Identification of Factors for Successful Implementation of the Incident Management System in Ontario Health Unit Emergency Management Programs

MPA Research Report

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Acknowledgements

Executive Summary

In 2008, the Ministry of Health and Long-Term Care released the Public Health Emergency Preparedness Protocol (Protocol) which mandated local health units to develop emergency response plans consistent with the Incident Management System (IMS). The main purpose for implementing IMS was to provide a standardized approach to local and provincial government emergency response by providing a common framework to provide a consistent, flexible and co-ordinated response.

Although IMS is intended to provide a standardized approach to incident and emergency management, deviations in the implementation of IMS during incident or emergency response among Ontario's health units have become evident in multi-jurisdictional incidents or emergencies. For IMS to be effective, it must be implemented consistently by those involved in the response and recovery phases.

The goal of this research paper was to identify some of the factors present in heath units that consistently implement IMS during incident and emergency response. The focus of the research was to determine the factors for successful implementation of IMS into Ontario health unit emergency management programs. The selected factors for the research were based on Emergency Management Ontario's (EMO) Guide to IMS Implementation and John P. Kotter's eight-stage framework for creating major change.

A questionnaire with closed ended questions was developed to collect data from thirty four of the thirty five health units in Ontario. One section of the survey assessed the presence of the selected factors within the health units. Respondents were asked to select responses that indicate to what extent, if at all, the factors identified are or were present. The other section of the survey assessed the level of integration of IMS within the health unit emergency management programs.

The purpose of the research was to determine the factors that facilitate the successful implementation of IMS, which can vary from one health unit to another, and to determine the potential impact of these factors on the successful implementation of IMS. The research led to recommendations for local health units and municipalities on how to successfully implement IMS. These recommendations will assist to meet the requirements under the various pieces of emergency management legislation which apply to health units and municipalities, but it and may also lead to increased value in the time and resources invested into emergency planning, training and exercising.

List of Abbreviations

EMO	Emergency Management Ontario
EOC	Emergency Operations Centre
F/P/T	federal, provincial and territorial
FTE	full time equivalent
HPPA	Health Protection and Promotion Act
IMS	Incident Management System
MCSCS	Ministry of Community Safety and Correctional Services
MOHLTC	Ministry of Health and Long-Term Care
OPHS	Ontario Public Health Standards
Protocol	Public Health Emergency Preparedness Protocol
SARS	Severe Acute Respiratory Syndrome

Table of Contents

Chapter 1 - Introduction

Ontario Public Health Standards (OPHS) are published by the Ministry of Health and Long-Term Care (MOHLTC), under the authority of the Health Protection and Promotion Act (HPPA), to specify the minimum mandatory health programs and services to be provided by boards of health.[1] Protocols and guides further specify how to operationalize some of the requirements in these standards. Boards of health are accountable for implementing the standards including those protocols and guides that are incorporated into the standards.

In 2008, the MOHLTC released the Public Health Emergency Preparedness Protocol (Protocol) which mandated local health units to develop emergency response plans that were consistent with the Incident Management System (IMS). The principles and concepts of IMS were originally developed for and applied by first responders (e.g. police, fire and paramedics) in North America and have evolved and been applied in emergency management programs by other agencies and jurisdictions over the past number years.[2]

The IMS doctrine for Ontario was refined and adopted by Emergency Management Ontario (EMO), a branch of the Ministry of Community Safety and Correctional Services (MCSCS), prior to being implemented into the Protocol by the MOHLTC. The main purpose for implementing IMS was to provide a standardized approach to local and provincial government emergency response by providing a common organizational structure that provides a consistent, flexible and co-ordinated response. The changes to the Protocol followed a number of focussing events in Ontario, which included an ice storm, a major

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[1]Ontario Ministry of Health and Long-Term Care. *Public Health Emergency Preparedness Protocol,* 2015. *http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/emergency_preparedness.pdf*
[2]Ministry of Community Safety and Correctional Services. Emergency Management Ontario. *Guide to Incident Management System Implementation.* Last accessed July 26, 2016. http://www.emergencymanagementontario.ca/english/emcommunity/ProvincialPrograms/IMS/Resources/GuidetoIMSImplementation/IMS_Guide_to_Implementation_package.html

blackout and an outbreak of Severe Acute Respiratory Syndrome (SARS). These events, which simultaneously impacted multiple jurisdictions across the province, provided incentive to move to IMS, a new co-ordinated direction in emergency management, for Ontario health units.

SARS was one event in particular that had major implications on the future of emergency management programs and public health units in Ontario. "The National Advisory Committee on SARS and Public Health was established in early May 2003 by the Minister of Health of the Government of Canada, the Hon. A. Anne McLellan, in the circumstances surrounding the outbreak of SARS."[3] This National Advisory Committee provided a number of recommendations which included: "...the development of a comprehensive approach to managing public health emergencies through a pan-Canadian system that includes: harmonizing emergency preparedness and response frameworks at the federal, provincial and territorial (F/P/T) levels; developing seamless planning and response capacities as envisaged by the thirty-one recommendations of the Special Task Force on Emergency Preparedness and Response; building an integrated F/P/T planning, training and exercising platform for responding to all-hazard disasters, including public health emergencies created by large scale disease outbreaks; developing and applying a common set of principles, concepts and capabilities for large scale disease outbreaks…"[4]

Although the recommendations made by the National Advisory Committee on SARS and Public Health did not explicitly recommend IMS to be implemented in public health emergency management programs, the recommendations did have characteristics consistent with IMS and included as stated above: developing and applying a common set of

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[3] National Advisory Committee on SARS and Public Health. *Learning from SARS: Renewal of Public Health in Canada.* (Ottawa: Health Canada, 2003), 1.
[4] Ibid215.

principles, concepts and capabilities. Therefore moving towards implementation of IMS in emergency management was a logical progression for policy makers at the MOHLTC when they were developing the Protocol during the years following SARS. Since the release of the Protocol in 2008, the task of implementing IMS and developing emergency response plans that are consistent with IMS has been left to the local health units in Ontario. To date an IMS implementation guide for health units has not been provided by the MOHLTC.

Chapter 2 - Background

The implementation of IMS in health unit emergency preparedness is mandated by the OPHS and Protocol. Although IMS is intended to provide a standardized approach to incident and emergency management, deviations in the implementation of IMS during incident or emergency response among Ontario's health units have become evident during multijurisdictional emergencies. During these emergencies, for some health units, IMS remains a peripheral function to the operations of the health unit while in others it has been fully integrated and operationalized. For those health units that have fully integrated IMS, it appears there was a paradigm shift in the way the health units respond to incidents and emergencies.

The variation in implementation and use of IMS is an issue of concern because in multi-jurisdictional incidents or emergencies this variation could lead to a lack of interoperability and consistency in response which could lead to negative consequences for the health and safety of the public. "Lessons learned from notable domestic and international disaster situations emphasize the urgent need to be prepared to prevent, respond to, and rapidly recover from constant public health threats."[5] In addition, there is a

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[5] Gamboa-Maldonado, Thelma, Helen Hopp Marshak, Ryan Sinclair, Susanne Montgomery, and David T. Dyjack. "Building Capacity for Community Disaster Preparedness: A Call for Collaboration between Public

considerable amount of time and resources invested into emergency management programs and to maximise the benefits from these investments, implementation of IMS requires consistency among the stakeholders involved in emergency response.

"The IMS doctrine for Ontario was developed by a multi-stakeholder Steering Committee, chaired by Emergency Management Ontario. This doctrine was developed to provide a single, province-wide IMS that is capable of ensuring the effective, coordinated response to all incidents by Ontario's various response organizations. Lessons from previous emergencies demonstrated the need for such a standardized IMS to avoid confusion and enhance response."[6]

In Ontario, following the terrorist attacks in the United States on September 11, 2001, emergency management policy became less permissive and more prescriptive; legislation and regulations mandated the specific standards for municipal emergency management.[7] The phases of emergency management include: prevention, mitigation, preparedness, response and recovery, and form the basis of emergency planning. Local governments dedicate a significant amount of time and resources for emergency planning, specifically on prevention, mitigation and preparedness.

