A Simple Scan for Stress Reduction and Safety

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April 28, 2021

Notes from the Author

This DNP academic journey has been quite an undertaking over the past four years, and I could not have done it without the support of my family, friends, faculty, and student peers. Thank you to Dr. Jan Tillman for all her support and guidance through the development and completion of this DNP project. I would be remiss if I did not credit her for the initial idea for this project. I am grateful that I got to work alongside several other students on addressing the concern of communication between first responders and citizens with communication limitations. Whitney, Taylor, and Zara – Thank you for your assistance and words of encouragement during the course of this project. Latina, I am blessed to have met you through this DNP program. Your friendship has been one of the highlights of this journey, and I appreciate all the words of encouragement and the assistance that you have given me over the past four years. Thank you to my family for embracing this journey with me. Scooter and Prancer, you guys have been my faithful study buddies for the long hours that I have spent on the couch doing homework. Mama, Daddy, and Erika - I appreciate everything you all have done to help make obtaining this degree a little easier. Elliott, you have endured my rants of frustration and picked up my slack around the house as I have given my time primarily to work and school. I am grateful for your love, support, and patience through this endeavor.

Abstract

Communication between first responders and citizens during emergencies can be impacted by communication disorders. If a citizen is unable to effectively communicate personal, medical, or situational information to a first responder, it can cause undue stress for the parties involved and lead to detrimental outcomes. This DNP project aimed to reduce stress for first responders and citizens with communication disorders through the promotion of QR code medical profiles. Officers at a rural police department were briefly educated on common communication disorders and then trained on how to use the QR code medical profiles. The utilization of this technology was also promoted in the community with coupon codes offered for free registration and discounted products from a company that offers this technological service. The project goals were: 1) to educate at least 90% of the full-time staff at the police department, 2) to have at least 75% of those educated to express confidence in their ability to utilize the QR code profiles in emergencies, and 3) to have at least 25 registrations from the community using the unique coupon codes. While the goals of officer implementation were met, the goal for registrations was not. The hindrance on in-person communication and the cancellation of public events due to the COVID-19 pandemic were considered to be the primary barriers to implementation. The technology is still believed to be useful, and it is recommended that further efforts be made to promote its utilization when social distancing restrictions are lifted.

Keywords: communication disorders, first responders, law enforcement, QR code, emergencies

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Section I. Introduction

Background

The inability to efficiently and effectively communicate can affect individuals across the lifespan. A person may be born with a diagnosis, such as Down syndrome, which impacts their ability to communicate from birth, or they may develop a condition in childhood or adulthood, such as autism spectrum disorder or Alzheimer's disease, respectively, that makes communication difficult. Emergencies occasionally arise involving individuals with communication disorders. These situations can be stressful for both the individuals with communication disorders and the first responders, especially when caretakers are not present to bridge the gap in communication and provide vital information. There is a need to ease stress for both of these parties in emergencies and to attempt to improve communication between them.

Organizational Needs Statement

There have been unfortunate incidents involving persons with communication disorders and law enforcement that resulted in adverse outcomes. For example, a deaf and nonverbal man was shot by police officers in Oklahoma City after he did not comply with officers' orders to put down a metal pipe that he was holding (Andone, 2017). In 2013, Ethan Saylor, who had Down syndrome, died from asphyxia after being restrained by law enforcement officers who were taking him into custody after he did not comply with requests to leave a movie theater (Anderson, 2019). His caretaker had stepped away to pull up the car when the incident occurred (Anderson, 2019). Ethan's mother, Patti Saylor, believes that in the caretaker's absence, Ethan did not comply because he did not understand what was going on (Anderson, 2019). While neither of these examples occurred in North Carolina, the possibility exists. While certain communication disorders, such as Down syndrome, are associated with physical characteristics

that indicate the possibility of a communication disorder, many physical, emotional, cognitive, or developmental disorders are not perceivable based on one's visual appearance. It is important to reduce the likelihood that unnecessary harm and death, such as previously discussed, will continue to occur. The police chief in Louisburg, North Carolina (N.C.), recognizes that it would be beneficial to improve communication between police officers (representing first responders) and persons with communication disorders (J. Abbott, personal communication, March 26, 2020).

The town of Louisburg is located within Franklin County, N.C. The U.S. Census Bureau (n.d.) estimated that there were approximately 70,000 persons residing in Franklin County, N.C. as of July 2019. Of these, 11.1% were considered to be under 65 years of age and living with a disability (U.S. Census Bureau, n.d.). In 2018, the Eastern North Carolina Health Survey was completed by a sample of residents living in Franklin County (Health ENC, 2019). Out of 332 persons that responded, six indicated that services for disabled people were the most needed improvements for the community (Health ENC, 2019). Eleven residents reported a need to know how to care for loved ones with special needs, and seven individuals affirmed a need to know more about eldercare (Health ENC, 2019). It is speculated that if the questions had allowed multiple responses, more individuals would have expressed concern for caring for elderly or disabled loved ones.

There are established goals at the state and national levels that address these concerns. At the state level, a health indicator in Healthy North Carolina 2030 addresses the number of adverse childhood experiences (ACEs) and recognizes that children with special needs are more at risk for ACEs (North Carolina Institute of Medicine, 2020). At the national level, Healthy People 2020 identified two aims to benefit Americans with special needs: 1) to increase the

percentage of adults who perceive social and emotional support, and 2) to decrease the percentage of adults who suffer from severe psychological stress sources (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion [DHHS/ODP], 2020).

