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Developing a Vermont Nurse Triage Line: A Systems Improvement Project

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Developing a Vermont Nurse Triage Line: A Systems Improvement Project

A Project Presented

by

Andrew Kehl, BS, RN, CCRN

to

The Faculty of the Graduate College

of

The University of Vermont

In Partial Fulfillment of the Requirements
for the Degree of Master of Science
Specializing in Nursing

May 2016

Defense Date: April 28, 2016
Project Examination Committee:
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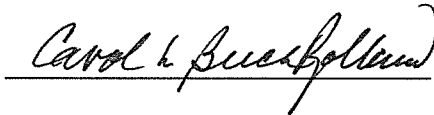
This project for the Master of Science degree by

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has been approved for the

Department of Nursing

by



CNL Project Advisor

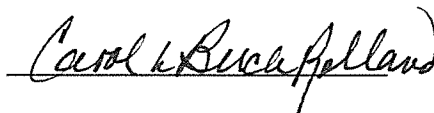


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Abstract

Nurse Triage Lines (NTL) have been utilized since the 1970s as a healthcare service delivery model. The efficacy of their utilization has been proven in non-acute, mainly primary care settings. During the 2009 H1N1 pandemic in the United States, NTLs proved their efficacy in an acute emergency event. The Minnesota FluLine, the exemplar case study, showed a significant reduction in unnecessary healthcare resource utilization as well as a significant economic cost savings.

This project performed an organizational assessment for the Vermont Department of Health () focused on implementing an NTL. Through qualitative semi-structured interviews with key informants, key themes surround the implementation of an NTL were identified utilizing a modified Strengths, Weaknesses, Opportunities, and Threats model. Through quantitative use of economic modeling, a cost savings analysis was performed to explore potential cost savings for Vermont if an NTL had been established during the 2009 H1N1 Pandemic.

Results of this project suggest that there is a need for an NTL. Furthermore, VDH is capable of implementing an NTL. Future projects should focus on operationalizing an NTL and evaluating the process and outcomes.

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Introduction

The public's relationship with infectious diseases has always been tense. From diseases such as Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS) in the 1980s and the more recent Ebola outbreak, fear and misinformation has led the public to initially react with hysteria rather than science. The key to effective management of public health emergency events rests in clear and concise management of communication. This means that the message being sent by public health authorities needs to be unified and provide the public with assurance that the event is being handled effectively by all stakeholders.

In the last 10 years, the public health community has had to respond to and manage a series of virulent and contagious epidemiological emergencies with global implications. Severe Acute Respiratory Syndrome (SARS), Influenza A Virus Subtype H1N1 (H1N1), and Ebola Virus Disease (EVD), has forced public health officials to look at new service delivery methods in order to address the health needs of the public. In the context of the United States, H1N1 serves as an ideal case study on the implementation of a new service delivery model: Nurse Triage Lines (NTL).

During the H1N1 pandemic, NTLs were successfully used in a number of states to provide the public with information specific to their circumstances. NTLs allowed an avenue for the worried well to be reassured by a licensed health care provider. They also provided access to H1N1 health care information to low income and under-insured individuals. NTLs have not only increased public access to health information, but they have worked to reduce the number of patients already using limited medical resources on the local and state levels.

Based on the success of NTLs in other states in the wake of H1N1, the aim of this project was to complete an organizational assessment focused on implementing an NTL within the Vermont Department of Health (VDH). The NTL will be primarily used for dissemination of medical information and services in epidemiological emergencies. The project focused on the public's use of this resource,

and explored the challenges and barriers likely to be encountered with implementing such a delivery model within the state.

Purpose

The purpose of this project was to complete an organizational assessment for what is needed to implement an NTL at VDH for use during public health emergencies.

Specific Objectives

1. Complete an organizational assessment of VDH's current system for disseminating information to the community during public health emergencies.
2. Explore current models being used for NTLs in other states and municipalities.
3. Utilize key informant interviews to understand what stakeholders feel are the most important aspects of an NTL within the Vermont context.
4. Provide key recommendations for implementation.

Cost

Although the implementation of this project's findings will incur significant costs, especially as it pertains to implementing the findings from the organizational assessment, during this phase of the project the costs amounted to \$300.00. This cost was incurred for professional transcription services and was covered by the project director. The work time investment on the part of VDH staff was absorbed as part of their normal responsibilities. The time of the project director was provided at no cost to VDH. No outside funding was expected or used for this initial phase of the project.

Present and Future State

At present, VDH does not maintain an NTL for any of its programmatic activities. Instead, VDH relies on a contract with the statewide "2-1-1" hotline run by the United Way. The line is primarily utilized by VDH in instances where they expect a large influx of calls from the public. The current system is static and provides callers with information from a pre-prepared and approved script related to the

public health emergency at hand and VDH services. If the callers have questions or concerns these are transferred to VDH staff to answer at a later time. Real-time information sharing between the caller and VDH is extremely limited, and more times than not, not available.

The project's overall goal is to enhance VDH's capacity to respond to public concerns during times of public health emergencies. This will allow VDH to improve its communication abilities with the public. Additionally, the NTL will serve to lessen pressures on existing health care resources. Given Vermont's tightly regulated healthcare sector, there is great potential for VDH to partner with hospitals and insurers in the state to set up a system which maximizes positive health outcomes while minimizing costs when the NTL is operational.

Literature Review

Nurse Triage Lines: Historical Perspectives

The application of NTLs in healthcare is not new. NTLs first emerged in the 1970s as a way for large health maintenance organizations (HMOs) to contain cost. As pointed out by Wheeler and Siebelt (1997), these triage lines served as “gatekeepers.” Nurses, rather than more costly physicians, were trained to determine if a covered individual was well enough to manage their care at home or if they needed to see a healthcare provider. Utilizing NTLs allowed HMOs to preform utilization review before services were rendered, rather than after. The anticipated net effect was to decrease unnecessary health care expenses.

The utilization of nurses in a primary assessment role by the Harvard Community Health Plan HMO, in the 1970s is credited with advancing the development of the nursing role in primary triage. According to Bates (1972) the Harvard Community Health Plan had several factors which made it ideal for implementing an NTL. These included; a highly educated nursing staff (mostly prepared at the Bachelors of Science in Nursing or Masters of Science in Nursing level), with specific training on triaging, standing orders and protocols. These factors lead to nurses being able to handle 70 to 80% of in-office visits (N=988) without the need for a medical consult. This freed up the medical staff to take care of the remaining 20 to 30% of office visits. While nurses were triaging these patients in person as opposed to on the phone, the success of the Harvard Community Health Plan proved that nurses could serve in a primary assessment role. This case study demonstrated that nurses could effectively and safely work in a role that had been previously in the sole domain of a doctor.

A study conducted by Katz, Pozen, and Mushlin (1978) of the Columbia Medical Plan demonstrated that the triage role could be expanded to include telephone triaging. In the Katz et al. (1978) study, a non-physician run pediatric triage line found significant improvements in the delivery of health care. Pediatric Health Assistants (PHAs) were able to manage 30% of callers independently. The

PHAs were non-licensed health assistants working under the delegated authority of the physician. Additionally, 18% of callers were able to be managed over the phone by a pediatric provider. Combined, the triage line kept 48% of callers out of the office through in home management (N=2520). In follow-up surveys with callers (n=247), 90% reported satisfaction with the triage line and 92% reported resolution of symptoms.

As the efficacy of the NTLs gained traction, it was a natural progression for the application to move into other healthcare specialty areas. One of the first uses of an NTL in an emergent care setting occurred at the Hospital for Sick Children in Toronto, Canada (Shah, Egan, & Bain, 1980). The implementation of a Medical Information Center (an NTL) resulted in a reduction in overall emergency visits. Over the course of the study time frame, Emergency Department (ED) visits decreased from 15,942 between 1975 and 1976 to 14,507 between 1977 and 1978 ($\chi^2 = 2.2, P > 0.05$). Of the 1,227 callers classified with acute illnesses surveyed (N = 4,052), over 50% of these callers were able to be managed at home with the advice of nurses.

Simultaneously with the Hospital for Sick Children in Toronto implementation of the Medical Information Center, Boston implemented a triage line out of necessity during the 1978 blizzard (Hargreaves, Krell, Blakeney, & Ryan, 1979). A need to care for homebound individuals was the initial mechanism that sparked the development of a triage line. This line worked to manage individuals in their homes in order to reserve hospital resources for the emergent cases. Although not solely a nurse managed triage line, the successful implementation of this triage line, provided some of the first evidence of the effective use of triage lines during a disaster. Specifically, the Boston study showed that triage lines could be used during times of unanticipated utilization of finite healthcare resources.