Prevention activities intend to prevent an emergency from occurring by focussing on potential threats. Mitigation activities intend to reduce the severity of and emergency. Most public health activities and programs operate within these two phases of emergency management. Examples of such activities and programs include conducting routine

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Environmental Health and Emergency Preparedness and Response Programs." *Journal of Environmental Health* 75 no. 2 (September 2012): 25.

[6] Emergency Management Ontario. *IMS-100 Introduction to the Incident Management System (IMS) for Ontario*, (December 2008), 4.
https://training.emergencymanagementontario.ca/coursematerial/IMS100_EN_PDFUA.pdf

[7] Henstra, Daniel. "Introduction: Multilevel Governance and Emergency Management and Canadian Emergency Mangement Policy." In *Multilevel Governance and Emergency Management in Canadian Municipalities,* ed. by Daniel Henstra (Montreal: McGill – Queens University Press 2013), 9.

inspections, responding to health hazards, providing immunization clinics and ongoing disease and outbreak surveillance. Preparedness activities intend to maximize the efficiency of the emergency response through planning and preparation. These activities focus on actions taken before the emergency including, regular emergency training and annual emergency exercises.

For local municipalities, health units and other organizations that have integrated IMS into their emergency plans the annual exercises are the primary method used to test the implementation of IMS and the emergency plans themselves. A significant amount of time and staff resources are invested into keeping the emergency plans updated and organizing and executing annual emergency exercises for the organization. Whether it is an orientation exercise, tabletop exercise, functional exercise or full-scale exercise, they all require careful planning, clearly stated goals and objectives, a well-designed scenario and an effective evaluation process which can be very labour intensive and time consuming to develop.[8]

Health units also invest such resources, not only to ensure the requirements of both the OPHS and Protocol are met, but to also be prepared to provide an effective co-ordinated response to incidents and emergencies as they arise. However, if IMS is not implemented during the prevention, mitigation, response and recovery phases of emergency management, then there is little value gained from the resources invested in the preparedness phase of emergency management. In addition, the lack of a co-ordinated and consistent response during inter-jurisdictional incidents or emergencies could reduce the effectiveness and or efficiency of the response. For IMS to be effective, it must be implemented consistently by all those involved in the response and recovery phases.

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[8] Emergency Management Unit Public Health Division Ministry of Health and Long-Term Care. *A Guide to Planning Public Health Emergency Exercises. Public Health Emergency Preparedness Protocol* (February 2009). http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/req82.pdf

The consequences of the failure to adhere to and successfully implement IMS were never more evident than during the collapse of the Algo Centre Mall in Elliot Lake on June 23, 2012 in which two people lost their lives. Questions remain as to whether one person could have been rescued if there was a more co-ordinated response. Failures in the basic principles of IMS during this response included: not having a clear chain of command, not developing incident action plans to provide clear direction, a lack of interoperability in terms of communication technology, and a failure to communicate with shift change briefings.

In the Report of the Elliot Lake Commission Inquiry one of the recommendations was for the province to "…put in place strategies that will increase the acceptance and actual use of the Incident Management System (IMS) – including simplifying its language and instituting joint training and exercises – so as to be able to make it mandatory in the near future."[9] This recommendation was made because the inquiry concluded that "the Incident Management System was improperly applied: no one understood or respected its mandated command structure."[10]

"Critical events and periods of crisis may provide windows of opportunity for advancing new ideas, but whether they become institutionalised or not depends on the interplay of ideas, interests, and institutions."[11] The goal of this research is to identify some of the factors present in heath units that facilitate consistent implementation of IMS. The results of this research could lead to recommendations for successful implementation of IMS not only in health units but also in local municipalities, other government agencies and non-government organizations.

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[9] *Report of the Elliot Lake Commission of Inquiry, Executive Summary*, by the Honourable Paul R. Belanger, Commissioner. (Queens Printer for Ontario, 2014), 63.

[10] *Ibid,* 42.

[11] Norm Catto and Stephen Tomblin. "Multilevel Governance Challenges in Newfoundland and Labrador: A Case study of Emergency Measures." In *Multilevel Governance and Emergency Management in Canadian Municipalities* ed. Daniel Henstra107.

Chapter 3 - Research Question

This report will attempt to answer the research question: "*What are the factors for successful implementation of the Incident Management System (IMS) into Ontario health unit emergency management programs?*"

The research will focus on factors that health units have the ability manage or change including: the use of implementation guides, change management models and the organizational structure. Factors that are out of the control of the health unit, like local government structures, geographic location within Ontario and population size, will remain out of the scope of this analysis. Although these factors very likely have some impact on the successful implementation of IMS, the aim of the research is to provide recommendations that are actionable.

The factors examined in the research were selected based on EMO's Guide to IMS Implementation[12] (Guide) listed in Appendix 1 and John P. Kotter's eight-stage model for creating major change which is detailed in his book *Leading Change*. The eight stages are outlined in Appendix 2. A number of models to describe a structured approach to change have been developed, however Kotter's model has components consistent with EMO's Guide and was therefore selected as the change management model from which to derive the factors to be examined. EMO's Guide can be summarized into three themes: communications, training, and integration. These three themes are also evident in Kotter's change management model and therefore aligned well for the development of the hypotheses to be tested.

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[12] Ministry of Community Safety and Correctional Services. Emergency Management Ontario. *Guide to Incident Management System Implementation.* Last accessed July 26, 2016. http://www.emergencymanagementontario.ca/english/emcommunity/ProvincialPrograms/IMS/Resources/Guide toIMSImplementation/IMS_Guide_to_Implementation_package.html

To answer the research question, establishing successful implementation of IMS among the different responding health units was a required first step. The dependent variable was the successful implementation of IMS in the health unit emergency management programs. It was measured as the extent to which a health unit has integrated IMS into plans and policies as well as the use of those plans and policies to prepare for, mitigate impacts of, respond to and facilitate recovery from incidents or emergencies.

The research questions in Part One of the questionnaire were developed principally using concepts from EMO's Guide. A goal for health units in Ontario is to be compliant with the MOHLTC protocols; the Public Health Emergency Preparedness Protocol requires public health emergency plans to be aligned with the Incident Management System Doctrine for Ontario. EMO's Guide advises, as part of IMS implementation, to identify policy, plans and procedures requiring IMS incorporation and to revise them using an IMS integration plan. In addition, the Guide indicates conducting operations using IMS, both for real incidents and planned events, is required to lead to successful implementation. The principle notion is that the incremental use of IMS in public health operations and emergency response could lead to successful implementation of IMS in emergency management programs.

Kotter advises not to declare victory too soon in the change process[13] and that short-term wins are essential to keep the momentum of change going.[14] This aligns with EMO's Guide which advises to adopt IMS in procedures and to ensure that IMS implementation is sustainable. Adopting IMS into procedures provides the opportunity for short-term wins as it relates to the successful implementation of IMS. Finally, responding to emergencies using IMS could help instigate cultural chages, which Kotter suggests can be sought in order to effect change. The theory being that consistency in response to different

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[13] John Kotter. *Leading Change* (United States of America, Harvard Business Review Press, 2012), 13.
[14] Ibid, 138.

types of incidents or emergencies will create a familiarity and comfort with IMS; it will become second nature. This information was used to develop the six questions for Part One of the questionnaire which attempted to assess if IMS was successfully implemented in the health unit, if the health unit is still progressing towards implementation or if the attempt to implement IMS in the health unit has been limited.

For the purposes of this research IMS will be identified as being successfully implemented in the health unit if:

- the health unit's public health emergency plan and emergency procedures are written using IMS,
- there is an expectation through either formal or informal policy within the health unit for IMS to be used in incident and emergency response,
- IMS is used incrementally for small unplanned incidents or planned special events, and
- IMS is used consistently in the health unit emergency operations centres.

    IMS was introduced to health units through the provision of a new protocol. Implementation of this new system, IMS, into existing organizations requires the ability to manage the change and integration within the organizations. An important component of the change management process is communication. EMO's Guide identifies: raising awareness, endorsing IMS and establishing a governance structure as important aspects to the implementation of IMS. Similarly, in Kotter's eight-stage model for creating change the first four stages focus on aspects of communication and they include: establishing a sense of urgency, creating a guiding coalition, developing a vision and strategy and communicating the change vision.[15]

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[15] Kotter, *Leading Change*, 23.