Working to improve the availability of information to first responders in emergencies involving individuals with communication disorders aligns with the Institute of Healthcare Improvement's Triple Aim. The Triple Aim is a guideline that was developed to direct improvements for systems of care (Institute of Healthcare Improvement [IHI], 2020b). The Triple Aim indicates that changes or new processes should accomplish three things: 1) better patient care, which includes both the quality of care and patient satisfaction, 2) better population health, and 3) decreased cost of health care per capita (IHI, 2020b). Improving first responders' access to personal and health information will allow them to provide safe, individualized care and employ unique strategies to connect with persons who have communication disorders. This will improve the quality of care that is given and increase satisfaction for citizens and first responders. Improved individual care results in improved population health and potentially reduces the cost of care.

Problem Statement

First responders can experience difficulty in caring for individuals with communication disorders during emergencies. Due to the decreased abilities of those with communication disorders to correspond proficiently, first responders may lack the personal or health information needed to provide accurate, timely, and safe care while keeping the environment free from unnecessary stress.

Purpose Statement

The purpose of this DNP project was to reduce stress for first responders and citizens by making personal and health information for individuals with communication disorders readily available in emergencies through the use of QR code technology.

Section II. Evidence

Literature Review

The initial intended search strategy was to determine keywords and locate MESH terms in PubMed for use in searching other databases. However, due to the complexity of the project topic, that search strategy was quickly dismissed. Instead, OneSearch through Laupus Library was used to locate articles related to the project topic. Several searches via OneSearch were performed. All levels of evidence were considered with each search due to the nature of the topic.

The initial search was for "communicating with special needs persons in emergencies." This search elicited 307,681 results. After filtering the search for results published within the last five years, 56,748 results remained. The "subject terms" category was then filtered for "law enforcement" and the "content type" was filtered out for "government document." The first 25 results listed according to relevance (out of 880 total) were then reviewed by article title and brief abstract. There were 21 articles eliminated for irrelevance from the title and brief abstract. Four articles were reviewed further: two were deemed irrelevant to the topic, one was eliminated due to lack of full access, and one article was kept for relevance. The kept article was peer-reviewed.

The following searches proceeded in similar fashion. After the initial phrase search, results were filtered for publications within the last five years. Other filter options varied slightly each time based on the options available and the number of articles found. Results were listed according to relevance with each search.

The second search was for "how first responders interact with disabled persons in emergencies." This initially merited 545 results with 213 results published in the last five years.

Government documents were filtered out of the “content type” leaving 201 results. The top 25 results were then evaluated via title and brief abstract. Two results were duplicates of others already located in the search. Fourteen others were excluded for irrelevance based on title and brief abstract alone. Four articles were reviewed further and then excluded. Five articles were kept for relevance. One of the five articles was from a peer-reviewed journal, and four were from popular media.

The following search was for “first responders communicating with special needs persons.” The initial 28,169 results were narrowed to 9,989 from the past five years. “Emergency medical care,” “firefighters,” "law enforcement," and "police" were then selected under the "subject terms" category, leaving 882 results. The top 25 were reviewed. Twenty-two articles were excluded initially - two for being duplicates of articles from previous searches and 20 for being irrelevant. One article was read further and excluded for irrelevance, one article was excluded due to lack of access, and one article was kept. The kept article was from a peer-reviewed journal.

"Interactions between first responders and disabled persons" was the final search. This produced 2,976 results, which was narrowed to 944 results in the last five years. The "subject terms" category was then filtered for "law enforcement," which left 38 results. The top 25 results were reviewed. One result was a repeat from a prior search. Six articles were kept for relevance. The remaining 18 articles were excluded for being either a government document or dissertation or for being irrelevant. Of the six kept articles, five were from popular media, and one was from a peer-reviewed journal.

Current State of Knowledge

It was found that there is concern throughout the nation regarding communication between persons with special needs and first responders, particularly law enforcement. However, there was little literature of high evidential standards found on improving communication between first responders and persons with communication disorders. There was also no clear standard found by which to measure potential interventions. Most findings were news stories from public media. However, these stories were of interest because they described interventions that are currently in place throughout the United States. Several literature findings focused specifically on autism spectrum disorder. These sources were kept as the interventions mentioned could be applied to other communication disorders.

Current Approaches to Solving Population Problem(s)

There are a number of interventions currently in place throughout the United States aimed at improving communication between first responders (specifically law enforcement) and persons with communication disorders. One of the most common interventions found in the literature is related to training for law enforcement on the topic of communication disorders. The Arc, a national organization that provides support and services for persons with developmental disabilities, has offered training for law enforcement officers in certain locations on identifying and communicating with such individuals (Blocker, 2015). There are states, such as New Jersey and Florida, that have mandatory training on mental health disorders and disabilities (Kelly & Hassett-Walker, 2016; Warren, 2018). In addition to training law enforcement, another current approach is to train persons with disabilities and their families on how to prepare for emergencies (Garner, 2017). The Special Needs Awareness Program, or SNAP, of Chattanooga, Tennessee is one example of this intervention (Garner, 2017).