Nurse Triage Lines and the Pandemic Flu

While NTLs have been utilized successfully by hospitals and health insurance providers, only recently have these lines been utilized by public health agencies. Prompted by the H1N1 pandemic in

2009, the Centers for Disease Control (CDC) in conjunction with the Association of State and Territorial Health Officials (ASTHO) and the National Association of County and City Health Officials (NACCHO) began to advance the development of NTLs in September 2011 (*The Nurse Triage Line Mid-Term Report*, (2013)). The CDC's initiative came about primarily from the successes of the Minnesota Department of Health (MDH) which implemented the Minnesota FluLine during the 2009 H1N1 pandemic. Minnesota FluLine's successes currently provide other states with a template from which to develop their own NTLs.

The original impetus for starting the Minnesota FluLine was based on several factors within the state which included: 1) Health care facilities in the state experienced a surge in both symptomatic and worried-well patients, leading to scarcity in resources to treat those patients (i.e. PPE gear, medications etc.) as well as increased risk of disease transmission; 2) Rapid access to antivirals became a challenge in light of strapped health care resources; 3) The worried-well had limited options for health care information and added to the patient surges seen at healthcare facilities; and lastly, 4) The uninsured/underinsured had limited access to treatment for H1N1 due primarily to cost barriers (Spaulding, Radi, Macleod, Lynfield, Larson, Hyde, Dehnel, Acomb, & DeVries, 2012).

With these findings in mind, the Minnesota FluLine was developed to:

"1. Decrease public confusion by providing accurate information, consistent messaging, and assistance, including use of antiviral medications; 2. Decrease the spread of disease by reducing the volume of sick individuals gathering in health-care settings; 3. Reduce medical surge on the HCS (health care system) to ensure that other priority medical needs would continue to be met; and 4. Meet the needs of uninsured or underinsured patients, and those without easy access to health care" (Spaulding et al., 2012, p. 533).

The Minnesota FluLine by all measures was extremely successful in accomplishing its goals. During the implementation, 27,391 calls were received. Of these calls approximately 20% of the callers (n=6,094) ended the call after listening to the initial pre-recorded information. Another 20% of the callers (n=6,160) entered into the Minnesota FluLine nurse protocol and 97% of those individuals

completed the protocol (n=5,949). The balance of the callers had either non-flu related questions or sought information only. It is estimated that the Minnesota FluLine prevented 10,998 unnecessary visits to health care facilities (Spaulding et al., 2012).

In addition to reducing medical surge and preserving healthcare resources for the truly sick and injured, the Minnesota FluLine proved to be a cost effective and well received tool for addressing the H1N1 pandemic. Satisfaction rates with the service ranged from 50% (these individuals did not complete the protocol) to 89-91% (these individuals completed the protocol). Cost per call was \$12.09 per call (Spaulding, Radi, Macleod, Lynfield, Larson, Hyduke, Dehnel, & DeVries, 2013). These objective measures provide clear utility in further developing NTLs in other states and for a broader range of potential public health emergencies.

While the Minnesota FluLine provided the exemplar for NTLs in much of the literature, it should be noted that other municipalities (both local and state) had established similar triage lines to address H1N1. Each triage line had slight variations and differences and can be broadly broken down into three levels of service; information only, nurse advice only, and nurse advice with ability to prescribe antivirals ("Role of Flu Information and Triage Lines," 2012). Each model presented its own set of intended outcomes as well as challenges.

Public Health Information Line Models

The NTL is just one component of Public Health Information Lines. *The Nurse Triage Line Mid-Term Report* (2013) has provided extensive detail into each model explained below. These lines can be categorized into three models. In any of the three models a distinguishing feature is the use of a dedicated central hotline and call takers. The simplest model is information only (*Chart 1*). In the information only model, callers hear either a pre-recorded message or interactive recordings. Interactive recordings allow organizations a level of customization by providing information to target specific populations (i.e. “For English press 1, for Spanish press 2”). Both the Rocky Mountain Poison Control Center and the New Jersey Department of Health serve as prototypes for this type of model. In one case live screeners are used to provide health care provider referrals. In the other case live screeners are used to direct callers to either public or government health care resources

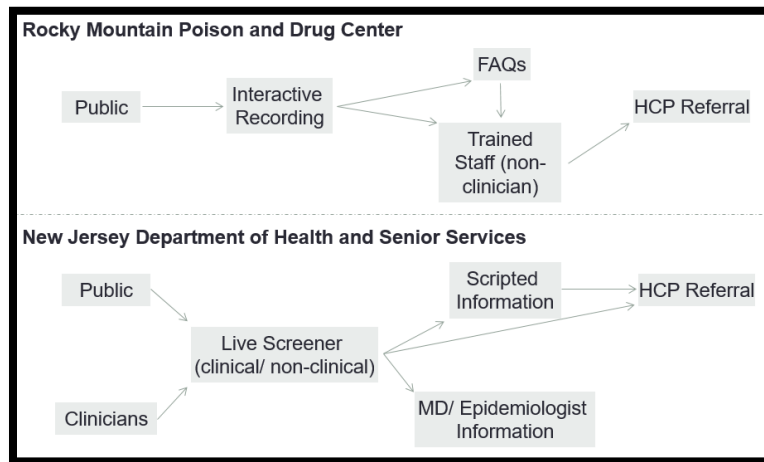


Chart 1 – Information only model. System is reliant on recorded messages and primarily non-clinical call takers.

The second model adds the component of an NTL to an information only line. The differentiation here is that the NTL component is staffed by clinical providers who can provide advice specific to the callers’ circumstances (*Chart 3*). This is done within the guidelines of the State’s Nursing Practice Act as well as utilizing physician approved protocols. Although called an NTL, clinical providers are not necessarily all nurses. Thus, physician approved protocols allow for not only standardization

with the health care advice given, but flexibility to be used by a wide variety of healthcare providers. The New York City FluLine serves as the prototype for this model. The added value here is that the recommendations being made are tailored to the individual. This potentially reduces false healthcare provider referrals.

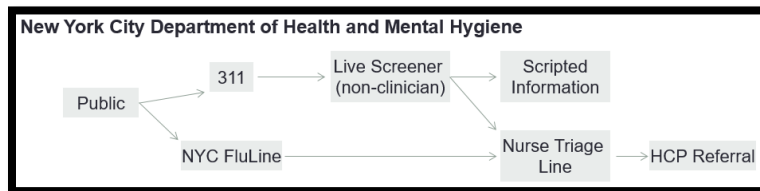


Chart 2 – System utilizes non-clinical screeners who then triage callers with clinical question to an NTL. Those answering the NTL may not be nurses but are clinical providers who can offer an additional layer screening for appropriateness to seek care from a healthcare provider.

The last model is the most complex. In addition to an information and NTL component, the last model adds the ability to dispense antivirals over the phone (Chart 3). The antivirals are prescribed by clinical providers utilizing protocol-driven standing orders. If a caller meets the criteria, a prescription is called in to the pharmacy for them. The prescription is paid through the caller’s insurance or through state funds. This systems has the most potential to keep the symptomatic but not acutely sick at home, as they are able to get access to prescription medications. When thinking about reducing the possibility of transmission of disease this system also has the potentially highest impact. It is also the most difficult system to establish as it has many organizational and logistical components. The Minnesota FluLine serves as the prototype for this type of system.

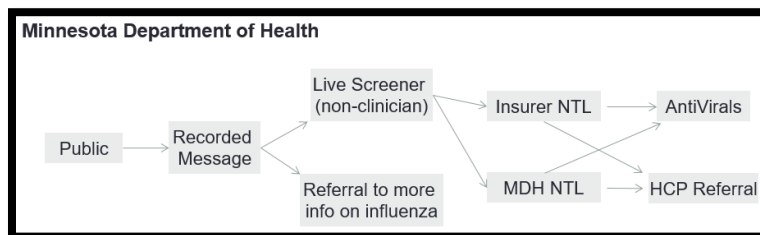
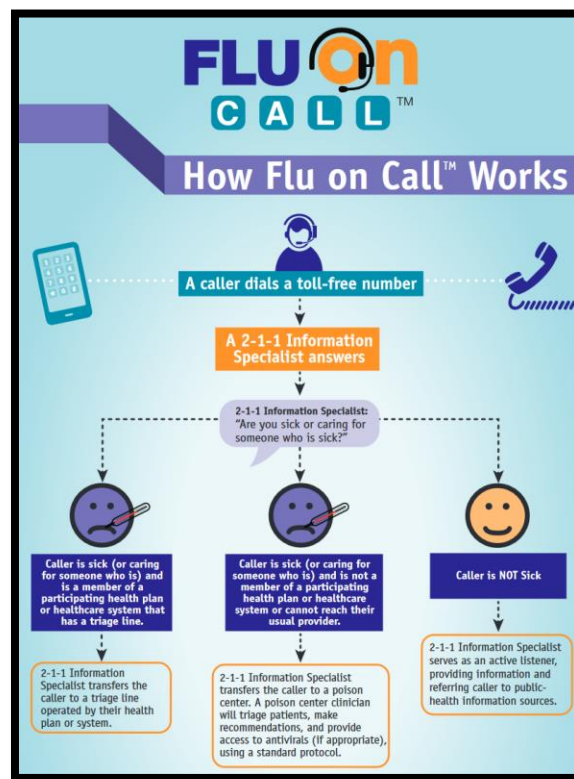


Chart 3 – The most logistical complex and potentially highest impact model. Through a private and state run NTL callers are able to access antiviral prescriptions if they meet certain guidelines.

