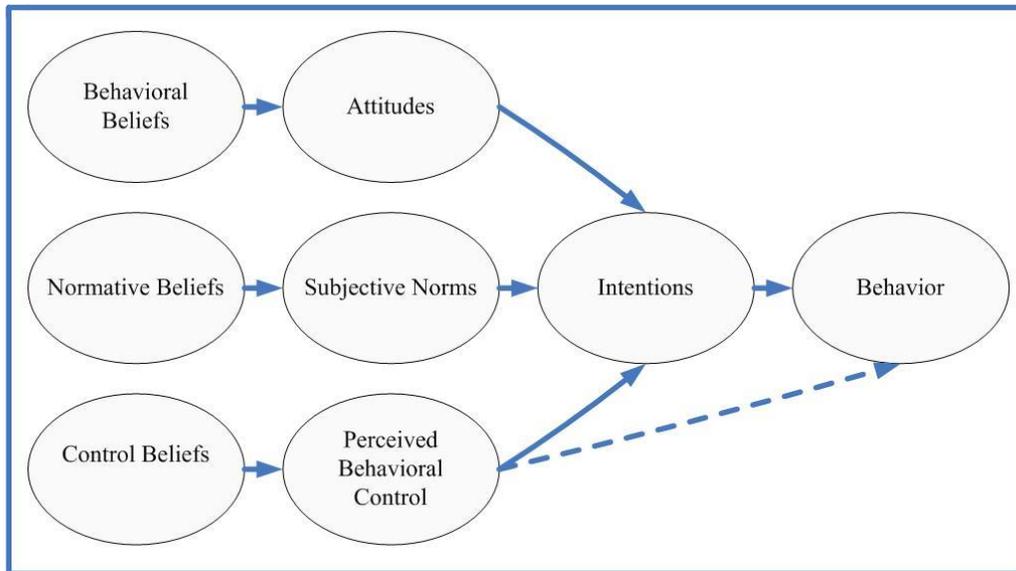
Complexity Theory

Change processes must also have a systems focus. In large organizations, the only way to change how managers work is to reinvent the processes that govern the work (Hamel, 2006). Complexity theory is useful for studying the evolution of complex organizations, entities with multiple, diverse, interconnected elements (Begun *et al,* 2003). From its roots in physics, mathematics and biology, the study of complexity science, or complex adaptive systems (CAS), has expanded into the domain of organizations and systems of organizations. Evolution of complex organizations is often accompanied by feedback effects, nonlinearity, and other conditions that add to the complexity of existing organizations and the unpredictability of the emergence of new entities (Begun *et al,* 2003).

Healthcare organizations are ideal settings for the application of complexity science due to the diversity of organizational forms and interactions among and within organizations that are also evolving. Complexity science can benefit from attention to the world's most complex human organizations. Organizations within and across the healthcare sector are increasingly interdependent. Not only are new, highly powerful and diverse organizational forms being created, but also the restructuring has occurred within very short periods of time (Begun *et al*, 2013).

Complexity science explores the interaction of CAS and resilience in that small, seemingly inconsequential events, perturbations, or changes can potentially lead to profound, large scale change; and what appears to be random may in fact have an underlying orderliness to it (Begun *et al,* 2003). CAS are seen as evolving networks of independent but interdependent agents, having the capacity to self-organize into higher or greater levels of complexity using simples 'rules' or patterns of interaction (Zimmerman & Hayday, 1999). Attention to the patterns of interaction within a CAS, how they are sustained, how they self-organize and how outcomes merge are important to understand in order to change all or parts of the system. A CAS may be sensitive to certain small changes in initial conditions. An apparently trivial difference in the beginning state of the system can result in enormously different outcomes. Although adaptive in the moment, such a response may turn maladaptive as the environment shifts (Begun *et al,* 2003).