Beyond training, there are several other approaches currently being implemented. In Minneapolis, there is an app available that will notify first responders if a person with disabilities is within a certain radius of them (Star Tribune, 2019). Several law enforcement agencies are utilizing database systems to store information regarding disabled persons in case of emergencies. The intent of these databases may be specific, such as searching for a missing person, or broad, such as for any call at a residence where a disabled person is reported to reside (Eischens, 2019; Stephens & Sauber, 2017; Stepzinski, 2019). The state of Kentucky uses a program where a yellow dot on the rear window of a vehicle indicates to first responders that someone in the vehicle has special needs (Copenhaver & Tewksbury, 2018; Families for Effective Autism Treatment, n.d.). A corresponding information packet should be available in the glove box of that vehicle which provides first responders with vital information about the person (Copenhaver & Tewksbury, 2018; Families for Effective Autism Treatment, n.d.). Lastly, a couple of states are now issuing identification cards to persons with special needs. These cards, which contain pertinent personal and medical information, can be provided to first responders in emergencies (Brodsky, 2019; Waldman, Perlman, & Seiver, 2019).

For this DNP project, a new approach was promoted. The use of QR code technology to access stored vital information for a person with special needs was encouraged. The concept is that an individual creates an online health profile which is linked to a unique QR code. That QR code is then worn or carried on their person so that first responders may scan it in an emergency and obtain the information necessary to best care for them.

Evidence to Support the Intervention

The QR code was chosen in light of concerns related to currently utilized interventions and in light of its own potential benefits. The state of North Carolina already has training in place

for law enforcement regarding disabilities and mental illness. The North Carolina Justice Academy (2019) requires that students in basic law enforcement training (BLET) receive 24 hours of combined instruction (lecture and practicum) on mental illness and developmental disabilities. For 2020, acting officers were required to take a course on communicating with persons who are deaf or hard of hearing (North Carolina Department of Justice, 2019). While additional training would likely be beneficial, I was not able to significantly influence state training standards within the project period. Training and emergency preparation for individuals with communication disorders and their families would be best taught by experts in the field, such as professionals in the field of communication sciences and disorders (Neave-DiToro, Fuse, & Bergen, 2019). Applications and database services can be costly in terms of money or time for first responder agencies (Star Tribune, 2019; Stepzinski, 2019). While programs like Yellow Dot are likely beneficial, they are limited in use (only applicable for incidents where persons are in motor vehicles.) Lastly, identification cards may be problematic for persons with communication disorders to carry in a visible fashion without the general public being privy to the provided information (Brodsky, 2019).

The QR code intervention has a number of advantages over the aforementioned interventions. It may be utilized in various circumstances as its use is not restricted to association with a particular residence or vehicle. The QR code may be placed on a dog tag necklace or bracelet or made into an iron-on patch for permanent transfer to clothing or bookbags. It can be easily visible to first responders without blatantly displaying personal information to the general public. With the widespread use of smartphones in today's society, first responders should be able to easily and quickly scan the code without cost to them.

Evidence-Based Practice Framework

An evidence-based practice framework was chosen to help guide the development and progression of this DNP project. For this project, the Plan-Do-Study-Act (PDSA) cycle was selected (IHI,2020a).

Identification of the Framework

The model of change that was utilized for this project was the PDSA cycle. IHI (2020a) specifically touts PDSA as a "model for improvement." The intention of this DNP project was to reduce stress for first responders and citizens by making personal and health information readily available for those who might not be able to efficiently communicate that information for themselves, thereby leading to improved communication between the two parties and more individualized care.

As indicated by the name, the first step in this framework was planning out what change would be made and how the effectiveness of that change would be measured (IHI, 2020a). After a plan was made, the change was then implemented (IHI, 2020a). Observations were made during this time, and data was collected (IHI, 2020a). The data was then analyzed in step 3 to see if the intended improvement was achieved (IHI, 2020a). Alterations were made based on the analysis to prepare for further testing and for the cycle to start over again (IHI, 2020a).

A plan was developed for this DNP project in order to encourage the use of the QR code profiles to facilitate better communication in emergencies and to decrease the stress of individuals with communication disorders and the responding emergency personnel. The plan was carried out in two separate pathways – one which targeted the officers and support staff at the project site and one which targeted the general public. Both parties needed to be made aware of the availability of QR code technology for the specific usage of communicating vital information in emergencies. The officers also needed to be instructed on how to utilize this

technology if they encountered it on a call. The feedback from the implementation processes was analyzed, and recommendations were then made for future modifications for promoting this intervention on a broader scale.

Ethical Consideration and Protection of Human Subjects

There were few ethical concerns with this project. As this project primarily focused on raising awareness with law enforcement about the availability and use of the QR code technology and promoting the utilization of the technology with the general public, there were no real risks to individuals. There was only the potential for benefit. Therefore, this project corresponded with the ethical principle of beneficence outlined in The Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The intervention was considered equitable to the target population. The QR code technology used for this project was EmergencyScan®. However, it was shared that other QR code platforms are available for use. On behalf of first responders, the intervention was considered equitable as the overwhelming majority of first responder personnel have access to smartphone technology to scan the QR code. Even if one first responder did not have access to scan the QR code, it was expected that other responders would be coming to the scene. Therefore, this project was deemed to align with the ethical principle of justice outlined in The Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

I completed the Collaborative Institutional Training Initiative (CITI) modules for social/behavioral research investigators and key personnel in order to prepare for the formal project approval process. As the project site did not have a formal Institutional Review Board

(IRB) process, formal project approval was sought through East Carolina University's IRB. A Qualtrics survey questionnaire was completed with the assistance of the faculty advisor to determine if further review was needed by the IRB. Based upon the provided responses, it was indicated that this DNP project did not require further IRB review as the planned project constituted quality improvement and not research.