As a result of the success of the Minnesota FluLine, the CDC has spearheaded efforts to create a nationwide Flu On Call™ system (*Graphic 1*). The system borrows from many of the best practices of the Minnesota FluLine, but decentralizes the workload amongst key partners. Existing telecommunications infrastructure such as 2-1-1 is responsible for primary triage of calls. Through partnerships between local and state public health agencies and private health insurers, NTLs in place with protocols to dispense antivirals have been established. Insured individuals are directed to their insurer's NTL. A safety net through partnerships with Poison Control Centers would be available (Koonin & Hanfling, 2013). Currently, Flu On Call™ is active and growing nationwide after being piloted in 15 states in 2014 ("Flu on Call™ 2014 pilot sites," 2014).



Graphic 1 – Starting in 2014, the CCDC in conjunction with local and state partners has piloted Flu On Call™.

The Role of the Clinical Nurse Leader

Despite the bountiful and robust research surrounding nurses in a public health role, as a newly established role in the nursing profession, the role of the Clinical Nurse Leader (CNL) in public health is not well researched. In fact, the current literature includes only one case study which examined the role of a CNL within the Alabama Department of Public Health. In this case study, Shipman, Stanton, Hankins, and Odom-Bartel (2013) found that the advanced generalist training provided to CNLs makes them particularly suited to carrying out public health projects. Skills such as being able to evaluate outcomes at the point of care, managing data and information, and being able to promote performance improvements, were all strengths of the CNL. While the role of the CNL in public health is not yet widely published in the literature, the current project specifically utilizes seven of the American Association of Colleges of Nursing (AACN) CNL core competencies. These seven CNL core competencies guided the current project in the following ways:

AACN CNL Competency (<i>Competencies and curricular expectations for Clinical Nurse Leader education and practice, 2013</i>)	Rationale
Clinical leadership for patient-care practices and delivery, including the design, coordination, and evaluation of care for individuals, families, groups, and populations;	The project had statewide implications in the delivery of healthcare information to laypersons in Vermont. Given the potential reach of this project, strong clinical leadership was important to the success of this population health project.
Participation in identification and collection of care outcomes; Accountability for evaluation and improvement of point-of-care outcomes, including the synthesis of data and other evidence to evaluate and achieve optimal outcomes	The project utilized qualitative methods to assess VDH's ability to respond to request for information from laypersons during a public health emergency. Synthesis and analysis of this high importance data was conducted using a modified version of the Strengths, Weaknesses, Opportunities and Threats (SWOT) analytical framework. This allowed the use of the best analytical tool despite the fact that this tool is not normally used in point of care health care decisions.
Design and implementation of evidence-based practice(s) (EBP);	EBP, primarily from the published experiences of other states, was utilized to guide the development of this project.

<p>Team leadership, management and collaboration with other health professional team members;</p> <p>Stewardship and leveraging of human, environmental, and material resources; and,</p>	<p>The success of the NTL, and by default this project, rest on the collaborative effort of all stakeholders and potential users. Central to successful collaborative effort is strong team leadership, management, and resource utilization (human resources as well as material resources).</p>
<p>Information management or the use of information systems and technologies to improve healthcare outcomes.</p>	<p>A primary goal of this project was to streamline and improve the public information system utilized by VDH for public health emergencies. The current system, through “2-1-1,” has been deemed ineffective.</p>

Methods

The organizational assessment was completed utilizing qualitative research methods. Specifically, key stakeholders were identified and interviewed using semi-structured interviews. Stakeholders were identified with the assistance of project mentor Margaret Wilson, MPH, BSN, RN. Selection criteria for stakeholders focused on their subject-matter expertise as it applied to this project. Within VDH, the following stakeholders were identified and interviewed:

1. Chip Deasy, BA, OPHP Emergency Preparedness Chief
2. Max Kennedy, BA, Strategic National Stockpile Coordinator
3. Patsy Kelso, PhD, State Epidemiologist for Infectious Disease
4. Allison Reagan, MS, Director of the Office of Local Health Access
5. Nancy Erickson, Communications Director

Additionally, Margaret Wilson, MPH, BSN, RN, Project Mentor, and MaryEllen Mendl, BS, Executive Director of Vermont 2-1-1 provided perspective at various times throughout this project. Formal interviews were not conducted with these two professionals.

Institutional Review Board Approval (IRB)

In fulfillment of University of Vermont requirements, approval for this project was sought through UVM's Human Subjects Research-Institutional Review Boards (IRB) prior to initiating the project. Specifically, the "Not Research Determination" form was completed, and reviewed by the Faculty Advisor. On July 1, 2015, the project received IRB approved (*Appendix A*). VDH did not require separate approval as this project fell under the quality improvement category, not the research category.

Research Disclosure

Prior to conducting any interviews the identified interviewees were informed of the purpose of this quality improvement project via email. They were provided a copy of the University of Vermont IRB

certification for this project. The following was also explicitly stated: The project director could not guarantee that their identities or responses would be shielded from identification. All efforts would be made by the project director to limit the use of identifying information; the participants were under no obligation to answer any questions asked and could stop the interview at any time for any reason; and the participants were participating in this interview in their roles as VDH employees. After agreeing to the interview, verbal consent for recording was obtained.

Interview Design

Semi-structured interviews were conducted separately in one session of approximately one hour between July and November of 2015 at VDH (*Appendix B*). The session was broken into three sections. The first section consisted of ten questions that all participants were asked. These questions focused on gaining an understanding of the interviewee's knowledge as it pertained to the current system(s) in place for VDH to communicate with the public during a public health emergency.

In the second section, participants were introduced to the concept of the NTL through a short presentation. The presentation was largely developed from the information extrapolated from the Association of State and Territorial Health Officials and National Association of County and City Health Officials 2012's *Preliminary Report on the Role of Flu Information and Triage Lines in Reducing Surge in Healthcare Facilities and Increasing Access to Antiviral Medication During the 2009 H1N1 Pandemic*. The purpose of the presentation was to provide a framework and background for the third section of the interview. As needed, throughout this presentation, the project director answered questions.

The third section of the interview consisted of six to ten questions which were specific to the content and subject matter expertise of the individual interviewee. The purpose of these questions was to assess the applicability of an NTL system at VDH. This included understanding the logistics that would be involved in order to setup NTL. Moreover this last section sought to understand how an NTL may improve upon VDH's current communication systems during public health emergencies.

Prepared questions (Appendix B) guided the interviews. The prepared questions were developed in consultation with the Project Mentor. Throughout the interviews clarifying and follow up questions were asked by the project director. The additional question focused on clarifying responses or better understanding the views of the interviewee as it pertained to an NTL. Each interview was audio recorded with the prior consent of the interviewee. Additionally, the project director took written notes.

Data Analysis

A transcript of each completed interview was prepared. Transcripts were created with the assistance of a professional transcriptionist. All transcripts were reviewed by the project director to ensure data integrity. Transcripts were analyzed for common themes as well as content and subject matter expertise of each interviewee. Both group and individual themes were recorded. Using the analytical frame work of a modified Strengths, Weakness, Opportunities, and Threats (SWOT) Analysis, the themes were grouped into strengths, weaknesses, opportunities, and threats. Findings from the modified SWOT Analysis served as the basis for final recommendation to VDH.