Appendix B: Summary of Behaviour Change Campaigns

Table 1: Sample Patient Safety and Infection Prevention and Control Behaviour Change Campaigns and Strategies

Campaign Title	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
WHO Global Patient Safety Challenge: Saving Lives in Healthcare Through Clean Hands	Global	Focus on increasing awareness of and improving compliance with hand hygiene practices	The World Health Organization launched the First Global Patient Safety Challenge - Clean Care is Safer Care in 2005 with the goal to prevent HAIs globally. Since that time, May 5, has been declared as "The SAVE LIVES: Clean your hands" day. This global campaign has been very successful, with many countries and healthcare organizations adopting the goals and purpose, and participation, expanding significantly each year (Magiorakos *et al*, 2010). Awareness, communication and collaboration amongst participants has provided a significant platform for raising awareness and implementing best hand hygiene practice world-wide over the past 11 years.		See CPSI Canadian Hand Hygiene Challenge at the bottom of the table.
World Alliance for Patient Safety Global Patient Safety Challenge: 'Clean Care is Safer Care'	Global	Focus on world-wide prevention of healthcare-associated infection regardless of the level of development of healthcare systems and the availability of resources. The campaign aims to save millions of lives and achieve major cost and resource savings by improvement of basic procedures and a greater adherence to hand hygiene protocols among healthcare providers	The World Alliance for Patient Safety commitment to reduce HAIs by selecting this topic as the first Challenge was an unprecedented step. The Challenge was first launched in October 2005 and implemented several actions to tackle HAIs worldwide, regardless of the level of development of healthcare systems and the availability of resources. Strategies include the implementation and integration of multiple interventions in the areas of blood safety, injection safety, and clinical procedure safety, as well as water, sanitation, and waste management, with the promotion of hand hygiene in healthcare as the cornerstone, in different healthcare settings After 2 years, formal statements had been signed by 72 ministries of health as a pledge of their support to implement actions to reduce healthcare-associated infection; of these, 30 are developing countries. Additional countries, mostly from the developing world, have planned to sign by the end of 2008 and will represent in total more than three-quarters of the world's population (Pittet *et al,* 2008).		Canadian participation in this Global Safety Challenge.
Institute for Healthcare	National initiative launched in US and	Focus on reducing healthcare morbidity and	The campaign consisted of proven best practices to help participating hospitals extend or save as many as 100,000 lives during an 18 month period from	Sustainability of initiatives such as	Establishment and promotion of a set of

Campaign Title	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
Improvement 100,000 Lives Campaign	adopted by many other countries.	mortality by specific initiatives to reduce harm and death through six interventions.	January 2005 through June 2006 to foster and facilitate widespread change in health care. The interventions consisted of rapid response teams, medication reconciliation, prevention of central-line infections, surgical sites infections and ventilator associated infections, and evidence-based care for myocardial infarction. The campaign surpassed its goal, saving 122,300 lives. It also generated an unprecedented amount of social pressure for hospitals to participate. The campaign highlighted the importance of social pressure in generating change and demonstrated the need for national organizations to develop rigorous processes to prioritize quality and safety interventions (Wachter and Pronovost, 2006).	the Rapid Response teams are problematic. Methodological concerns regarding the "lives saved" calculations.	achievable goals for Canadian hospitals (see SHN).
Institute for Healthcare Improvement 5 Million Lives Campaign	Built upon the successes of the 100,000 Lives Campaign. Initially introduced in the U.S.	Focus on continuing the improvement of medical care to significantly reduce levels of morbidity and mortality.	This campaign introduced six new interventions addressing the prevention of pressure ulcers, reduction of methicillin-resistant *Staphylococcus aureus* (MRSA) infection, prevention of harm from high-alert medications, reduction of surgical complications, delivery of reliable and evidence-based care for congestive heart failure, and getting hospitals' boards of directors on board. Adopted by many other countries as the campaign became more successful. The Campaign celebrated the enrollment of 4,050 hospitals, with more than 2,000 facilities over a two year span (McCannon *et al,* 2007).	Methodological concerns regarding the # of "lives saved" calculations make it difficult to interpret the campaign's results.	
Canadian Patient Safety Institute *Safer Healthcare Now!* (SHN)	Pan-Canadian Campaign enlisting Canadian healthcare organizations and clinical teams in implementing targeted interventions in patient care.	Focus on reducing morbidity and mortality in Canadian healthcare. Patterned after the U.S IHI 100,000 Lives	The initial interventions were: Acute Myocardial Infarction; Central Line Infections; Medication Reconciliation; Rapid Response Team; Surgical Site Infections; and Ventilator-Associated Pneumonia**.** The following interventions were added between 2008-2016: Delirium; Falls; Hand Hygiene; Infection Prevention and Control; Sepsis; Surgical Checklist; Venous Thromboembolism. SHN has established a Canada-wide collaboration among healthcare organizations that did not exist before and has provided effective leadership in promoting collaboration among HCWs (Prairie Research Associates, 2007). The number of organizations enrolled in SHN has steadily increased since 2006.		
UK, Health Foundation's	Developed to achieve	Focus in the impact of a large-scale collaborative	Findings support the view that programs such as SPI have considerable impact upon the cultural, inter-professional, strategic and organizational aspects of		