To establish support from the project site regarding project implementation, email communication was sent to the police chief with details of the planned project. The chief indicated via email that he was glad to partner with me and have the department serve as the project site (J. Abbott, personal communication, March 26, 2020). This agreement was more formally established through a formal approval letter that he signed, which I submitted to my faculty advisor. The site champion also spoke with university staff to provide consent for me to come on site to complete the planned project.

Section III. Project Design

Project Site and Population

A police department in a rural county in N.C. served as the DNP project site. The population impacted by this project included both the officers at the site as well as the citizens of the town and county.

Description of the Setting

This DNP project was conducted in collaboration with the police department in Louisburg, N.C. As aforementioned, there are approximately 70,000 county citizens. A census in 2010 determined that close to 3,500 of those live within the limits of the town that the police department serves (Town of Louisburg, N.C., 2020). However, many individuals work, shop, dine, or travel through the town though they do not reside within the town limits. Therefore, the police department serves much more than 3,500 people.

Description of the Population

The population impacted by this DNP project was two-fold. The first population involved was the police officers at the project site. At the time of implementation, the department consisted of 15 full-time officers and three part-time officers. Their roles consisted of one chief, one captain, one detective, three patrol sergeants, two school resource officers, and seven patrol officers. In addition to the officers, there was also one full-time secretary on staff.

The second population consisted of the citizens within the town and county. In particular, citizens with communication disorders and their families and other caregivers were targeted during community outreach efforts. However, efforts were not solely limited to these populations as it was recognized that the QR code technology could potentially be beneficial for all persons

in an emergency. Anyone may develop a communication disability at any time, such as during a syncopal episode. Therefore, the QR code profiles have relevance for all.

Project Team

The project team primarily consisted of me (the DNP student), the faculty advisor, and the site champion. I was the project leader. I met with my DNP faculty advisor approximately once every two weeks during the planning stages to help ascertain how to feasibly meet project goals. We continued to meet throughout the implementation process so that my faculty advisor could continue to offer guidance to me. The police department chief was involved early in the project period in order to grant initial approval for the project partnership and to delegate a site champion. A detective at the department was chosen to serve as the site champion. After a preliminary plan was developed, I communicated with the site champion regarding the intended plan for disseminating information on the QR code technology to both the general public and the police department staff. Support from both the faculty advisor as well as the site champion was received throughout the DNP project process.

Project Goals and Outcome Measures

As the overall purpose of this DNP project was to reduce stress for first responders and citizens in emergencies through the utilization of QR code technology, several project goals were developed to help establish achievement of that purpose. Separate goals were set for the implementation method to reach the officers at the project site and for the implementation method to reach the local community. As the implementation process took place during the COVID-19 pandemic, modest goals were chosen.

Description of the Methods and Measurement

As this project had two focal populations, it also had two unique implementation processes. The first process involved the officers at the police department. During a department staff meeting, officers were provided with a brief training on communication disorders and informed of the availability of QR code technology for the purpose of sharing vital personal information during emergencies. This DNP project utilized the technology platform available through EmergencyScan®. Officers were taught how to use technologies such as EmergencyScan®'s products and platforms. Officers were made aware that other companies had products similar to those of EmergencyScan®, so they should be cognizant they may encounter comparable products during their daily work.

The second process involved the general public in the town and county. As the DNP project was aimed at improving communication between first responders and persons with communication disorders, outreach strategies were primarily targeted to reach persons with communication disabilities and their families. Several methods were employed for the outreach. The first method involved placing informational flyers with coupon codes (see Appendix A) at a coffee shop in town. This particular coffee shop primarily employs persons with disabilities. The second method consisted of promoting the initiative at the project site. This included placing flyers at the police department. The town administrator also offered to have flyers placed at the town's administration building. The site champion was provided with flyers to deliver there. Furthermore, the town shared an image of the flyer and a brief write-up about the initiative on their social media pages. The third method involved reaching out to the county's Miracle League organization and the local chapter of the Autism Society of North Carolina. Information regarding the QR code technology was shared with the members of these groups through email and/or social media. After the first three methods were undertaken, an initial review of those

efforts was completed. Based upon those findings (as evidenced through the number of registrations with EmergencyScan® using the unique coupon codes), additional methods were subsequently planned and taken. The fourth method for dissemination involved sending emails about the initiative to educators in the public school system and the local charter school. They were asked to share the information with the families of their students. The fifth method involved placing flyers elsewhere in the town. I reached out to local businesses and certain health care offices to try to get permission to place flyers at their locations. Lastly, I sent emails or web messages to approximately 75 churches located within the county. I asked them to share the information regarding the initiative with their parishioners.

In order to assess the successfulness of implementation at the site itself, the first goal was to train at least 90% of the full-time staff about the QR code technology. I hoped to have the opportunity to train part-time officers, as well. However, it was recognized that it might not be feasible to get them trained during the implementation period. The second goal was to have at least 75% of the trained staff report being confident in their ability to utilize the technology in an emergency.

As much of the implementation to raise awareness amongst the general public was done in an indirect manner (without face-to-face contact), the success of distribution and subsequent utilization was evaluated using feedback from EmergencyScan®. I was provided with unique coupon codes by EmergencyScan® to share in the town and surrounding communities. EmergencyScan® then tracked the frequency at which consumers used the coupon codes to purchase their services and products. I set a goal to have at least 25 people create accounts with EmergencyScan® using the unique coupon codes.