Modified SWOT Analysis Framework

<i>Internal Factors</i>	
<p><i>Strengths</i> <i>Define: Structures in place that are working and should be kept. These structures support further development of the project.</i></p>	<p><i>Weaknesses</i> <i>Define: Structures in place that warrant change due to inefficiency. This structures can hinder further development of the project</i></p>
<p><i>Opportunities</i> <i>Define: Areas where collaboration may increase project efficiency.</i></p>	<p><i>Threats</i> <i>Define: Factors which if not addressed could derail the project's goal.</i></p>
<i>External Factors</i>	

Figure 1 – Visual representation of project’s modified SWOT Analysis framework

Utilizing the work of Wehrich (1982), the project director created a modified SWOT Analysis (Figure 1) applicable for analyzing the qualitative data from this project. The purpose was to tie themes

to the organizational structure(s) most affected. Strengths and weakness were noted as being factors internal to the organization. That is, the organization could address these factors. Opportunities and threats were noted as being factors external to the organization. Changes to these factors relied on other variables that the organization could not entirely control.

Economic Analysis

To understand the potential economic benefits of implementing an NTL in Vermont, several datasets were researched. These data sets all came from the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality. Specifically the Medical Expenditure Panel Survey, Nationwide Inpatient Sample, Nationwide Emergency Department Sample (NEDS) and State Emergency Department Databases (SEDD) databases were explored for both average cost of treatment by service type as well as number of patients treated for Influenza (ICD-9 Code 487). This information served as the basis for a basic correlation model to explore how Vermont would benefit economically from an NTL. The data sets were centered on the 2008-2009 reporting year to align with the available financial data for the Minnesota FluLine.

Results

The qualitative semi-structured interviews provided significant insight into how an NTL might impact VDH and vice versa. Many of the themes that emerged were commonly shared by several and in some case all interviews. While shared themes allowed for validation of the ideas expressed, individual themes were equally important. Individual themes were derived from the interviewee's experiences specific to their program responsibility area.

Strengths

Institutionalized process for public communications approval

The Communications Department has a clearly defined role that is understood well throughout the organization. The heads of the Epidemiology, Emergency Preparedness and Local Health Access all agreed that the Communications Department served as the organization's main method for approving all information going to the general public. While there was no clear flow as to how a document gets approved, during the process of developing the document members of the Communications Department are heavily involved. Their involvement is dependent on the needs of the each department and may include content development, editorial services, or just approval:

"...the communications group writes them [press releases] with input from us.....we then work with Communications to make sure it's reading level appropriate and looks nice, and then we get it printed."

VDH has built a solid structure for the approval of public communications. This is evident as staff recognize the role of the Communications Department. Processes within each department have been tailored to include and utilize the Communications Department. This includes implementing fail-safes which catch public communications that have not been approved before they go out to the public.

"..wherever it [the public communication release] may be coming from – it has automatically gone through Nancy Erikssen's Communications Department.....We have a method of checking whether or not it's gone through there, and if it hasn't we re-loop it back though Communications."

In the role of gate keeper of public information, the Communications Department serves to ensure accuracy of information. A consistent and accurate message is needed. In an NTL, the responsibility for information dissemination is distributed from a few staff, to ten or even hundreds of staff. Having more people involved with information dissemination can lead to mixed messages being sent. Utilizing a gate keeper as VDH has done, can alleviate the potential for mixed messages being sent.

Strong partnerships with 2-1-1

The relationship between VDH and 2-1-1 is strong. Currently, 2-1-1 serves as a communication resource for VDH. 2-1-1 is utilized by VDH to serve as an information resource center for programmatic activities as well as to handle public inquires during public health events. While acknowledging 2-1-1's limitation as an information only resource, there is strong sentiment within VDH that 2-1-1 is a valuable and useful resource.

"They have always been very flexible for us and accommodating of our requests."

"I am satisfied with their level of service."

Additionally, there appears to be a clear information flow process between VDH and 2-1-1. On 2-1-1's end, those working in the Contact Center are trained in how to utilize VDH website for information. Additionally, VDH and 2-1-1 have established a clear information flow process during times when public health information may be rapidly changing. In this way 2-1-1 serves to enhance VDH's ability to communicate with the public.

"My understanding of how that works is communications group – Nancy Erikssen's group sends them information, tells them specific web pages of ours to refer to or gives them talking points or specific fact sheets."

"So the Health Department is very well connected to 2-1-1.....so we always give them the alerts, and in fact, we copy them on all of our news releases and that sort of thing so that they're aware of what's happening."

“Nancy is typically the public – or one of Nancy’s staff -- is acting as Public Information Officer in there [the Emergency Operations Center during an event]. Or they may be – and I know they do also – the 2-1-1 folks that are actually talking right through the Joint Information Center, which Nancy’s folks are a part of also. So it all comes back together again.”

Currently 2-1-1 is meeting their contractual obligations and VDH appears satisfied with the services being offered. Between the Communications Department and 2-1-1 updates are provided on a daily basis. During times of public health events, 2-1-1 is able to accommodate the needs of VDH. This includes being receptive and open to receiving more than once daily updates as a public health event evolves. While it is clear that there is a strong working relationship, the relationship could be enhanced. Ways in which the relationship could be enhanced are discussed further in the weaknesses and opportunities sections.

Weakness

Internal buy-in for an NTL may be lacking

Although VDH has identified the development of an NTL as a top priority, buy-in for the project is not universal. A lack of strong buy-in may be indicative of perceived or actual challenges to making an NTL a reality. These perceived or actual challenges are described below. Outside of implementation challenges, there appeared to be disagreement as to whether an NTL is needed. A key theme that was mentioned was the potential of duplicating services. In one instance it was felt that Public Health Nurses are already doing the work of an NTL.

“So the nurse triage line is pretty much staff in the district offices; the nurses in the district offices that are answering those questions. If there was a central system, one would wonder how much tripping over – there is the expertise already there. So the question is, where do you want the expertise. Because we’re really one organization.”

In addition to the sentiment that VDH is already doing the work of the NTL, hesitation to pursuing an NTL was centered on whether or not other organizations in the state had an NTL. If so, VDH may not need its own version but could augment what is already available.

“Because if there are going to be things like a UVM [Medical Center] nurse triage line, then how do we either take advantage of that or piggyback on that or not get in the way of that?”

“Yeah, like Blue Cross/Blue Shield must do something during flu season. So what do they do? And what about the State employee – like what about Express Scripts? Do they have one. There’s probably lots of other entities that have them”.

Limited to no surge capacity for public communications

Currently, there are some conflicting beliefs when it comes to VDH’s ability to scale up its staffing levels for public communications during events. These beliefs fall into three categories: a surge capacity does exist, a limited surge capacity exists, and no surge capacity exists. In all contexts, the current surge capacity relies on internal VDH resources.

“Well, we don’t have the surge capacity, so we use 2-1-1”

“All I can really say is that there’s a system in place for that. But what the capacity is and does it meet the public’s need, I can’t answer the question because it’s not a role that I’m involved with.”

“I think one of the difficulties with providing a call-in line is trying to find staff to man it. That’s always been a challenge. We’ve talked about doing that in the past, even when it has been to answer questions for health care providers, health care professionals. But even that has been difficult, to try to find out a way to staff it with the number of people that we have available and the work that they’re already doing.”

While there is debate as to what VDH’s surge capacity is, there is general agreement that staff create work arounds with the existing human resources. This is done within departments as well as between departments. These work arounds typically require staff to dedicate their energy away from their regular job functions and focus attention on the event at hand.

“Specifically what we’ve done in the past is bring public health nurses from some of the district offices to sit here in central office during really busy times, like H1N1 or a big outbreak, and we’ve had help to take public calls. So if we’re getting a lot of calls here, we have additional public health nurses from a district or two each day assigned to come here and be in central office and help answer those calls.”

“I know we have three or four people in our division that are trained to be able to switch out and cover each other on the phones. So I mean we can keep that going, and we have multiple phone lines coming into our divisions and so on.”

It was noted that during the H1N1 event, VDH resorted to hiring two temporary Public Health Nurses to augment staff. This is not a practice normally utilized. It was utilized specifically for the 2009 H1N1 event. As VDH currently does not regularly utilize temporary staff for public health events, VDH's surge capacity is extremely limited. Rather than relying on additional human resources, VDH resorts to redeploying current staff.

Within VDH, 2-1-1 has an unclear role

While 2-1-1 is well known and has a strong relationship with VDH, its role within VDH remains unclear. A contributing factor for this is the fact that there does not appear to be a unified agreement as to when 2-1-1 is most useful. On the topic of 2-1-1 use during the 2009 H1N1 event, conflicting sentiment was shared:

"I don't believe that they're handling a lot of public health type calls, and that's not their fault. It's just people don't think to call 2-1-1 for that."