Campaign Title	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
Safer Patients Initiative (SPI)	improvement in quality and safety of care in 24 UK acute hospital Trusts between 2004 and 2008.	improvement program.	care delivery, in addition to clinical working practices (Legido-Quigely, 2008).		
England, Patient Safety First	National campaign in England, June 2008 - March 2010.	Focus on patient safety culture changes.	Large scale change can be achieved on a small scale budget; using a creative approach to reaching as many people as possible using the least possible resource (Leape, 2009).		
European Union Network for Patient Safety and Quality of Care, PaSQ	Multi-national enlisting European healthcare organizations in implementing targeted interventions in patient care	Focus on patient safety and quality related to healthcare.	Officially launched in May 2012, the main objective of PaSQ is to support the implementation of the Council Recommendation on Patient Safety. PaSQ unites representatives of the European medical community, and the institutional partners involved in Patient Safety and Quality of Care in the Member States of the European Union. The work occurs through knowledge exchange and sharing experience and good practices focusing on hand hygiene, safe surgery, medication reconciliation, and paediatric early warning scores. A total of 482 'good practice' interventions were identified and delivered at 34 events organized in the EU, to facilitate sharing of the practices. Findings supports the important role the PaSQ has in strengthening collaboration between organizations and professionals at EU and SNHS level regarding PS and quality of care (Agra-Varela, 2014).		
Canadian Patient Safety Institute STOP! Clean Your Hands	Collaborative effort led by CPSI involving IPAC-Canada, PHAC, and Accreditation Canada	Focus on promoting the importance of hand hygiene in reducing the occurrence of HAIs (HAIs) in Canada, with emphasis on a national strategy.	The Canadian Patient Safety Institute (CPSI), Accreditation Canada, IPAC-Canada and the Public Health Agency of Canada join forces every year to support the practice of optimal hand hygiene in healthcare settings across the country. The annual national Stop! Clean Your Hands Day takes place on May 5, in conjunction with World Health Organization's global initiative, SAVE LIVES: Clean Your Hands. The goal of the campaign is to register as many healthcare facilities and providers across the country to participate in the day and spread the message that optimal hand hygiene is one of the most effective ways of preventing healthcare associated infections. Each year the campaign has a different theme with offerings and promotional material being offered to registrants to help them spread the message in their local setting.		

Campaign Title	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
			This national campaign has been very successful, with provinces and healthcare organizations adopting the goals and purpose, and becoming participants. Awareness, communication and collaboration amongst participants has provided a significant platform for raising awareness and implementing best hand hygiene practice. Since the inaugural STOP! Clean Your Hands Day in Canada in 2009, participation has been steady with approximately 1,000 registrants yearly.		