The PDSA cycle was used as the implementation tool for this DNP project. As this project was utilizing a new communication process between first responders and persons with communication disorders, the PDSA seemed to be a simple, but relevant, operational tool to use. With new implementation, there is often much planning to get started and then revision (acting) based upon the study of what seems to be working or not. Two separate PDSA processes were needed to correlate with the project's two separate implementation processes. The first PDSA process related to the officer training while the second PDSA process related to community outreach. An initial PDSA cycle was developed for each process (see Appendix B and Appendix C). For the officer-based PDSA, a second cycle would be created if the initial training did not meet the chosen goals. For the community-based PDSA, the plan was to consider running a new cycle approximately every four weeks after feedback was received from EmergencyScan® regarding the utilization of their services and products as indicated by the usage of the unique coupon codes. To track progress and changes with the cycles, the PDSA worksheet was used. A total of five PDSA worksheets were completed for the community implementation portion of the project (see Appendix C through Appendix G). While feedback on the utilization of the coupon codes was tracked through the beginning of February 2021, the actual implementation efforts for this portion of the project were completed through December 1, 2020.

Discussion of the Data Collection Process

Data was collected regarding officer training by taking attendance of which officers attending the QR code training session and comparing that attendance list to the complete officer roster that was provided to me by the site champion. The goal was that 90% of the full-time staff would attend the training.

In addition to training at least 90% of the full-time staff members, I also wanted to have at least 75% of those trained to report that they felt confident in their ability to utilize the QR code technology in an emergency. Measurement was assessed using a Likert-type scale survey distributed at the end of the training session. The one-question survey asked staff how much they agreed with the statement, "I am confident in my ability to use QR code technology (such as EmergencyScan®) in an emergency situation." The response options were strongly disagree, disagree, undecided, agree, and strongly agree. I considered the response options of "agree" and "strongly agree" to indicate confidence in using the technology. The percentage of full-time staff self-reporting confidence was calculated using the number of "agree" and "strongly agree" responses as the numerator and the total number of full-time staff who received the training as the denominator. The goal was to have 75% or more of the trained staff to self-report confidence in their ability to use the QR code technology.

To evaluate the success of the community awareness initiatives, I engaged the assistance of staff at EmergencyScan®. Two unique coupon codes were provided by EmergencyScan® to place on informational flyers and to share with town and county citizens via social media. Staff at EmergencyScan® then provided feedback to me regarding the number of times those coupon codes were used to purchase services and products from EmergencyScan®. The goal that I established was to have at least 25 people use the coupon codes during the implementation period.

Implementation Plan

The implementation plan for this project was binary. One half of the plan focused on educating the officers briefly on communication disorders and training them on how to use the QR code technology. The other half of the plan focused on raising awareness in the community

about the availability of the QR code technology for storing and accessing personal health information.

For the Officers

To implement this project at the project site, I chose to begin by providing education. The intent of this DNP project was to reduce stress for first responders and citizens by making personal and health information for those with communication disorders readily available in emergencies. In order to achieve this goal, I recognized that officers must first have an understanding of what communication disorders are. They also must have some basic knowledge on how to communicate with such persons. To implement such training, a presentation was developed which incorporated information from reliable sources on communication disorders. This presentation was shared during a department staff meeting. As communication disorders can take a number of forms, this presentation was not completely inclusive, but it reviewed more common disorders that officers are likely to encounter.

Based on the lack of literature found on the use of QR code technology for the intent of providing personal health information, it was deemed that this simple technology was a relatively new practice. As such, it was vital to ensure that officers knew what the technology was and how to utilize it in an emergency. During the same staff meeting, I discussed the technology with officers. A demonstration was performed to show them how to scan the code and what the resulting profile may look like. Officers were asked to perform a reverse demonstration in order to show me that they knew how to scan the code. I then showed the officers potential formats that the QR code may come in, such as a sticker, medical ID bracelet, and dog tag necklace. Images of products from EmergencyScan® were shown as examples. However, officers were

informed that other companies may offer this same technology, so similar but different items may be encountered during their daily work.

For the Community

In order to reach a large number of residents, it was recognized that multiple outreach pathways would need to be taken. I also wanted to focus efforts on pathways that would reach persons with communication disorders and their caregivers. The first chosen pathway was to place informational flyers at a coffee shop that employs persons with disabilities. As many communication disorders are due to physical and/or mental disabilities, this was thought to be a targeted implementation pathway as it could easily reach those employees and their caregivers.

The second outreach pathway involved sharing information at the project site and through the town administration. Flyers were placed at the police department (the project site.) The town administrator also offered to have flyers placed at the town's administration building, which was done by the site champion. The town of Louisburg also shared an image of the flyer with an additional write-up about the initiative on their social media pages.

The third pathway that was selected was to reach out to the leadership of some county organizations that serve persons with disabilities and their families. The organizations included the county chapters of the Miracle League and the Autism Society of North Carolina. The Miracle League (2019) seeks to modify and overcome barriers that hinder persons with physical and mental disabilities from playing baseball. The Autism Society of North Carolina (2020) "improves the lives of individuals with autism, supports their families, and educates communities." While in-person communication was the preferred method to inform the members of these organizations about the QR code technology, it was deemed safer to try to reach persons through social media and email considering the COVID-19 pandemic. Therefore, I prepared an

informational message about the technology, which contained a link to the EmergencyScan® site. Individuals were instructed to comment on the post or email a response to me if they were interested in receiving more information about the initiative. This implementation pathway was also considered to be targeted as it involved organizations that serve persons with communication disorders.