The same official went on to state:

"I think – I'm trying to remember back – there was enough of that at the beginning that we really pushed 2-1-1 – I mean pushed that as a number to call."

The push to call 2-1-1 was prompted by departments in VDH stating they were overwhelmed with phone calls. If individuals are not immediately thinking that 2-1-1 is a Public Health resource, why would they call 2-1-1 during an actual emergency? This is a question that needs to be answered for the project to be successful.

Another area of role confusion tackles the issue of how 2-1-1 is integrated into VDH organization. While there is general agreement in VDH that 2-1-1 is an information and referral line, the ways in which 2-1-1 interacts with VDH are not clear.

"I guess maybe it's not appropriate because if people are calling the Health Department, would we want to refer them to 2-1-1. But maybe, if they just want general information. And then if they had specific information that 2-1-1 couldn't answer, 2-1-1 could refer them back here to a specific part of the Health Department."

Opportunities

Coordinate VDH's public communication methods

VDH currently has various methods for communicating to outside stake holders. The effectiveness of these methods has not been fully studied. There is no consensus as to whether or not current communications are effective. Those interviewed shared:

"If I think about different types I think there's always a complaint that they're getting conflicting information from different sources. I think also we are often not – we don't use clear enough English."

"I mean we – when we have an issue, like when we find EEE (Eastern Equine Encephalitis) or West Nile in mosquitoes, we do a press release and I might do some interviews or go on The 30 Live or something, but you never know how many people are seeing it and how many people are actually – how many people you're actually reaching with the message."

The success of an NTL is partly due to an effective communication strategy. A key item missing from the current communication strategy is the ability to measure how successful public health emergency/ event information is reaching the public. Strengthening the current system in place to reach out to the public and adding the ability to measure effectiveness could help to establish when an NTL should be activated.

Address a gap in the public communication Strategy

One interviewee felt that there was a gap in the public communication strategy of VDH. This gap allowed for information to flow to the public, but not for information request to flow back to VDH.

"Sure. Well, I think one of our strengths is our ability to communicate going out to the public. But there isn't a very great method for the public to be able to request additional information, to call in, to get those kinds of questions answered."

The NTL adequately addresses this noted gap. In addition to providing information, what distinguishes an NTL is the ability to ask questions specific to a caller's individual health circumstance.

Utilization of non-VDH staff

VDH is constantly under fiscal constraint pressures. These pressures limit the ability to increase human resource capacity during an emergency. Public Health emergencies and events are unpredictable, therefore budgeting yearly for anticipated human resources is nearly impossible. These budgetary constraints have been noted. One interviewee shared:

“I think one of the difficulties with providing a call-in line is trying to find staff to man it. That’s always been a challenge. We’ve talked about doing that in the past, even when it has been to answer questions for health care providers, health care professionals. But even that has been difficult, to try to find out a way to staff it with the number of people that we have available and the work that they’re already doing.”

Opportunity however exist by tapping into the volunteer human resource assets of VDH. These volunteers have already been vetted and credentialed by VDH.

“So right. We want to be able to utilize them in public-facing position. And we’ve done that before. We did it most recently with the pertussis response. So that was good to be able to call upon those volunteers, and we want to be able to continue to build that kind of model.

I’d like to see it incorporated into the planning and sort of HOC (Health Operations Center) considerations and would like to be able to actually call on the volunteer group that we have now in place. And that would have – had we had such a system in place, we could have used it during the TB (Tuberculosis) [emergency].”

A key requirement to the integration of volunteers into an NTL is training.

“But we’d need to figure out a training system for the volunteers and then test it out and have a protocol in place about how you would activate it.”

Utilization of these volunteers may help to address the lack of human resource capital. By having already vetted volunteers, trainings could be developed for those in clinical as well as non-clinical support roles. Semi-annual trainings could be held to keep volunteers up to date on the technical and operational aspects of the NTL. For each activation of the NTL “just in time” training would be needed regardless of whether the person was a VDH employee or volunteer.

Build upon current external relationship (2-1-1)

VDH has strong relationships and partners with numerous organizations across the state. In terms of communications, VDH has a strong relationship with the United Way 2-1-1 Hotline. A contract exists and 2-1-1 is utilized by VDH as referral line for its many services. During a public emergency 2-1-1 is easily able to get information from VDH for public dissemination.

“We have a representative at the State Emergency Operation Center that’s there to represent the Health Department, the Health & Medical Services and we sit right next to the folks from Vermont 2-1-1. So as close as Max is to me right now, we can just talk about how’s things going in the 2-1-1 room, what kind of questions are you getting, what do you need answers to, and we can usually provide them information very quickly that way.”

“We’ve been able to use 2-1-1 during any emergency and they’re already set up to – they’re very well trained and set up to take calls from the public and direct people to all manner of resources.”

A natural approach for implementing an NTL would be to expand the partnership already in place with 2-1-1. As noted, systems are already in place to transmit information to 2-1-1. Trained 2-1-1 call takers could answer the initial calls from the public while VDH mobilized its own (paid and volunteer) resources. Lastly, 2-1-1 has the infrastructure in place to operate a call center. This includes Voice-Over IP services that can be implemented anywhere there is an internet connection.

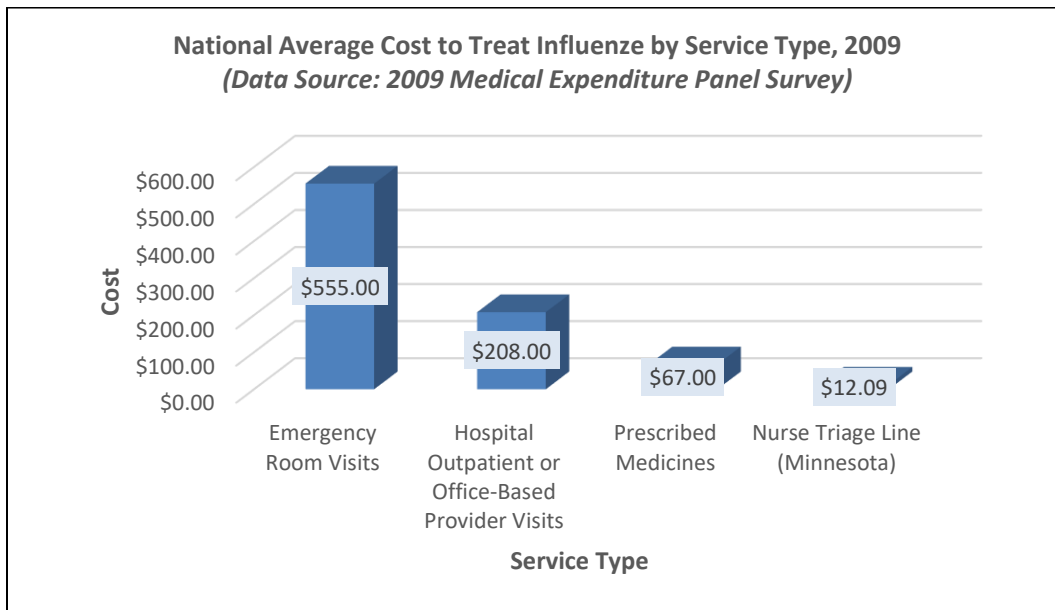
Threats

The greatest threat to implementing an NTL appears to be a lack of funding. Given the current funding structure of VDH it is unlikely that an NTL could be funded out of the general fund. Further development of an NTL would require grant funding. This funding can be tenuous and is highly dependent upon yearly funding goals. Maximizing the current 2-1-1 contract, as well as mobilizing the current volunteer resources of VDH may be a way to minimize costs while still allowing this project to

move forward. It should be noted that initial costs for developing an NTL, would be total or partially absorbed by the potential cost savings examined below.