Table 2: Sample Antimicrobial Resistance (AMR) Campaigns and Strategies

Campaign Type	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
World Health Organization World Antibiotic Awareness Week	Global	The goal of the global action plan is to ensure, for as long as possible, continuity of successful treatment and prevention of infectious.	Antimicrobial resistance is occurring everywhere in the world, compromising the ability to treat infectious diseases, as well as undermining many other advances in health and medicine. This initiative has been adopted by many countries as the campaign became more successful. World Antibiotic Awareness Week.		
France- "Les Antibiotiques c'est pas automatique" ("Antibiotics are not automatic")	National Campaign of France	Focus on outpatient antibiotic use and subsequent reduction.	An annual information dissemination campaign with the theme "Antibiotics are not automatic". France has the highest antibiotics consumption and the highest rates of beta-lactam resistance in **Streptococcus pneumoniae** than any other European country The campaign was successful in that it was associated with a marked reduction of unnecessary antibiotic prescriptions, particularly in children (Sabuncu *et al* 2009**)**.		Responsibility of countries with higher levels of antibiotic use to take steps to address this issue...
Australia Antimicrobial Use and resistance in Australia Project	National Australian Campaign	Focus on reduction of inappropriate antibiotic use.	The campaign has so far achieved its targets of developing a National Surveillance system and monitoring system for Antimicrobial Resistance and Antibiotic Usage for Human Health in Australia http://www.safetyandquality.gov.au/national-priorities/amr-and-au-surveillance-project/ .		
Public Health Agency of Canada Antibiotic Resistance & Antibiotic Awareness Campaign	National Campaign	The objective of Antibiotic Awareness Campaign is to improve knowledge and awareness of antibiotic resistance in Canada through the promotion of responsible antibiotic use and good infection prevention behaviours.	The Public Health Agency of Canada (the Agency) leads the Government of Canada's response to the issue of antibiotic resistance in Canada. Part of this response included the development and launch of an antibiotic awareness campaign for Canadian families and health care professionals. To achieve its objective, the Agency has developed a suite of resources to address antibiotic resistance, intended for both Canadian families and health care providers. Available on the website are several resources that help explain to Canadians what antibiotic resistance is, why it is important, and how to reduce the risks associated with it. Through the use of campaign messages and resources health care providers are supported in their discussions about antibiotic resistance with their patients and clients, and in their efforts to be part of the solution in addressing this global health challenge.		
AMMI Canada Antibiotic	National Canadian	Focus on reduction of inappropriate antibiotic	National initiative enhancing public awareness of improving antimicrobial stewardship (McKay *et al,* 2011). Key message delivered through Canadian		

Campaign Type	Scope	Purpose	Key Learnings/Successes	Challenges	Recommendations
awareness week.	Awareness Campaign declared by the Association of Medical Microbiology and Infectious Disease Canada (AMMI-Canada)	use.	Antimicrobial Awareness week every third week of every November. The following challenge of "How can YOU steward improved awareness of antimicrobials and better antibiotic practices? Antibiotic Awareness Week challenges us to facilitate improved antimicrobial stewardship practices every year" is promoted via media campaign (McKay *et al,* 2011). Antibiotic awareness week.		
Choosing Wisely Canada	National Campaign		The 'Choosing Wisely Canada' campaign helps physicians and patients engage in conversations about unnecessary tests, treatments and procedures. Campaign success has not been formerly evaluated at this point. http://www.choosingwiselycanada.org/		
Alberta and British Columbia "Do Bugs Need Drugs?"	Provincial Education Campaign	Focus on reduction of antibiotic use and misuse in the community	Targets decreasing antibiotic overuse and misuse in the community in order to interrupt the development and subsequent spread of antibiotic resistant organisms. Findings include that overall consumption of antibiotics for systematic use has been on the decline since 2005, and more appropriate prescriptions writing patterns. Do Bugs Need Drugs.		