The fourth outreach pathway involved emailing educators with the county's public school system and the local charter school. I specifically tried to reach the instructors of the exceptional children. They were emailed a copy of the flyer and were asked to share information about the initiative with the families of their students.

For the fifth pathway, I reached out to other businesses and health care offices in the area. I requested permission to place flyers at their locations. These sites included a gym, the county health department, a pediatric primary care office, and several therapy or behavioral health offices in the area. In this pathway, I also reached out to the Children's Developmental Services Agency to inquire about which therapy venues they refer children to. I also sent a copy of the flyer in case they were willing to share it, as well.

The final outreach pathway involved sending emails or web messages to approximately 75 churches in the county. Email was the preferred method of communication for this pathway. If I was able to locate an email address for the church or one of the church's leaders, I sent an email containing information about the initiative along with an attachment of the project flyer. I asked that they share information with their congregation about the initiative through whatever means they saw fit (word-of-mouth, email, social media post, etc.) If I could only locate a Facebook page or website for the church, I sent information through one of those portals. I was

not able to send an attachment with the flyer through these methods. However, I did offer to send a copy of the flyer to them through other means.

Timeline

For the Officers

The implementation period started with the start of the fall semester, which began on August 10, 2020. I deemed it important to educate the officers on the available QR code technology early in the semester in order for them to have the best opportunity to recognize the codes in emergency situations during the course of the semester. The goal was to have the officers trained within the first two weeks of the semester (by August 23, 2020.) After the training, I would evaluate whether the two training goals had been met – to train 90% of the department's full-time staff and to have at least 75% of them report feeling confident in their ability to use the QR code technology in emergencies. If the goals were not met, another PDSA cycle would be warranted to either develop a new training plan or to revise the existing one.

For the Community

As previously stated, the implementation period started on August 10, 2020. As the first outreach pathway involved placing informational flyers at a local coffee shop, the first task was to reach out to the operator of the shop to get permission to place the flyers in the location. The first milestone was to establish communication with the operator within the first week of implementation (by August 16, 2020). The second milestone was to have the brochures in place in the shop by the end of the second week, assuming approval was granted.

The second outreach pathway involved the police department (project site) and the town administration. Flyers were placed at the project site. Flyers were also taken to the town's administration building by the site champion, which was not originally planned but was offered

by the town administrator. In addition, an image of the flyer with a brief write-up on the initiative was shared on the town's social media pages. The goals established for this pathway were to have the flyers in place at the police department by August 30, 2020 and to have the information shared via social media by September 6, 2020. These goals were established for the initial PDSA cycle. The subsequent timeline was developed gradually based upon periodic review of the data provided by EmergencyScan® regarding registrations with their service using the unique coupon codes.

The third outreach pathway developed was to distribute information within the local Miracle League and Autism Society organizations. Due to the COVID-19 pandemic, it was thought to be safer to distribute this information via social media and/or email. I sought approval from the leaders of both organizations to share about the QR code technology with their members and supporters. Accordingly, the third milestone was to reach out to the leaders by the end of the third week of implementation (August 30, 2020) and have the information shared with the members and supporters by the end of the fourth week (September 6, 2020.)

For the fourth outreach pathway of sharing the initiative with educators for dissemination to families of exceptional children, I set a goal to reach out to an administrator for the county's public system by September 13, 2020 and to reach out to an administrator for the local charter school by September 20, 2020. I accomplished these goal on September 8, 2020 and September 16, 2020, accordingly. I later reached out to individual instructors for exceptional children within the public schools over the course of a couple days at the beginning of October 2020.

The fifth implementation pathway of reaching out to area businesses, health care offices, and therapy locations occurred over the course of a couple of months beginning in mid-

September 2020 and continuing through mid-November 2020. During that time, I also proceeded on to the final implementation pathway of reaching out to area churches about the initiative. I began with contacting the churches in and surrounding the immediate town limits during mid-October 2020. I then expanded that reach to contacting churches within the whole county through the beginning of November 2020.

EmergencyScan® offered to provide feedback on the utilization of the unique coupon codes. While this information was reviewed when provided, an overall assessment of the data was planned for four times over the course of the implementation period. The interim assessments were done on September 16, 2020; October 7, 2020; October 21, 2020; and November 4, 2020. It was anticipated that new PDSA cycles would potentially be needed after each of these dates depending on the progress made towards the chosen project goal. If the goal of having 25 individuals utilize the coupon code was not yet met, new outreach pathways would need to be considered or existing pathways would need to be modified. A total of five PDSA worksheets were completed for the community portion of the project as the goal was not yet met at each of the set intervals. No new implementation efforts were taken after December 1, 2020. However, the impact of the implementation efforts was tracked via the utilization of the coupon codes through February 4, 2021.

Section IV. Results and Findings

Results

My project had two separate measurement processes based upon the two-fold implementation process. For the officer-based implementation, I measured the attendance of full-time staff at the presentation on common communication disorders and the QR code initiative. I then surveyed the officers to ascertain their confidence in their ability to use the QR code technology if they encounter it in an emergency. For the community implementation, I measured the number of sign-ups in this area. This was done with the assistance of EmergencyScan® who provided special coupon codes for free registration and for 25% off of products with free shipping. EmergencyScan® provided periodic feedback on the utilization of those coupon codes.