Economic Analysis

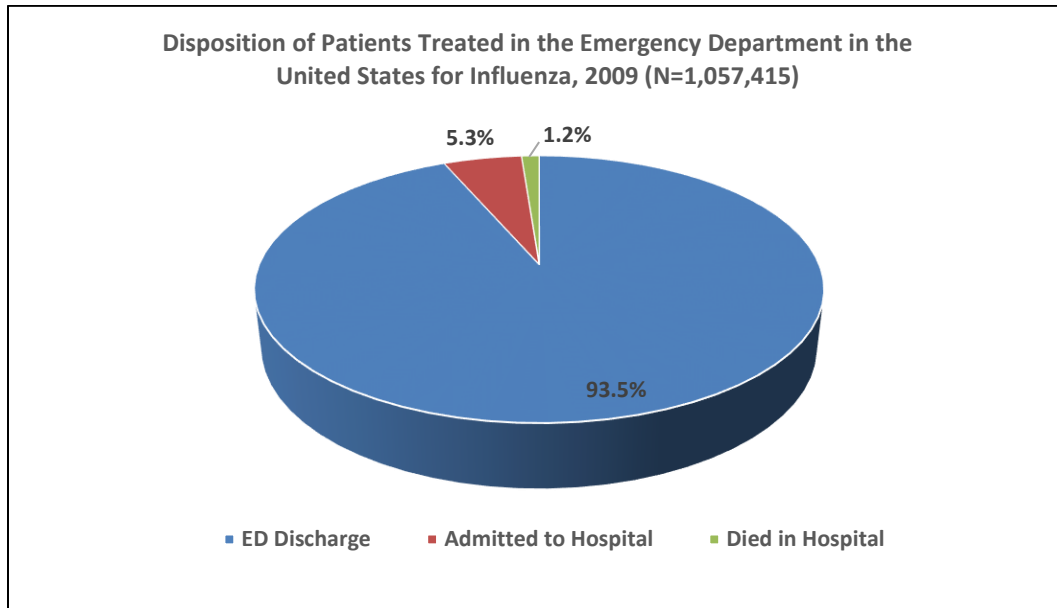
In 2009, medical expenditures for Influenza-like illness (ILI) totaled \$2.93 billion dollars according to the Medical Expenditure Panel Survey. This total accounted for the cost of inpatient hospital treatment (47.1%), Hospital Outpatient or Office-Based Provider Visits (33.9%), Emergency Room Visits (10.5%) and Prescribed Medicines (8.5%). Specifically, this project aimed to tackle the cost associated with hospital outpatient or office-based provider visits and Emergency Room visits. In 2009, the cost of these two services totaled \$1.3098 billion.



Graph 1 – Comparison of average per person national cost related to the treatment of Influenza-like illness as compared to cost per call on the Minnesota FluLine (Mean expenses per person with care for selected conditions by type of service: United States, 2009; Spaulding et al., 2012).

Nationwide the cost for seeing a provider for an Influenza-like illness in an outpatient or emergent care setting averaged \$208.00 to \$555.55 per person treated. While the prescribed medication amount averaged to \$67.00, this amount is most likely in addition to a fee paid to provider to write the prescription. In stark contrast, the Minnesota FluLine was able to handle calls at a cost of

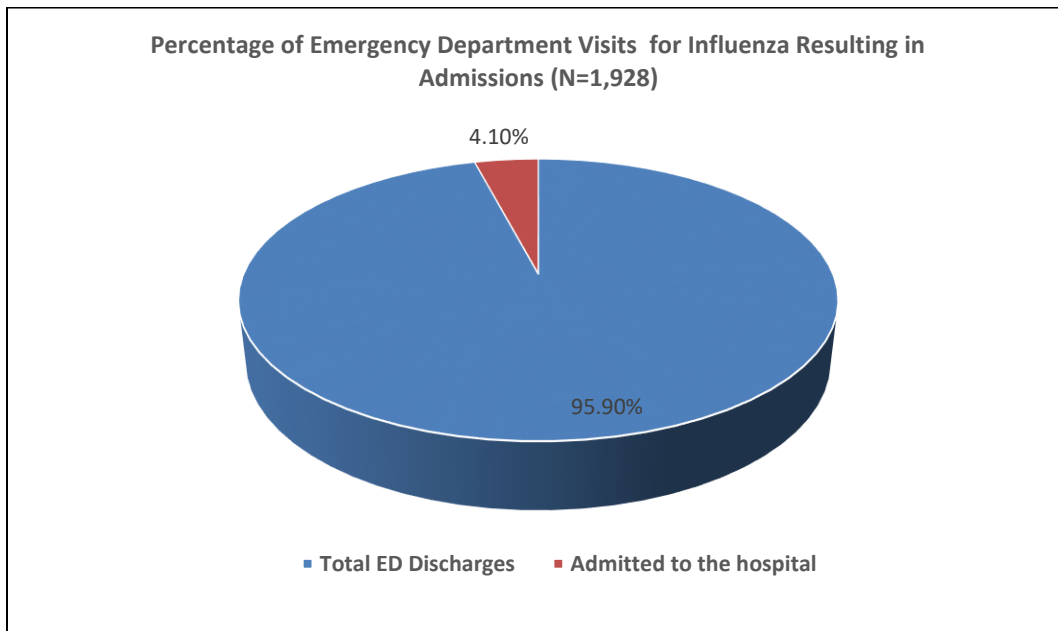
\$12.09 per call. The triage line avoided approximately 10,998 unnecessary healthcare visits (Spaulding et al., 2012). Based on the 2009 average cost data healthcare saving amounted to \$2.29 to \$6.11 million against a cost of \$132,966 to run the triage line.



Graph 2 – Breakdown of patients who were seen in the ED for Influenza-like illness then discharged, admitted, and admitted then died in the hospital in 2009 (Statistics for EDs in U.S. community hospitals, principal or first-listed diagnosis based on CCS, 2009).

As a result of the 2009 H1N1 outbreak, Emergency Department (ED) visits were high with individuals complaining of Influenza-like illness symptoms. A little over one million people were seen in EDs. Of these only a small fraction were admitted to the hospital (n = 68,732). The remainder (n = 988,683) were discharged from the ED. If these individuals called a triage line (at a cost of \$12.09 per call) and were even told to present to an outpatient clinic (at a cost of \$220.00 per visit) the cost would be \$229.5 million (at a cost of \$232.09 per person). This would be a savings of a little more than 50% by diverting visits from the ED to less costly outpatient providers. An additional benefit would be decompressing already crowded EDs, as flu season is a known contributor to overcrowding (Hoot & Aronsky, 2008).

Although Vermont is a small state, in size and population, the economics explored above on a national level can still be realized within the state. In 2009, Vermont saw 1928 patients with a primary complaint of influenza-like illness. Of this total 1848 were discharged from the ED. As state specific cost for treatment could not be obtained for this project, utilizing the national average costs of \$555.55 per ED visit, the total cost of seeing these patient was \$1.03 million. Again, using a worst case scenario that each of these patients called a triage line and saw an outpatient primary care provider, cost would total \$406,726.32 based on national average cost. Even in the unlikely event that these individuals were prescribed antivirals, this would add \$123,816 dollars to the figure. The total would be \$530,542.32, nearly half the cost of treating these patients in the ED.



Graph 3 – Breakdown of discharged versus admitted patients seen in Vermont EDs in 2009 (Statistics for EDs in Vermont community hospitals, principal or first-listed diagnosis based on CCS, 2009).

What is evident is that an NTL can have a significant financial savings impact even in a small state like Vermont. Despite not having Vermont-specific figures for cost of treatment, the validity of this analysis can be trusted as Vermont healthcare spending mirrors that of the United States. A 2009 Vermont Legislative report found that healthcare spending accounted for 19.1% of the State's economy.

This was in comparison to national healthcare spending accounting for 17.6% of the United States economy (*Costs of Vermont's health care system, 2011*).

By modeling potential nationwide and state cost savings based off of 2009 data, a picture emerges that suggests the implementation of an NTL can pay for itself by diverting patients away from higher cost healthcare services. The service delivery model of an NTL acts as a conduit to shift cost from higher priced healthcare services to lower priced one. This shift in costs, resulting in a net savings, and falls in line with current healthcare reform initiatives. Regionally, there is potential to incorporate public health NTLs into the service delivery models of Accountable Care Organizations (ACO). In the case of Vermont, this would be the OneCare ACO that includes the States of Vermont and New Hampshire.

Discussion

Based on the findings from this project a Vermont based NTL is needed and feasible. The NTL would enhance VDH's ability to serve the public in times of public health emergencies and events. This is not only through decreasing public confusion, decreasing the spread of disease, and reducing medical surge on the healthcare system, but also by opening up access to healthcare services. Vermont is a state that is mostly rural, and as such, access to healthcare facilities is even more of a challenge (Battista, 2014).

Advancing an NTL in Vermont

What the NTL could achieve is the ability to reach all Vermonters affected by the Public Health emergency or event. The only limitation to an NTL would be needing to have access to a phone to access the service. While access to a phone is a major barrier, the increase in cell phone technology would help to address this barrier. Even in cases where cell phones and cell phone towers were lost, setting up these infrastructures can be done quickly (Townsend & Moss, 2005). Issues such as language barriers could be addressed in the development of the line. Unlike a web-based service, there is a limited technology learning curve.