Although creating a sense of urgency is important, Kotter warns that it is also important not to confuse the sense of urgency with anxiety. Clear objectives for everyone to work towards are necessary as part of the change process. A sense of urgency must be created to ensure complacency doesn't undermine the objectives of IMS implementation. The second stage in Kotter's change management model is to create a guiding coalition. The guiding coalition must have power either through formal titles, reputation or information and expertise.[16] EMO indicates a guiding coalition should be established with an identified lead and to include stakeholders; in the Guide it is referred to as Governance. Once a vision with clear objectives is developed it can be communicated through endorsement of IMS and within health units this can be accomplished through a formal communication strategy or informally and from different levels of management.

For the purposes of this research, the focus was on communication strategies, both to and from front line staff. It was hypothesised that those health units identified as having successfully implemented IMS would also have:

- clear objectives to implement IMS,
- a formal communication strategy to raise the sense of urgency and awareness among front line staff,
- senior managers and mid-level managers to endorse the implementation of IMS and
- an evaluation or feedback survey to ensure the implementation of IMS was effective.

As with all new systems training and exercising it is important to ensure the system is implemented effectively. EMO's Guide indicates that training should be provided and that in-house training instructors should also be designated. To provide effective training, tools and resources should also be made readily available. By having in-house instructors and the tools and resources for training, staff are empowered to implement the change and can

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[16] Kotter, *Leading Change*, 6.

provide a shared sense of purpose. This is also another stage in Kotter's model which is "Empowering Employees for Broad-Based Action."[17] Having in-house training changes the experience and allows staff to help communicate and implement the vision and achieve the objectives.

Exercises using IMS is another important activity which will help to ensure the integration of IMS within health units. There are many ways to conduct such exercises, from table top to full-scale, which can be used to test the full emergency plan or components of the plan. Exercises can also be conducted with external stakeholders including local municipalities, townships or cities. If their plans and exercises implement IMS, the horizontal and vertical alignment will facilitate IMS to be integrated into the local health unit emergency management programs. For the purposes of this research it was hypothesised that those health units identified as having successfully implemented IMS would also have:

- IMS training as part of the orientation for new staff,

- in-house IMS training instructors with tools or resources available to conduct the training,

- exercises conducted using IMS and where applicable the local government stakeholders such as municipalities, townships and cities would also use IMS for their emergency plans and exercises.

The organizational structure was also included as a factor to consider because Kotter indicates that sometimes obstacles to implementing change can be the organizational structure.[18] Having dedicated staff for the emergency management program could reduce the barriers, perceived or actual, to successfully implementing IMS including lack of time and resources. It is also consistent with a component of Kotter's model "Creating the Guiding

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[17] Kotter, *Leading Change*, 105.
[18] Ibid, 10.

Coalition"[19], which is an important stage to the change initiative. The hypothesis is, if the health unit has dedicated emergency managers or planners (e.g. the roles and responsibilities of these individuals are limited to or comprised mostly of the emergency management program) then IMS is expected to be successfully implemented into the organization's emergency management program.

Chapter 4 - Methodology

The data collection tool used for this research report was a web-based questionnaire. The questionnaire was comprised mostly of closed ended questions grouped into three parts. Part One attempts to establish success of IMS implementation in each health unit based on the level of integration of IMS in the emergency plans, policies and procedures as well as a demonstration of the incremental use of IMS during both unplanned and planned events. Variation in the level of IMS integration was expected. Success was not considered to be an absolute state but rather a scale where some health units will have integrated IMS in more components of their emergency programs than other health units and therefore those health units were considered to be more successful in implementation of IMS. This measure was also identified as the dependent variable in this research.

Parts Two and Three of the questionnaire attempted to assess potential factors that could impact the successful implementation of IMS in the health unit. Part Two specifically focusses on the change management process stages that may have been applied within the health unit since the protocol and IMS was first introduced to Ontario health units. Part Three focusses on other contextual factors that could be present within each health unit that could also influence the successful implementation of IMS. Together these were identified as the independent variables in this research.

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[19] Kotter, *Leading Change*, 53.

A number of hypotheses were considered to attempt to answer the research question for this report. These hypotheses were used as a starting point to create the questions considered for the questionnaire and were informed through the theoretical frameworks of Kotter's change management process and EMO's Guide to Implementation of IMS. These hypotheses also serve to guide the analysis and discussion in the following chapters.

In addition to the questionnaire in Appendix 3, a letter of recruitment and consent, which is provided in Appendix 4, and the recruitment email, which is provided in Appendix 5, were drafted for review by Western University's Research Ethics Board. Once revisions were made and the documents were approved for use, the email, which included the letter of recruitment and consent, was sent to thirty four of the thirty five health units in Ontario; Halton Region health department was excluded to eliminate any potential writer conflict or bias. The link to the web-based questionnaire was available for participants to complete and a PDF of the questionnaire was also included in the email for respondents to review or to share with management prior to submitting final responses on the web-based version. Individual emails were sent to the emergency program managers or emergency planers from thirty-four health units in Ontario. They were invited to participate in the research project by providing only one consolidated response for each of their respective health units.

Prior to sending the request to health unit representatives to complete the questionnaire, it was pre-tested on two Halton Region health department employees who were involved, either currently or in the past, with the emergency management program. This was done to ensure that the format of the questions and the language used in the questionnaire were clear and that the questions were interpreted and responded to in a similar way. Several changes were made based on their feedback to provide consistency in responses and clarity in the questions. In addition, the web-based version was also tested to

ensure both the link and format provided were functional, easy to complete and that the estimated time to complete the questionnaire was accurate.

The number of completed questionnaires received initially was below what was expected therefore an extension was provided to allow more time for respondents to complete the questionnaire. After a majority of those contacted responded to the questionnaire, an analysis of the responses was conducted to determine if a relationship between the selected factors identified in Parts Two and Three of the questionnaire and the successful implementation of IMS existed.

To protect the confidentiality of their responses, health units were identified by a unique number only. In addition, an attempt was made to omit any other unique identifiers such as location, population size etc. An index value was calculated for each health unit using Likert scale indexing based on the responses to the statements provided in Part One of the questionnaire which were regarding the integration of IMS into the health unit's emergency management program. An index is a set of variables combined to measure a more abstract concept.[20] A numerical value was assigned to each potential response of each question in Part One of the questionnaire and the values of the selected responses for each health unit that had provided responses were averaged to provide the index value for that health unit. Based on the scale developed, those with a higher index had greater integration of IMS and therefore were considered more successful in the implementation of IMS.

For each health unit that completed the entire questionnaire, Likert scale indexing was also conducted for the responses to the questions in the other two parts of the questionnaire. Comparisons of the health units with a higher index value to those with a

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[20] Elizabeth O'Sullivan, Gary Rassel and Maureen Berner. *Research Methods for Public Administrators 5th edition.* (United States: Pearson Education Inc., 2008), 490.

lower index value, and the indexing for the other two parts of the questionnaire, were used

to attempt to answer the research question. A *t*-test and *Pearson's-r* were used to determine

the direction and strength, if any, of the relationship between integration of IMS and change

management factors and between integration of IMS and contextual factors.

Chapter 5 - Results

Twenty-seven responses were received from the 34 health units that were contacted

which resulted in a response rate of 79%. Of those, two of the questionnaires were

incomplete and not suitable to be included in the analysis; therefore the results include the

responses from 71% of the health units in Ontario. There was significant geographic

diversity among the respondents including health units located in large urban areas, small

rural areas and more remote northern jurisdictions. There was also diversity among

respondents in their different types of governance structures such as health units which

operate with independent boards of health, regional governments and city run. As previously

indicated, the scope of the research will not include an analysis of the impacts of these types

of health unit characteristics but will instead focus on the opportunities available to impact

implementation of IMS through the use of the change management processes and the

steps in the IMS Implementation Guide developed by EMO.