For the officer implementation, I expected to train at least 90% of the full-time staff at the project site and to have at least 75% of the trained staff indicate that they were confident in their ability to use the QR code technology during an emergency. For the community implementation, I expected to have at least 25 citizens use the special coupon codes to sign up with EmergencyScan®.

The presentation to the officers at the project site was conducted on August 18, 2020. At that time, there were 16 full-time employees. Fifteen attended the training. Of the 15 staff that attended the training, 11 indicated that they “strongly agree” and four indicated that they “agree” that they can use the QR code technology in an emergency. Therefore, the officer implementation met both goals with 93.75% of the full-time staff being trained and 100% of the trained staff indicating that they feel confident in being able to use the QR code technology.

For the community-based implementation, there were no registrations with EmergencyScan® using the special coupon codes during the implementation period. Although

there have been no registrations or purchases with EmergencyScan® using the special coupon codes, EmergencyScan® was able to provide feedback of a high percentage of website visits from the state of North Carolina. For the week of September 14-20, 32.31% of the new site visits from the United States and Canada came from North Carolina. The percentage dropped off in subsequent weeks to 7.22% for September 21-October 4 and 10% for October 5-19. There were 10 new site visits from North Carolina during October 18-November 7, which was 7.75% of the new site visits during that time. From November 8-February 4, 9.38% (20 of 213) of the site visits came from North Carolina. While my own project implementation cannot solely assume credit for the high percentage of site visits from throughout the state, it is suspected to be a reflection of the collective implementation efforts of three other students who were working on similar projects in other counties and myself.

Community implementation was difficult in light of the COVID-19 pandemic. COVID-19 restrictions made it difficult to reach a large number of people in person and show demonstrations of the technology. I feel that if people had been able to see a demonstration of the technology and the available products in person, there may have been better uptake of the QR code technology in the community.

Outcomes Data

For the officer implementation, I gathered quantitative data on the number of full-time staff members in attendance at the training. This was done through a sign-in sheet. The number of signatures on the sign-in sheet was then compared to a total number of full-time staff members on a roster provided to me by the site champion. I also gathered qualitative data on how many of the trained staff members felt comfortable with their ability to use the QR code technology in emergencies. This was done through a printed survey where the officers indicated their level of

agreement with the statement: “I am confident in my ability to use QR code technology (such as EmergencyScan®) in an emergency situation.” A five-point Likert-type scale was used for this survey. For the community implementation, quantitative data was collected through the assistance of EmergencyScan®. EmergencyScan® provided feedback on the number of registrations and purchases made using the special coupon codes.

The outcome measure for this project was to try to decrease stress for first responders and citizens with communication disorders in emergencies by improving communication between the two parties. Two concerns were recognized in this effort. The first concern was the lack of knowledge and training that officers receive on communication disorders. Therefore, one process involved training them on common communication disorders and presenting them with tips on how to interact with such persons in emergencies. To measure the success in getting them trained, the attendance at the training session was tracked. The second concern was the lack of awareness about the utilization of QR code technology for medical profile purposes. Thus, the second process was to raise awareness. To raise awareness among the officers, information on the QR code profiles was presented and officers were given a sample code to scan. To raise awareness in the general public, flyers were placed out in the community, posts were made on social media, and information was shared virtually with perceived stakeholders. The process measures for the awareness component were to survey the officers on their ability to use the technology after they were trained on it and to track registrations with EmergencyScan® using the special coupon codes.

Discussion of Major Findings

The officer-based implementation measures were successful at meeting the intended training outreach and training effectiveness goals. The community-based implementation

measures were not successful in achieving the designated goal of 25 citizen sign-ups with EmergencyScan®. As of February 4, 2021, there were no sign-ups using the special coupon codes for the county. I received some general messages of support from community partners who seemed willing to share information on the initiative with others. I also had one officer express interest in the technology for his own child with specials needs. However, none of those words of support or interest led to a sign-up during the project implementation interval.

Section V. Interpretation and Implications

Cost Benefit Analysis

For the portion of the project that was aimed at educating officers on common communication disorders and the availability and use of QR code technology in emergencies, cost would be minimum. It took approximately 45 hours to develop the PowerPoint presentation. This time consisted of reviewing various sources of information on communication disorders and then compiling bits of that information into a slideshow. Information on the QR code technology was also added to this presentation. Creating such a presentation could either be done by an officer or by a community partner with a special interest in communication disorders. Having a volunteer to create the presentation certainly is the more affordable option.

The department head made it mandatory for staff to attend the presentation that was given. Therefore, officers were paid for their attendance. However, the presentation was given during a regular staff meeting for the department. The presentation itself lasted approximately 30 minutes. Therefore, it cost the organization a half-hour of pay per participant. Refer to Table H1 for an estimated budget to train all department personnel.

For the community implementation portion of the project, it would once again primarily cost the organization the time and salary of an officer or other designee to reach out to community members. Some outreach efforts could be incorporated with other work duties, such as with the original plan to promote the utilization of the QR code technology at the town's music festival. The officers already work at the festival to provide security, so it would not be an extra cost. Visiting businesses in the town limits to place out flyers could also be incorporated as part of an officer's daily duties. The extra cost would come in spending time to contact organizations or professionals to request that they share information with the persons with

communication disorders that they come in contact with. That being said, the flyers that were made to place out in the community did incur an actual cost (see Table H2). It cost approximately $60 to have 100 flyers professionally printed. Some plastic holders for the flyers were also purchased. For a set of two holders, the cost was $12.61. Two sets were ordered for a total cost of $26.92 with taxes.