AN NTL is cost effective. Even if all the NTL did was to direct the public away from Emergency Healthcare resources, as noted in the economic analysis the savings could amount to close to \$500,000 dollars for an event similar in size to the 2009 H1N1 event in Vermont. Further cost saving measures include the utilization of a telecommunication infrastructure that is already being used by 2-1-1, as well as utilization of VDH volunteer resources.

Having 2-1-1 in place allows for a quicker development of an NTL in Vermont. Such a system could be set up in stages with the goal of rolling out a complete system similar to the CDC's Flu On Call™. The easier components, information only and the NTL should be formally established first. The development of the information only component is the easiest stage to complete. This stage would

require a formalized protocol for disseminating public information to the 2-1-1 call center as well as a protocol for triaging calls to the health department. It would also require VDH to champion the public use of 2-1-1 for information related to Public Health emergencies and events.

As nothing currently exist for the NTL component, this component might be more difficult to establish. The key to the success of this component is to develop a uniform message. Unlike an information only line where information can be scripted, with the ability for the public to ask questions specific to their own health circumstances, there is greater chance for mixed messages to be sent. This can be dealt with by establishing standardized triage protocols. If a question falls outside of what is available on the standardized triage protocols, designating a limited number of individuals to answer these calls can limit mixed messages.

Training would need to be provided not only on the triage protocols (specific to the event) but also on the technology being utilized. Given 2-1-1's ability to set up a Voice-Over IP (VOIP) system, anywhere there is an internet connection, semi-annual trainings could be held in conjunction with 2-1-1 for VDH representatives. For maximum impact, coordinating these trainings with other emergency disaster drills within the state may help to enrich the training experience.

With standardized protocols and training, providing this training to health insurance companies, such as BlueCross Blue Shield and MVP Health, would help to spread the work load. Eventually there could be an expectation that all individuals insured by a private health insurer will have their calls answered by the triage lines of those insurers. This would free up state resources and decentralize the burden of running the NTL by having multiple NTL centers.

Although the last component of providing antiviral medications is an important part of the CDC's Flu On Call™, this is only feasible once a strong NTL system is in place. Further, insurers would need to play a key role in the NTL system. Once the NTL system is in place and is being utilized by private insurers, exploring an antiviral prescription by telephone system should be looked into.

While the formation of an NTL system in Vermont is modeled on CDC's Flu On Call™, it does not need to be used exclusively for flu. Given the modular nature of system: information only, Nurse Triage, and antiviral prescriptions, the system can be scaled up and down in terms of both call takers and modules. Whereas an incident such as H1N1 may require all three systems and the utilization of all available human resources, a low level incident, such as the 2016 case of a Vermonter contracting Zika may require just the information only system. In the latter, 2-1-1 would be utilized to reassure the public that there is no significant threat.

Advancing the Clinical Nurse Leader Role in Public Health

As a new role in nursing the CNL is primarily utilized in the acute care setting. The driver for early adoption of the CNL in the acute care setting is likely based on the fact that the microsystem can be easily defined by unit or floor. This provides a clear delineation of the clinical microsystem of the CNL. Although the focus of the microsystem is important and vital to the definition of a CNL, the CNL is an expert in other competencies areas that lend themselves to utilization outside of the acute care setting. This project demonstrates the use of several of these CNL competencies (*see "The Role of the Clinical Nurse Leader" section*).

Public Health, like acute care, does have its own microsystems. This project's microsystem would fall under public health communications. The CNL is able to combine clinical expertise with a strong understanding of organizational needs and limits. Within this project the clinical expertise was primarily derived from understanding effective ways of communicating health information to the public. The organizational needs and limits focused on being able to analyze the financial implications of an NTL, as well as to understand ways in which the organization's current structure could be modified to successfully implement an NTL.

Throughout this project, the process of project development mirrored the process that a CNL in an acute care setting would follow. This included a detailed search of the literature regarding NTLs, the

utilization of qualitative and quantitative tools to understand the current state, a financial analysis to support the business case for an NTL, and a proposal for next steps as well as suggestions for measuring the success of an NTL. CNLs come to their positions with in-depth knowledge and training of these methodologies which enables CNLs to “hit the ground running on day one.” In a traditional nursing curriculum the focus is primarily clinical, thus a new Public Health Nurse would have to be taught these non-clinical skills.

This project shows that CNLs can be a valuable asset to the public health system. CNLs bring a skill set that can merge the clinical as well as leadership aspects of public health into a quality driven project that results in positive outcomes. CNLs do not replace Public Health Nurses, CNLs complement their work. According the American Public Health Association (2013), “Public health nursing is the practice of promoting and protecting the health of populations using knowledge from nursing, social, and public health sciences.” Within this definition a Public Health Nurse would be responsible for the direct provision of care to the population they are focused on. The CNL would be responsible for identifying ways in which that care could be enhanced.

As the CNL role matures, a great opportunity is presented for public health to benefit from the role’s skills. Inherently, the role’s acceptance in public health will go through growing pains. Fortunately, the introduction of the CNL role into acute care can be used as a guide to minimize and address these conflicts. Role acceptance will come with the implementation of successful project such as this one. The value and potential of the CNL in the public health arena is just beginning to be realized.

Conclusion

The results of this project supports two conclusions. The first is that VDH does have the capacity and resources needed to implement a NTL. The second is that public health organizations can benefit from the CNL role. In fact, a strength of the CNL is the ability to analyze the provision of current healthcare delivery and present evidence based changes that improve the delivery. As this project demonstrates, utilizing core CNL competencies, current state was studied with a focus on implementing a NTL in Vermont. From the current state study, this project was able to propose future state.

Future state: A Vermont Nurse Triage Line

VDH's current capacity does allow for the implementation of an NTL. This is possible for several reasons. Through VDH's partnership with 2-1-1, VDH has access to a telecommunication infrastructure capable of handling a large volume of calls. This infrastructure which is based off of Voice-Over IP (VoIP) can be moved to anywhere there is an internet connection. This allows such a center to be setup where it is more appropriate based on the incident. In terms of human resources VDH has an underutilized resource: volunteers. Through several programs at VDH (i.e. Vermont Emergency Response Volunteers, Medical Reserve Corp), there is a core group of vetted licensed healthcare professionals that could be utilized for front line staffing. This frees up fulltime employees to create the protocols and perform higher level, behind-the-scenes work.

From a service delivery standpoint the utilization of an NTL accomplishes several goals. First and foremost an NTL allows the public a way to receive consistent and accurate information during a public health emergency or event. The added value with an NTL is that it extends the reach of VDH information to where ever the public has access to a phone. This is invaluable in a rural state such as Vermont. AN NTL will not only serve as a primary public point of communication, but will also serve as a health care resource for those with limited transportation options, as well as those who are under or not insured.

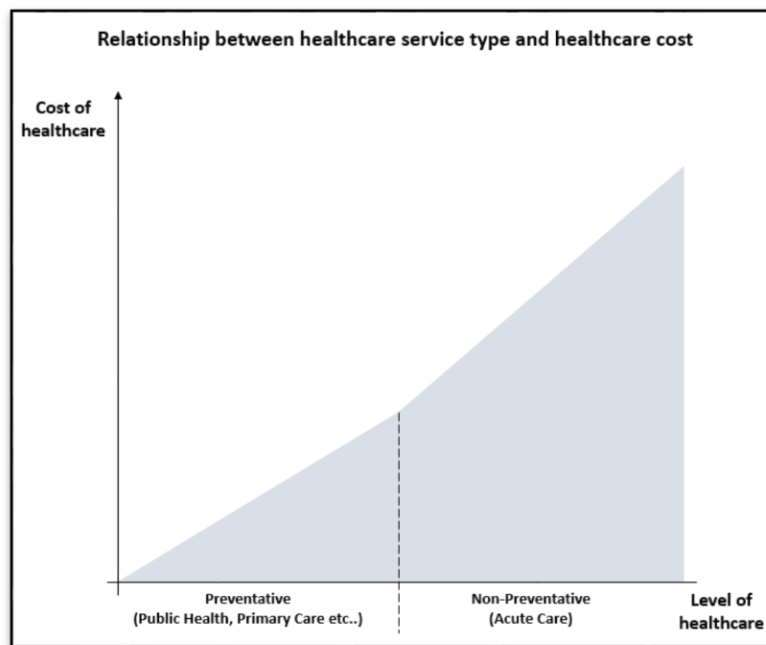
With respect to financing the NTL, this will be a challenge given current state level budgetary constraints. It is very likely that external funding will be needed to operationalize the NTL. Once operationalized, it may be possible to attach future costs to existing emergency and public health preparedness grants. As Vermont health care is heavily regulated by the Green Mountain Care Board, future partnerships with private insurers may help to spread the cost of running an NTL between public and private organizations. It is evident through the economic analysis/ modeling performed that an NTL can result in significant healthcare savings.