The first part of the questionnaire attempted to establish success of IMS

implementation in each health unit based on the level of integration of IMS in the emergency

plans, policies and procedures as well as a demonstration of the incremental use of IMS

during both unplanned and planned events. This measure was also identified as the

dependent variable in this research. As was expected there was variation in the responses

from each health unit. Likert scale indexing was used to determine the index value for each

health unit based on those responses; the results are presented in Figure 1: Index values for

integration of IMS in health unit emergency management programs by responding health

units. The following values were used for the indexing process. If answer A was selected a

value of 1 was provided, as it shows the least amount of progress to align with the Protocol

and EMO's Guide. Answer B received a value of 1.5 as it showed progress towards

alignment and answer C received a value of 4. Answer D received a value of 0 since no

indication of alignment was provided. The average of all the answers provided for Part One

were used to determine the index value for each health unit and they are displayed in Figure

1 from highest to lowest. The maximum index value a health unit could receive was 4 and

there was one health unit that received this value, the range was from 1.08 to 4.
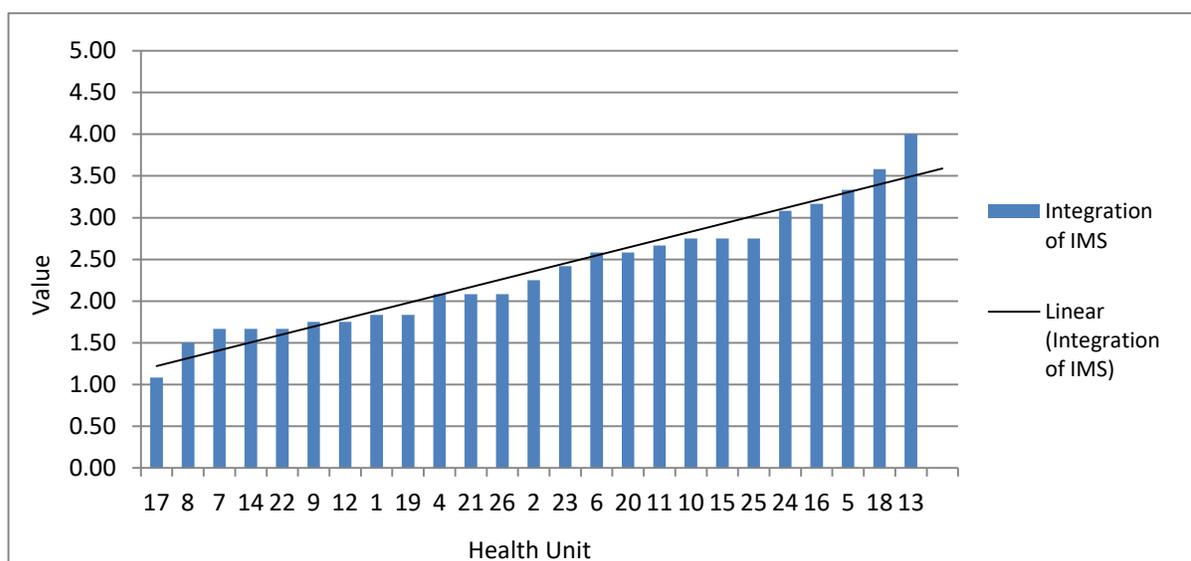
Figure1: Index values for integration of IMS in health unit emergency management programs
by responding health units

The first question asked if the health unit had an emergency response plan and if it

was in IMS format and 92% of respondents answered that they did. Since this is a clear

requirement in the Protocol it was expected to be high. There was also consistency in the

last question in this part of the questionnaire which asked if the Emergency Operations

Centre (EOC) was staffed using IMS structure; 88% responded that their EOC was always

or sometimes staffed using IMS structure. There was a diversion in responses for the questions regarding having a policy which required IMS to be used to respond to public health incidents or emergencies and for the use of IMS for planned special events.

Only 40% of respondents had a policy requiring IMS to be used to respond to public health incidents or emergencies and IMS was implemented consistently while 60% either did not have a policy requiring IMS to be used (48%) or if they did it wasn't consistently implemented (12%). EMO's Guide includes incorporating IMS in policy plans and procedures; however some respondents indicated in their comments that it is actually not necessary for the following reasons:

- "We have no policy requiring the use of IMS, but it (is) our standard practice which is partly why we have no policy. We consistently use it for surge and emergency events."
- "There is no "formal" written policy as it is understood from the OPHS protocol."

This question may have resulted in some health units receiving a lower index value for integration of IMS than they should have received because they already achieved a level of integration of IMS that went beyond calling for a policy to implement IMS. However, the five health units that had the highest index values for IMS integration (health units 5, 13, 16, 18 and 24) responded that they had a policy requiring IMS to be used while the heath units that received the lowest index values for IMS integration (health units 7, 8, 14, 17, 22) indicated they did not have this policy.

Sixty-four percent of respondents indicated they always or sometimes implement IMS to respond to minor public health incidents while 36% never do. However, when responding to planned special events only 48% always or sometimes implement IMS while 48% never do. The heath units that had the lowest index values for IMS implementation

(health units 7, 8, 14, 17, 22) never used IMS to respond to planned special events while four of the five health units with the highest index values always or sometimes did. The comments from respondents regarding the use of IMS for planned special events were focussed mostly on the size of the health unit and included the following:

- "Not yet anyway. We are a small rural health unit and do not have large public gatherings/concerts."
- "This is a new concept that will be used - we don't have very many large public gatherings."
- "This should be "not applicable", really. We've never had an event so large that it required us to use an IMS structure. If we did, we would use the IMS structure."

The example provided in the question was intended to provide the respondent some context for the question. However, it may have limited the respondents to considering only large public gatherings as a planned special event, whereas IMS implementation could be successfully used in many types of other planned special events, including internal events like planning a retirement celebration. It is possible some health units may have received a higher index value for integration of IMS if this question was interpreted more broadly rather than focussing on large public gatherings.

The five questions, in Part Two of the questionnaire, were developed to assess if components of the change management process were used to implement IMS in each health unit. An important component in change management is communication and this was the focus of the questions in this part of the questionnaire. They examine the communication components in EMO's Guide and Kotter's eight-stage process for creating change.

The following values were used for the indexing process. If answer A, unknown or cannot recall, was selected a value of 1.5 was provided. Since the change management

process could have started several years ago and because there could have been staff turnover during those years it was decided not to provide the lowest value for poor recall. If answer B was selected, which was to not include this change management stage, a value of 1 was provided as it shows the least amount of progress to align with EMO's Guide and Kotter's eight-stage process for creating change. Answer C received a value of 3 as it showed progress towards alignment and answer D received a value of 6 as it demonstrated the most alignment. Answer E received a value of 0 since no indication of alignment is provided. The average of all the answers for Part Two was used to determine the change management index value for each health unit and the results are displayed in Figure 2. The maximum index value a health unit could receive is 6 and there was one health unit that received this value, the range was from 2.4 to 6.

As in Part One, there was noticeable variation in the responses received from health units. Likert scale indexing was once again used to determine the index values for each health unit based on those responses and the results are presented in Figure 2: Index values for change management implementation and index values for integration of IMS in health unit emergency management programs.
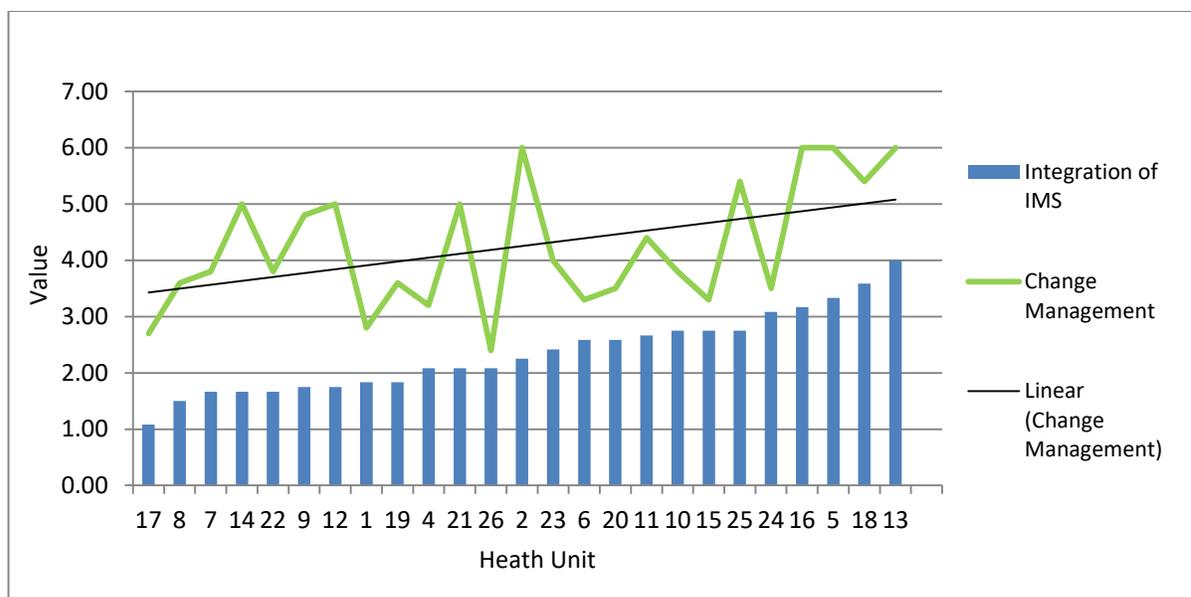
Figure 2: Index values for change management implementation and index values for integration of IMS in health unit emergency management programs