Table 3: Lessons Learned from Non-Healthcare Campaigns and Strategies

Campaign Type	Target/Goal of Behaviour Strategy	Key Findings	Did they Work?	What did it teach us?	Led to
Seat Belt Use Campaigns and Legislation	Increased seat belt use and implementation of mandatory seat belt laws.	Exposure to information campaigns delivered via mass media did result in some increased use of seat belts, however changes were not sustained (Gantz, *et al*, 1990). Seat belt legislation is known to improve driver behaviour and decrease overall traffic fatalities (Cohen and Einav, 2003). One study identified the effects of seatbelt laws using data from the Centers for Disease Control's (CDC) for, a period spanning over 20 changes in state seatbelt laws. Findings provide consistent evidence that mandatory seatbelt laws significantly increased seatbelt use among high school age youths by 45–80%, and significantly reduced traffic fatalities and serious injuries resulting from fatal crashes by 8 and 9%, respectively (Cohen and Einav, 2003).	No Yes	Safety adds failed to alter driver behaviour (Gantz, *et al*, 1990). Seat belt legislation is known to improve driver behaviour and decrease overall traffic fatalities, even if the magnitude of the effect is significantly smaller than anticipated (Cohen and Einav, 2003).	Vehicle engineering re-design has resulted in engineering redesign in most new vehicles with the introduction of seat-belt reminder systems such as intermittent dashboard flashing lights and chimes. Mandatory Seatbelt Legislation is now common practice.
Road Safety Campaigns	Increased awareness and adoption of safe driving habits.	The role of fear appeals in improving driver safety. Road user behaviour is characterised by bounded rationality. Hence, if road users can gain insight into the bounds of their rationality in order to see advantages of changing behaviour for them, they are likely to do so. However, the theoretical prediction is not supported by meta-analyses of studies that have evaluated the effects of road safety communication campaigns (Elvik, 2015). The effectiveness of using fear threats to improve driver safety remains controversial. Findings indicate that on the average, such campaigns are associated with a small reduction in accident (Elvik, 2015).	No	While fear arousal appears important for attracting attention, its contribution to behaviour change appears less critical than originally thought.	Increased awareness of poor driving habits.
Bicycle Helmet Campaigns	Increased use of bicycle helmets.	Campaigns targeting use of bike helmets have some success, (Bergman *et al,* 1990). One campaign measuring sales of youth helmets rose from 1500 to 22 000 over a 3-year period, accompanied by an observed helmet usage rate among school-age children increase from 5% to 16% (Bergman *et al*, 1990).	Yes	Overall general increased usage	Increased general use of Bicycle Helmets and in many instances the introduction of Bicycle Helmet Use Bylaws.

Campaign Type	Target/Goal of Behaviour Strategy	Key Findings	Did they Work?	What did it teach us?	Led to
Smoke-Free Workplace Campaigns	Increased awareness of the benefits of Smoke-free Workplaces.	Campaigns targeting smokers in the workplace, providing protection for non-smokers from the dangers of passive smoking, while encouraging current smokers to quit or reduce consumption (Fichtenberg and Glantz, 2002).	Yes	Smoke-free Workplace campaigns have had some degree of success.	Increased peer pressure to have major initiatives supporting smoke-free workplaces, no-smoking areas in public spaces, and the introduction of No-Smoking By-laws.
General Well-Being, Health Improvement Campaigns	Increased awareness or better overall health through the consumption of more fruits and vegetables.	Campaigns promoting increased awareness and policy interventions of the health benefits associated with fruit and vegetable consumption have met with little success. The impact of these initiatives remains at best, modest to low, in effecting a significant increase in daily consumption on a sustained basis (Rekhy & McConchie. 2014).	No	Daily intake of fruits and vegetables worldwide remains below WHO recommended levels, despite the established health benefits associated	Campaign and intervention redesign.