The success of an NTL must be measured to prove its current and future utility. Especially when the NTL is first established, measuring success will be vital in the continuation of the service. In addition to demographic data, what should be measured is both caller (the public) and clinician (call takers) perception on the utility of the service. A post utilization follow-up with the caller would also be valuable in establishing how the NTL affected the caller's health care decision. Specifically, how did the caller utilize the information provided to them by the NTL? It is important to establish metrics that look at both satisfaction as well as the economic impact of the NTL.

The next step for VDH is to decide if it wants to implement an NTL. It must also be known whether or not an NTL would fit within the current healthcare practice legislation in Vermont. From here VDH can move towards coordinating the infrastructure and human resources discussed above. A drill or a small scale public health emergency/ event could be used to test how well the NTL is coordinated. Although significant effort will be required up front, as hurdles to the initial implementation of an NTL would have been dealt with, continued maintenance of an NTL would require less effort. Given the proven efficacy, viability, and the enhancement that an NTL will provide to the Vermont public health system, moving forward with developing an NTL should be a high priority.

Future state: The Clinical Nurse Leader in Public Health

Although the CNL role originally focused on the acute care setting, as the role evolves its potential to positively impact other healthcare practice areas is just beginning. This project, as well as the Shipman et al. (2013) case study, presents compelling arguments for further developing the CNL role in the public health setting. Unlike the acute care setting, the public health setting allows CNLs to be on the forefront of reducing healthcare cost and unnecessary utilization of healthcare resources by preventing non-preventive healthcare utilization.



Graphic 2 – As the level of healthcare service increases, the cost of service increases. Preventative healthcare services are typically less expensive than non-preventive healthcare services.

Expenditures for non-preventive healthcare cost make up a significant majority of healthcare expenditures in the United States. Hospital charges in 2014 accounted for \$971.8 billion of the \$3.0 trillion spent on health care (*National Health Expenditures 2014 Highlights*, 2015). As the level of healthcare service increases so does the cost for the service (*Figure 2*). While CNLs in acute care setting have made great strides in decreasing cost associated with care, their work is reactive. They are working

with patient populations that are already in need of acute care services. In contrast, the CNL in public health is utilizing an upstream approach to prevent costly downstream outcomes.

The NTL is a great example of how a CNL implemented project using an upstream approach can positively affect downstream outcomes. As this project demonstrates an NTL has potential to change the way in which public health organizations are able to communicate with the public. In addition to sending out traditional and non-personalized public service announcements, the greatest strength of the NTL is to provide personalized healthcare information to the public. This one ability has been shown to be effective in decreasing the burden on healthcare resources, and in turn decreasing healthcare cost associated with public health emergencies.

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Appendix A




The
UNIVERSITY
of **VERMONT**

Committees on Human Subjects
Serving the University of Vermont
and the UVM Medical Center

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Certification**Not Research Determination**

TO: Andrew Kehl
FROM: Gale Weld, Research Review Administrator 
DATE OF CERTIFICATION: 17-Jul-2015
SUBJECT: CHRBS: 16-012
Developing a Vermont Nurse Triage Line: A Systems Improvement Project

The IRB has determined that this project does not require IRB review because it does not meet the definition of a "research" activity under the regulatory definition adopted by UVM. According to 45 CFR 46.102(d), the definition of "research" is "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge."

Projects that are not a systematic study or are not intended to contribute to generalizable knowledge, e.g. quality assurance, quality improvement, program evaluation, or public health practice, do not require IRB review.

Thank you for contacting the Committee to make this determination.

cc: Carol Buck-Rolland

Appendix B**Developing a Vermont Nurse Triage Line: A Systems Improvement Project
Semi-Structured Interviews**

The following semi-structured interviews are being performed to gain a better insight into the communication systems in place at VDH during Public Health emergencies. All interviewees will be asked the same 10 opening questions. Following these 10 questions, interviewees will be asked specific questions based on their subject area expertise. These questions are intended to guide the conversation and as needed follow-up questions that are not specifically listed below may be asked. With the prior consent of interviewee

All Interviewees

1. Can you tell me what your current position is and what that position entails?
2. Can you briefly discuss the process that is used to approve communications to the public?
3. What are the current system(s) in place for VDH to communicate with the public during Public Health Emergencies (i.e. H1N1, TB, Ebola)?
 - a. How can the public access VDH's information?
4. What are your thoughts about the current system(s)?
 - a. Strengths? (What's working well, what is not, what would you like to see more of)
 - b. Weakness?
5. What challenges exist, or are you aware of that exist, in terms of VDH's communication with the Public? (i.e. from AAR, debriefs etc..)
6. Based on your understanding can you explain the process flow/ relationships between the various stakeholders for 2-1-1? (i.e. the public and 2-1-1, VDH and 2-1-1)
7. Are you satisfied with the level of service offered by 2-1-1? Could things be improved?
8. What is VDH's current surge capacity in terms of handling inquiries from the public during Public Health Emergencies?
9. What structures are in place for VDH to connect with health insurers, hospitals and clinics, HCPs, health agencies, and health care associations?
 - a. What types of information is shared with these other constituents during Public Health emergencies.
 - b. Does VDH have structures in place to reach out to specific populations? (i.e. Charlotte TB crisis and reaching out to the Vermont Chapter of the APA)
10. In an ideal setting what changes and/or improvements would you make to the current system(s) used for sharing health information during a Public Health emergency?
 - a. Are there any gaps?

Chip Deasy, OPHP Emergency Preparedness Chief**Max Kennedy, Strategic National Stockpile Coordinator**

1. Currently who is part of the HANs system?
 - a. How is HANs currently utilized?
 - b. Has HANs been effective in disseminating time sensitive health information?
 - c. What feedback have you gotten from end users (i.e. subscribers) in terms of HANs?
2. Within the current EOPs is surge capacity for telephone calls addressed?
3. What does VDH currently do when there is a surge in telephone calls?
4. How are VDH staff utilized during Public Health emergencies?
5. How are non-VDH staff/ VDH volunteers (i.e. MRC) utilized during Public Health emergencies?

- a. Are their legal or special restrictions on how non-VDH staff/ VDH volunteers can be used during Public Health emergencies?
- b. In addition to MRC, are there any other volunteer groups that are dedicated to helping VDH during Public Health emergencies?
6. Do you see a Nurse Triage Line being utilized for specific Public Health threats or as part of a standard operating procedure? (i.e. written into the Pandemic Flu Plan or initiated based on predetermined thresholds like the HOC operation levels), If no, any other ideas?
7. What would you like to see as the goal(s) for an NTL at VDH?
8. How might you see this project evolve?

Patsy Kelso, State Epidemiologist for Infectious Disease

Allison Reagan, Director Office of Local Health Access

1. How are calls from the public funneled to your unit's staff?
2. When your unit's staff answers questions are the answers standardized (i.e. using a script or the same primary source)?
3. Aside from staffing challenges, what other challenges has the unit experienced specific to interactions with the public during public health emergencies?
4. Could you see non-unit staff potentially helping to field questions from the public? If so, what would you consider to be the minimum qualifications/ training for these staff members?
5. Do you see a Nurse Triage Line being utilized for specific Public Health threats or as part of a standard operating procedure? (i.e. written into the Pandemic Flu Plan or initiated based on predetermined thresholds like the HOC operation levels) If no, what are concerns? Any other ideas? If no, what are your concerns? Any ideas on how to handle this?
6. What would you like to see as the goal(s) for an NTL at VDH?
7. How might you see this project evolve?

Nancy Erickson, Communications Director

1. Can you speak about the current work that you are doing to address communication strategies with HCPs?
2. What challenges/ frustration have you heard from the public in terms of their ability to receive health information during public health emergencies?
3. How has VDH addressed these challenges?
4. Aside from 2-1-1, in what other ways does VDH encourage the public to seek out information? (i.e. websites, social media etc.).
1. What is the relationship between the Communications Department and 2-1-1? How do you work together?
2. Do you see a Nurse Triage Line being utilized for specific Public Health threats or as part of a standard operating procedure? (i.e. written into the Pandemic Flu Plan or initiated based on predetermined thresholds like the HOC operation levels). If no, any other ideas?
3. What would you like to see as the goal(s) for an NTL at VDH?
4. How might you see this project evolve?