The first question in Part Two asked if there were clear objectives to implement IMS into the health unit emergency management program. This question required a considerably long institutional memory by the health unit since the objectives may have been established and implement some time ago and as expected, 20% did not know or could not recall. The remainder either had clear objectives (52%) or they had objectives but they were not clear (28%). The comments provided for this question also demonstrate how the need for the establishment of objectives to implement IMS into the emergency management program can be subjectively interpreted and they included the following:

- "An emergency management framework was approved by the Sr. leadership team and an implementation plan was developed and a project team (that) was led by Health Emergency Management. PH Emergency Response Plan includes a maintenance plan that sustains the program and ensures ongoing quality

improvements that address the needs of the department and community, working towards a vision for the program and aligned with the PH strategic plan. "

- "There were no "formal" objectives established. It was an understanding based on the standard. "

- "We instituted IMS with our emergency plan in 2004."

Four of the five health units that had the highest index values for integration of IMS (health units 5, 13, 16, 18 and 24) indicated they had clear objectives established while only two of the heath units that received the lowest index values (health units 7, 8, 14, 17, 22) indicated they did.

The second question was regarding development of a formal communication strategy to raise awareness regarding implementation of IMS and only 40% of respondents had a formal one while 44% had informal communications with front line staff. Three respondents (12%) could not recall or did not know. There was clear endorsement of IMS from both senior managers and mid-level managers, 84% and 80% respectively.

The last question asked if an evaluation or feedback survey had ever been conducted to determine the effectiveness of the implementation of IMS and used to further inform the implementation of IMS and only 36% indicated that they had accomplished this while 52% indicated that they never conducted an evaluation or feedback survey. Four of the five health units that had the highest index values for integration of IMS (health units 5, 13, 16, 18 and 24) indicated they had conducted an evaluation or feedback survey while the heath units that received the lowest index values (health units 7, 8, 14, 17, 22) indicated they had not. This question prompted a number of respondents to provide additional comments including the following which highlights the diversity of interpretations of the question and the practical applications of the change management process:

- "The process is on-going. Feedback has always been collected and analyzed after each management training forum and/or exercise involving staff. We are currently conducting surveys and facilitated focus groups on the effectiveness of our use of the IMS system during a recent response to a health incident. "

- "Post incident analysis and evaluations are always conducted and the effectiveness of IMS is always evaluated and lessons learned integrated into program directions and policies."

- "It is too soon to answer this question. We have not yet had the opportunity to trial the IMS. We will be hosting an exercise this fall. Debriefs and After Action Reports are built into the Recovery Phase to obtain feedback on the IMS following an exercise or real event. "

- "It was more recommendations from an IMS-based emergency exercise that was used to further inform implementation of IMS than a formal survey."

The last part of the questionnaire included questions related the remaining aspects of EMO's Guide and they included providing support for training and using IMS in exercising. The following values were used for the indexing process. If answer A, unknown, was selected a value of 0.5 was provided as it shows the least amount of progress to align with the EMO's Guide and if answer B was selected, a value of 1 was provided. Answer C received a value of 3 as it showed progress towards alignment and answer D received a value of 6 as it had the most alignment. Answer E received a value of 0 since no indication of alignment is provided. The average of all the answers for Part Three was used to determine the Contextual Factors index values for each health unit and they are displayed in Figure 3: Index values for contextual factors and index values for integration of IMS in health unit emergency management programs. The maximum index value a health unit could receive is 6 and there was one health unit that received this value, the range for this index was calculated to be from 3.25 to 6.
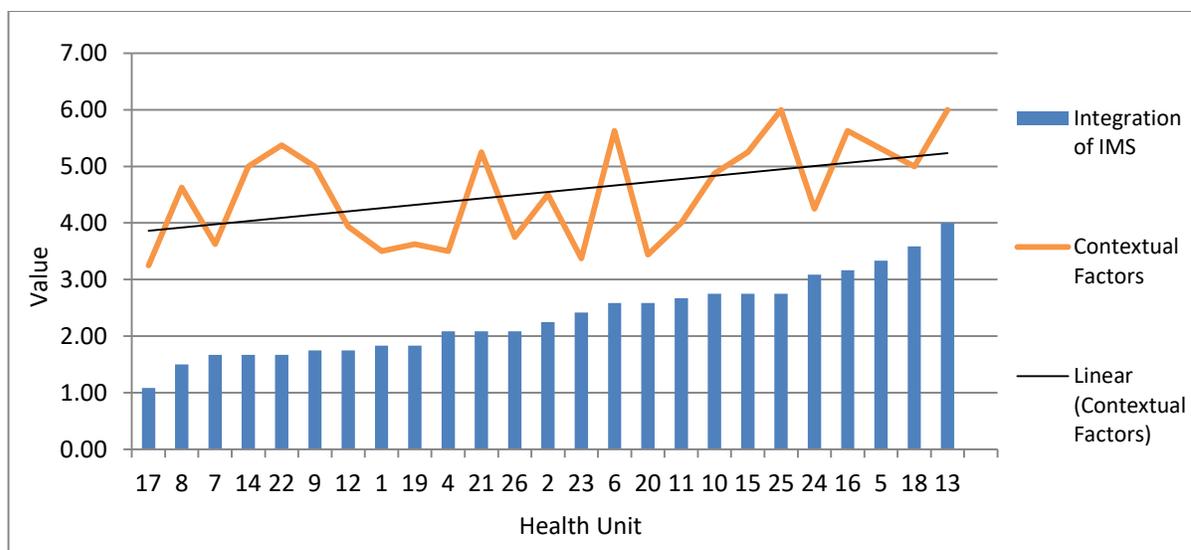
Figure 3: Index values for contextual factors and index values for integration of IMS in health unit emergency management programs

In Part Three of the questionnaire there were eight questions pertaining to contextual factors. There was less variation among the responses provided to these questions as compared to the questions related to change management. Almost all respondents, 96% or 24 of 25 respondents, had both at least one designated instructor to conduct IMS training and IMS training tools or resources available for staff. In addition, 84% of respondents conduct their annual emergency exercise using IMS and the remaining 12% plan on conducting their exercise using IMS this year.

There was one question regarding the provision of IMS training as part of orientation for new staff and 40% of respondents indicated they provide this training as part of orientation while 28% indicated their health units provide only general emergency management training as part of orientation. The remaining 32% either did not provide any emergency training as part of their orientation or it was unknown. Three of the five health units that had the highest index values for integration of IMS (health units 5, 13, 16, 18 and 24), indicated they had IMS training included in the orientation for all new staff and the other

two indicated they had general emergency management training only. Three of the five

heath units that had the lowest index values for integration of IMS (health units 7, 8, 14, 17,

22) did not have emergency management training as part of their orientation. The comments

that were provided for this question demonstrate the diversity of potential responses to this

question including the following:

- "IMS 100 is recommended for all management level staff. New employees are

    provided with a brief orientation to emergency management in our health unit and

    directed to additional resources. The orientation does include our public health IMS

    response structure and some background, but does not include formal IMS training."

- "This is new this year all PH staff will have to take the IMS Health 100 course."

- "Formalized training for IMS is reserved for identified staff within the agency's

    Business Continuity Plan, however within the general training IMS overview is

    provided."

- "In addition to the general emergency management training for new staff, we require

    all non-unionized staff to attend the IMS (basic and functional) training."

- "All managers have completed IMS 100. All staff will be asked to complete the IMS

    100 by the end of September 2016. The IMS 100 will be added to the orientation for

    all new staff."

- "Working towards having this with the online modules from PHO - no buy in with

    management to have IMS 100 as an orientation."

- "In our case, all new MANAGEMENT staff, public health inspectors, and some

    nurses (but not ALL new staff) get the IMS 100 training, and we periodically run the

    PHO IMS for Public Health training as well."

There were two questions pertaining to emergency plans and the annual exercises of

local government stakeholders within the health unit's jurisdiction including local

municipalities, townships, cities etc. For 48% of respondents, at least half or more of their

local government stakeholders had both their plans written in IMS format and their annual

exercises are conducted using IMS. The purpose of these questions was to identify the

potential horizontal and vertical alignment within government structures that health units are

governed under or interact with during emergency preparedness and response activities.

The last two questions were regarding the organizational structure within the health

unit specifically how many staff are assigned to the emergency program within the health

unit. In the question it was assumed that if more than half of the staff person's program

responsibilities were for the emergency management program it would count as one full time

equivalent (FTE) for that program. Only 40% of respondents had at least one FTE

management position assigned to the program. Most respondents (56%) had less than one

FTE management position assigned to the emergency management program. 4% (i.e. one

respondent) had the responsibilities for this program dispersed among a number of

managers/supervisors. Once again, four of the five health units that had the highest index

values for integration of IMS (health units 5, 13, 16, 18 and 24) had at least one FTE

management position assigned to the emergency management program while four of the

five heath units that received the lowest index values for integration of IMS (health units 7, 8,

14, 17, 22) had less than one FTE.

The responses were similar for front-line staff; 48% have at least one FTE, 40% have

less than one FTE and 12% have the responsibilities dispersed among front line staff

throughout the health department. However, there was no discernible difference when

looking at the specific answers for the health units with the highest index values for

integration of IMS with those that had the lowest index values.

There were two open ended questions regarding financing for the emergency management program, specifically if the health units had a dedicated budget for this program or if it was part of the base budget. Twenty three health units responded and it was almost evenly divided: 11 had a dedicated budget while 12 did not.

To examine the relationship between the level of integration of IMS and the change management and contextual factors a closer examination of the five health units that had the highest index values for IMS integration and the five health units with the lowest index values for IMS integration were compared using a t-test[21]. The following hypotheses were tested:

H_1: The five health units with a higher IMS integration index value will have higher contextual factor index values than the five health units with the lower IMS integration index values.

H_0: The five health units with a higher IMS integration index value will have equal or lower contextual factor index values than the five health units with the lower IMS integration index values.

H_1: The five health units with a higher IMS integration index value will have higher change management factor index values than the five health units with the lower IMS integration index values.

H_0: The five health units with a higher IMS integration index value will have equal or lower change management factor index values than the five health units with the lower IMS integration index values.

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[21] O'Sullivan et al., *Research Methods for Public Administrators*, 380.

A one-tailed test was selected because the hypothesis postulated the health units with the higher integration of IMS index values would have the higher contextual and change management factor index values. It is also assumed that the variances in the index values are unequally distributed and an alpha level of 0.05 was selected. The degrees of freedom (*df*) which is the sum of the number of observations in the two samples minus 2, was 8. By using these values and assumptions, a *t*-distribution table was used to find the value required to reject the null hypothesis, which in this case was equal to or greater than 1.86.[22] The calculated *t*-value for change management factors was 0.016 and for contextual factors it was 0.064 both of which are lower than the level required to reject the null hypothesis. One possible issue with using the *t*-test to compare the health units with higher IMS integration index values with the health unis with lower IMS integration index values is the small number of cases (n=10) used to conduct this analysis. There may be differences in the index values however they may not be large enough with such a small sample size to be evident with this calculation.

To test the strength of association between the index values for IMS integration, change management and contextual factors across the entire set of responses a second test of goodness of fit was conducted: *Pearson's r*. A *Pearson's r* equal to 1.00 indicates a direct linear relationship; an *r* equal to -1.00 indicates an inverse linear relationship. An *r* equal to 0.00 designates a null linear relationship and values of *r* between 0.4 and 0.6 seem quite strong.[23] *Pearson's r* was calculated using Excel for both the change management index values and the contextual factors index values and they were found to be 0.50 and 0.51 respectively. The *Pearson's r* values that were calculated indicate that there is a moderate to strong positive relationship between change management factors and integration of IMS and contextual factors and integration of IMS. The coefficient of

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[22] Ibid, 395.

[23] O'Sullivan et al., *Research Methods for Public Administrators*, 436.

determination, r^2 value indicates the proportion of the variance of the dependent variable, in this case integration of IMS, associated with or explained by the independent variable, change management factors and contextual factors.[24] The results of the r^2 values, which were also calculated using Excel, indicate that only 25% and 26% of the variation in integration of IMS in each health unit can be associated to change management factors and contextual factors respectively.

Chapter 6 – Conclusion and Recommendations

The aim of this research report was to attempt to answer the research question: "*What are the factors for successful implementation of the Incident Management System (IMS) into Ontario health unit emergency management programs?*" The following will present a summary of the findings and recommendations that health units and other organizations can use to successfully implement IMS in their emergency management programs.

First, there was a comment provided by a responded that requires mention because it highlights the narrow mandate of the Protocol as it relates to the IMS doctrine in Ontario. The comment provided was:

> "The Ontario Public Health Standards mandate health units to have an Emergency Preparedness program, not an Emergency Management program as referred to in many of the survey's questions. It is important to make this distinction. Often times these terms are used interchangeably however, 'Emergency Preparedness' reflects the emphasis on planning and preparedness, although we also respond to public health emergencies or emergencies with public health impacts."

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[24] Ibid, 436.

The mandate of the Protocol may be focused on preparedness however, as was mentioned in the comment, it is inevitable that all health units will have to also respond to and then recover from public health emergencies. Therefore, although only preparedness may be mandated by the Protocol, it would be impractical for health units to not maintain the other components of an emergency management program. Through the responses provided for this research it was found that health units have been successful in accomplishing the mandated requirements of the Protocol including writing public health emergency plans using IMS format, operating EOCs using IMS and having annual exercises to test the plans. In addition, the levels of preparedness or levels in achieving the requirements of the Protocol were broad and varying across health units as evidenced in some of the comments.

Preparedness has been defined "as the capability of the public health and health-care systems, communities, and individuals to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities…preparedness involves continuous planning and implementation that relies on measuring performance and taking corrective action."[25] Applying this broader definition of preparedness, through a continuous process of implementation and performance measurement health units can move beyond simply planning and move toward successful implementation of IMS. This research paper has addressed a few possible factors that can help lead to this success.

From the comments provided, it was evident the levels of preparedness or levels in achieving the requirements of the Protocol were broad and varying across health units. One limitation of this research was using closed ended questions to attempt to quantify a topic that is very subjective and influenced by many variables while limiting the length of the questionnaire. Nevertheless, the responses and comments provided did allow some

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[25] Gamboa-Maldonado et al., "Building," 2.

conclusions to be made from the analysis. The recommendations for successful

implementation of IMS in health unit emergency management programs are based both on

the results of the analysis of all the responses and on the specific responses from health

units identified as being successful in implementing IMS as compared to the health units that

were identified as being less successful. The factors identified in the successful health units

were used to develop these recommendations:

1. Continue doing what is being done well, which for health units includes achieving
   the mandated requirements of the Protocol and providing training, including tools
   and resources for training.

2. Have a policy requiring IMS to be used to respond to public health incidents or
   emergencies and create a framework for IMS to be easily implemented for minor
   incidents and planned events.

3. Establish achievable objectives to implement IMS into the health unit emergency
   management program and evaluate the effectiveness of the achievement of
   these objectives as they relate to the policy requiring IMS to be used.

4. Include emergency management training and specifically training on IMS in the
   orientation to all new staff.

The first recommendation is to continue doing what is being done well and includes

having public health emergency plans in IMS format, staffing EOCs using an IMS structure,

endorsing IMS formally and informally from all levels of management, conducting exercises

in IMS, providing IMS training, ensuring staff and resources are available for training and

empowering staff to provide the training in-house. All of these factors were identified as

components in EMOs Guide and they also align well with Kotter's eight-stage process to

change management.

The rationale for recommendations 2 to 4 is based on the results of the analysis which demonstrated there is a positive relationship between integration of IMS and the change management and contextual factors investigated. When examining the health units that had the highest index values for integration of IMS compared to those with the lowest there were specific questions where there was a clear diversion in responses and those formed the basis for these recommendations.

By having a policy requiring the use of IMS to respond to public health incidents or emergencies and by creating a framework for IMS to be easily implemented for minor incidents and planned events, it will target a number of the components of EMO's Guide while at the same time ensure the change management process is maintained. Change is a process and "whenever you let up before the job is done, critical momentum can be lost and regression may follow. Until change practices attain a new equilibrium and have been driven into the culture, they can be very fragile."[26] Ensuring the IMS policy is uniformly implemented and ensuring incremental use of IMS will drive the change into the culture of the organization.

Establishing achievable objectives to implement IMS into the emergency management program and evaluating the effectiveness of the achievement of these objectives as they relate to the policy requiring IMS to be used will ensure a continuous process of implementation and performance measurement. Creating achievable objectives will also create the short-term wins necessary to keep the momentum going. "Creating short-term wins is different from hoping for short-term wins."[27] The objectives should be tailored to meet the availability of staff and resources within the individual health units therefore the impacts of other health unit characteristics like size, budget etc. can be minimized. It is

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[26] Kotter, *Leading Change*, 139.
[27] Ibid, 12.

important to ensure the objectives are achievable. "New approaches usually sink into a culture only after it's very clear that they work and are superior to old methods."[28] Failure to achieve the set objectives could slow the implementation of IMS into the health unit emergency management program.

Include emergency management training and specifically training on IMS in the orientation to all new staff. IMS is implemented to provide a consistent, flexible and co-ordinated response therefore all staff should be at least aware of the basic principles of IMS. Providing this information during orientation is important because this is when new employees are introduced to the organizational culture and when the important messages are communicated. Both EMO's Guide and Kotter's change management process emphasise different aspects of communication including, endorsing IMS, raising awareness and communicating the vision. Providing IMS training during orientation will facilitate this communication process and provide new staff with a shared sense of purpose.

The factors for successful implementation of IMS in this research paper were based on EMO's Guide and Kotter's eight-stage process to change management and although the recommendations are tailored to health units, they could easily be applied to any organization intending to implement IMS into their emergency management programs. In addition, as more public organizations implement IMS, the more successful everyone will be at responding to and recovering from incidents and emergencies.

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[28] Ibid, 166.

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Appendix 1 – EMO's Guide to IMS Implementation

Governance:
• Establish a governance structure
• Identify a 'lead' and include all relevant stakeholders

Raise Awareness:
• Ensure staff are aware of IMS and where to access resources

Endorse IMS:
• Issue a statement, resolution, memo, email, etc.

Adopt IMS in Policy, Plans and Procedures:
• Revise relevant policy, plans and procedures to reflect IMS

Support Training:
• Attend courses, nominate participants, designate instructors

Use IMS in Exercises:
• Structure and conduct exercises using IMS concepts

Conduct Operations using IMS:
• Use IMS in responding to real incidents and planned events

Sustainability:
• All of the above will ensure sustainability

Appendix 2 – John P. Kotter's eight-stage process of creating major change

1. Establishing a sense of urgency
2. Creating the guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short-term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Appendix 3 - Questionnaire

The Ontario Public Health Standards and Emergency Management Protocol (protocol), published by the Ministry of Health and Long-Term Care (MOHLTC) set out standards that must be met when delivering public health programs and services including emergency response. According to the protocol the Incident Management System (IMS) is to be used to facilitate the management of public health services to respond to incidents or emergencies with public health impacts. Participation in this survey is voluntary and continuing to participate in the survey will constitute consent.

Part 1 – Integration of the Incident Management System (IMS) in the Health Unit emergency management program

- **For each statement below please select ONE response which best reflects the current status within your health unit** regarding the use of IMS to respond to incidents or emergencies.
  - o If there have been no incidents or emergencies in your health unit that have warranted activating your emergency response plan, in part or in whole, or your emergency operations centre, please select the answer that best reflects the expectations in your health unit.
  - o Additional comments can also be provided after each response if you want to elaborate on your answer.

1. The name of my health unit is: (name of health unit)

2. In my health unit:
   a. There is no written public health emergency response plan
   b. There is a public health emergency response plan but it is <u>not</u> written in IMS format
   c. There is a public health emergency response plan and it is written in IMS format
   d. I prefer not to answer

   Additional Comments:

3. In my health unit:
   a. There is no formal health unit policy requiring IMS to be used to respond to public health incidents or emergencies.
   b. There is a formal health unit policy requiring IMS to be used to respond to public health incidents or emergencies but it is <u>not</u> consistently implemented
   c. There is a formal health unit policy requiring IMS to be used to respond to public health incidents or emergencies and it is consistently implemented
   d. I prefer not to answer

Additional Comments:

4. My health unit responds to specific incidents with public health impacts (adverse water quality response procedures, outbreak response procedures, etc.) by using:
    a. The public health emergency response plan only; there are no procedures to respond to specific incidents
    b. Procedures <u>not</u> written in IMS format to respond to specific incidents
    c. Procedures written in IMS format to respond to specific incidents
    d. I prefer not to answer

    Additional Comments:

5. My health unit responds to minor public health incidents that <u>do not</u> require the public health emergency plan to be activated, in part or in whole by:
    a. Never implementing IMS to respond to minor public health incidents
    b. Sometimes implementing IMS to respond to minor public health incidents
    c. Always implementing IMS to respond to minor public health incidents
    d. I prefer not to answer

    Additional Comments:

6. My health unit responds to planned special events (e.g. large public gatherings for festivals or concerts, etc.) by:
    a. Never implementing IMS to respond to planned special events
    b. Sometimes implementing IMS to respond to planned special events
    c. Always implementing IMS to respond to planned special events
    d. I prefer not to answer

    Additional Comments:

7. My health unit emergency operations centre (EOC) is:
    a. Never staffed using IMS structure
    b. Sometimes staffed using IMS structure
    c. Always staffed using IMS structure
    d. I prefer not to answer

    Additional Comments:

Part 2 – The Change Management Process

For the questions below, please select ONE answer that best reflects your health unit's situation based on your recollection or knowledge from the period between the time the Emergency Management Protocol was published in 2008 until now.

1. Were clear objectives to implement IMS into the health unit emergency management program established?
   a. Unknown or cannot recall
   b. No, objectives to implement IMS were never established
   c. Objectives to implement IMS into my health unit's emergency management program were established but they were not clear
   d. Yes, there were clear objectives established to implement IMS into my health unit's emergency management program
   e. I prefer not to answer

   Additional Comments:

2. Was a formal communication strategy developed to raise awareness among front line staff regarding implementation of IMS in the health unit's emergency management program?
   a. Unknown or cannot recall
   b. A communication strategy was not developed to raise awareness of IMS implementation among front line staff
   c. There was some informal communication regarding IMS implementation to front line staff
   d. There was a formal communication strategy developed to raise awareness of IMS implementation among front line staff
   e. I prefer not to answer

   Additional Comments:

3. Has any senior manager (director level or above) in your health unit clearly endorsed (formally through a memo/presentation, or informally through emails etc.) the requirement to implement IMS within your health unit's emergency management program?
   a. Unknown or cannot recall
   b. No, there was no endorsement from senior management regarding implementing IMS into my health unit's emergency management program
   c. There was some communication from senior management regarding IMS but it was not a clear endorsement to implement it into my health unit's emergency management program
   d. Yes, senior management have clearly endorsed the requirement to implement IMS into my health unit's emergency management program
   e. I prefer not to answer

Additional Comments:

4. Has any mid-level manager (manager, supervisor or team leader) in your health unit endorsed (formally through a memo/presentation, or informally through emails etc.) the requirement to implement IMS within your health unit's emergency management program?
   a. Unknown or cannot recall
   b. There was no endorsement from mid-level management regarding implementing IMS into my health unit's emergency management program
   c. There was some communication from mid-level management regarding IMS but it was not a clear endorsement to implement it into my health unit's emergency management program
   d. Yes, mid-level management have clearly endorsed the requirement to implement IMS into my health unit's emergency management program
   e. I prefer not to answer

   Additional Comments:

5. Was an evaluation or feedback survey ever conducted to determine the effectiveness of the implementation of IMS into the health unit's emergency management program and used to further inform the implementation of IMS?
   a. Unknown of cannot recall
   b. An evaluation survey was never conducted to determine the effectiveness of the implementation of IMS into my health unit emergency management program
   c. A survey was conducted to determine the effectiveness of the implementation of IMS into my health unit's emergency management program, **but** feedback from the survey was not used to further inform the implementation of IMS
   d. Yes, a survey was conducted to determine the effectiveness of the implementation of IMS into my health unit's emergency management program **and** feedback from the survey was used to further inform the implementation of IMS.
   e. I prefer not to answer

   Additional Comments:

Part 3 – The Contextual Factors

1. Does your health unit require emergency management training that includes IMS training (e.g. IMS 100 or an equivalent) as part of orientation for new staff?
   a. Unknown
   b. No, emergency management training is not part of the orientation for new staff
   c. Only general emergency management training is included in the orientation and it does not include any IMS training
   d. Yes, all new staff are required to complete emergency management training that includes IMS training

e. I prefer not to answer

   Additional Comments:

2. Does your health unit have at least one designated instructor to conduct IMS training (i.e. instructors have completed PHO IMS 100 supplemental train the trainer course)?
   a. Unknown
   b. No, there are no designated instructors to conduct IMS training
   c. There are no designated instructors to conduct IMS training at this time **but** there is a plan to have at least one instructor trained by the end of this year
   d. Yes, there is at least one designated instructor to conduct IMS training
   e. I prefer not to answer

   Additional Comments:

3. Does your health unit have IMS training tools or resources (e.g. presentations, learning modules, reading material, etc.) available for staff?
   a. Unknown
   b. No, there are no IMS training tools or resources available for staff
   c. There are no IMS training tools or resources available for staff at this time **but** there is a plan to have some available by the end of this year
   d. Yes, there are IMS training tools or resources available for staff
   e. I prefer not to answer

   Additional Comments:

4. Does your health unit currently conduct their annual emergency exercise using IMS?
   a. Unknown
   b. No, the annual emergency exercise is not conducted using IMS
   c. There has been no emergency exercise conducted using IMS but here is a plan to conduct an annual emergency exercise using IMS this year
   d. Yes, the annual emergency exercise is conducted using IMS
   e. I prefer not to answer

   Additional Comments:

5. Do the local municipalities, townships, cities, etc. located within your health unit's jurisdiction have their emergency plans written in IMS format?
   a. Unknown
   b. No, none of the local municipalities, townships, cities, etc. have their emergency plans written in IMS format

      c.   Less than half of the local municipalities, townships, cities, etc. have their emergency plans written in IMS format

      d.   Yes, half or more of the local municipalities, townships, cities, etc. have their emergency plans written in IMS format

      e.   I prefer not to answer

      Additional Comments:

6. Do the local municipalities, townships, cities, etc. within your health unit's jurisdiction conduct their annual emergency exercises in IMS format?

      a.   Unknown

      b.   No, their annual emergency exercise is not conducted using IMS

      c.   Less than half of the local municipalities, townships, cities, etc. conduct their annual emergency exercise using IMS

      d.   Yes, half or more of the local municipalities, townships, cities, etc. conduct their annual emergency exercise using IMS

      e.   I prefer not to answer

      Additional Comments:

7. How many manager/supervisor full time equivalents (FTEs) does your health unit have assigned to the emergency management program (i.e. at least 50% of their program management responsibilities are for the emergency management program)?

      a.   Unknown

      b.   None, the responsibilities for the emergency management program are dispersed among a number of managers/supervisors throughout the health unit

      c.   Less than one manager/supervisor FTE is assigned to the emergency management program

      d.   At least one or more manager/supervisor FTE is assigned to the emergency management program

      e.   I prefer not to answer

      Additional Comments:

8. How many front line staff full time equivalents (FTEs) does your health unit have assigned to the emergency management program (i.e. at least 50% of their work is for the emergency management program)?

      a.   Unknown

      b.   None, the responsibilities for the emergency management program are dispersed among front line staff throughout the health unit

      c.   Less than one front line staff FTE is assigned to the emergency management program

       d. At least one or more front line staff FTE is assigned to the emergency management program

       e. I prefer not to answer

       Additional Comments:

Open ended questions:

1. Is the budget for the emergency management program in your health unit part of the base budget or there is a dedicated budget for the emergency management program?

2. If there is a dedicated budget for the emergency management program in your health unit, could you provide the amount that is allocated to the program and approximately what percentage that is of the overall health unit budget?

Appendix 4 - Letter of Recruitment and Consent

Western

<u>Letter of Information and Consent</u>

Project Title: Identification of Factors for Successful Implementation of the Incident Management System (IMS) in Ontario Health Unit Emergency Management Programs

Researcher:
Dimitra Kasimos
Masters Student
dkasimos@gmail.com
416-230-1297

Academic Supervisor:
Dr. Carol Agocs
Professor
cagocs@uwo.ca
519-660-8537

This study will attempt to answer the research question: "What are the factors for successful implementation of IMS into Ontario health units' emergency management programs?" I am reaching out to you as the emergency planner for your health unit to participate in this research study to identify the factors that lead to successful implementation of IMS in health unit emergency management programs. Your assistance to complete this short on-line questionnaire is requested and it is expected it will take 15-20 minutes to complete.

The data collected will be health unit specific and no personal information will be collected. Your responses will be on behalf of the health unit you represent and individual responses will not be reported as part of the results. The data will be retained by the researcher on a secure personal lap top for a minimum of 5 years as per regulatory guidelines. All information collected during this study will be kept confidential and will not be shared with anyone outside the study unless required by law. Only representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to study-related records to monitor the conduct of the research.

Completion of this survey will be the indication of your consent to participate and you do not waive any legal rights by consenting to this study. Your participation in this study is completely voluntary and you may withdraw from completing the

questionnaire at any time by closing the link to the questionnaire. The online survey is also formatted to allow skipping of any or all questions. There are no known or anticipated risks associated with participating in this study. If you choose not to participate or to leave the study at any time it will have no effect on your employment. There is no compensation for your participation in this research but you can request a copy of the report after it has been submitted.

If you require more information regarding the research study please contact the researcher, Dimitra Kasimos by email at dkasimos@gmail.com or by telephone at 416-230-1297.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics (519) 661-3036, email: ethics@uwo.ca.

This letter is yours to keep for future reference.

Appendix 5 - Recruitment Email

Subject Line: Invitation to participate in research

Dear Colleagues:

I am collecting data to examine the factors that lead to successful implementation of the Incident Management System in health unit emergency management programs. I am reaching out to you as the emergency planner for your health unit and requesting your assistance to complete the questionnaire. I only require one completed questionnaire for each health unit so it would be greatly appreciated if you could complete the questionnaire or if you prefer to have someone else in your health unit complete it to please forward this email to them on my behalf.

This short on-line questionnaire should only take about 15-20 minutes to complete. A PDF version is also attached if you would like to preview the questions before answering on-line. The data collected will be health unit specific and no personal information will be collected. Your participation in this study is completely voluntary and you may withdraw from completing the questionnaire at any time by closing the link to the questionnaire.

For further information about this research paper or if you have any questions you may contact me at the email below. If you choose to participate in this study, please click on this link: https://www.surveymonkey.com/r/IncidentManagementSystem. This link will remain active until, June 24th, 2016. Completion of this survey will be the indication of your consent to participate.

To request a copy of the report after it has been submitted please send your request by responding to this email.

Thank you for your willingness to participate.

Researcher: Dimitra Kasimos dkasimos@gmail.com

Academic Supervisor: Professor Carol Agocs cagocs@uwo.ca