The project has the potential to improve the quality of response that officers have for emergencies involving persons with communication disorders. For example, if officers are easily able to determine that someone has autism as opposed to being under the influence of an illicit drug or alcohol, they can then provide a more appropriate response for the situation. It could also make their work more efficient. The QR code technology offers the ability to gather information about an individual that the person might not necessarily be able to provide on their own. Instead of officers spending time trying to figure out the dynamics in a situation or who someone's emergency contact might be, that information can be readily accessed in less than 30 seconds by scanning the code.

Although the COVID-19 pandemic restrictions altered implementation processes, it cannot be claimed that those changes necessarily added to costs. More implementation was done via the internet by sending emails and messages, which ended up being more cost and time efficient. It is quicker and easier to send emails to 50 instructors at 15 schools than for one to drive to the 15 schools and share information with the 50 instructors in person. This same convenience applied with reaching out to churches throughout the county.

The project had minimal costs. The primary cost came in regard to time. I think the organization would have a good return on their investment with increased uptake in the community. In the least, the organization benefits from positive public relations through the

promotion of the initiative. Teachers, church leaders, and the general public who learn of the implementation can see that the police department is prioritizing their relationships with community members, particularly those who may generally be more vulnerable in emergencies. The organization could consider applying for a grant that could help cover the few costs that are associated with the implementation process.

Resource Management

The organization had the ability to hold an in-person training for the officers. This allowed them to practice utilizing the QR code technology and to ask questions as needed. It also helped ensure that more of the staff were reached. While not all staff members have department-supplied smart phones, they did have their own personal phones that they could use to scan the QR codes. The town also had its own social media page. The police department was able to get information shared about the initiative with the general public through that platform.

There were no particular resources that the department needed that presented significant barriers to implementation and successful outcomes. However, it is wondered if and how the community response would have changed if the officers themselves were doing more of the community promotion for the initiative as it is suspected that the department had connections with various community leaders. Therefore, they may have been able to utilize those connections for more successful outcomes.

It is feasible that the department would consider sharing information with the general public at community events that they are already serving at as it does not warrant any significant extra cost and is a prime opportunity to promote public relations. It is also feasible for the department to incorporate further education on communication disorders as part of their staff meetings. However, I do not foresee the organization designating staff to reach out to community

members about the initiative via numerous email communications. Being a smaller department, many staff members are already working over-time to help provide police coverage for special events in the town, and they are taking on extra responsibilities, such as writing grants for equipment.

Implications of the Findings

The costs of and investment in this initiative for the sponsoring organization are mainly manpower and time. It takes time and effort to build connections in the community with leaders who can help promote the use of the medical QR code technology among populations who may most benefit from it. It also takes time and effort for an organization to present this information to citizens directly and to develop staff training. While the initiative carries positive implications across the gamut, an organization has to determine if the return is worth the investment.

Implications for Patients

This project has positive implications for patients. Officers at the department are now aware of the availability of wearable QR code technology that is connected to medical profiles. They have been trained on how to scan the QR codes so they can access such vital information. They also have been encouraged to look for other potential sources of medical information, such as medical ID bracelets. The officers have furthermore been provided with information on some common communication disorders and with suggestions for how to interact with persons with those conditions. This can lead to more tailored and safer responses in emergencies. The response to someone who is exhibiting defiant behavior due to autism should be different than the response to someone who is exhibiting defiant behavior due to impairment with alcohol or illicit drugs.

The utilization of this technology can help persons with communication disorders get safer and more individualized medical care from first responders. It can also help first responders to reach emergency contacts in a more timely manner.

Implications for Nursing Practice

This project also has positive implications for nursing practice as the QR code technology has the potential to be used in the same manner by nursing professionals, particularly emergency department nurses. The availability of information accessed through the QR code profiles can facilitate better care across the continuum. If accessed by first responders initially, it can lead to more efficient handoff of care to other responders or health care professionals.

Impact for Healthcare Systems

Healthcare systems can also be affected by the utilization of the medical QR code technology and the aspects of this project. The use of this technology has the potential to help the community meet Healthy People 2020 and Healthy North Carolina 2030 goals. Healthy North Carolina 2030 and Healthy People 2020 both aim to reduce adverse events or psychological stressors for individuals, specifically for children and for adults with special needs (respectively.) In addition, Healthy People 2020 has a goal of increasing the percentage of adults with special needs that perceive social and emotional support. The utilization of the QR code technology by first responders to quickly access an individual's personal or health information can help prevent the undue stress of trying to ascertain that information through other methods. It also allows first responders to more quickly provide appropriate support to those persons with disabilities. The utilization of this technology also aligns with the IHI's Triple Aim of better patient care, better population health, and decreased health care costs per capita. If first responders can have efficient access to someone's past medical history, medication list, and allergies, they can refine

the emergency medical care that they give accordingly. Decreasing stress for all parties involved betters population health. Accomplishing both better patient care through the avoidance of adverse events and better population health through the reduction of stress subsequently leads to decreased health care costs.

As law enforcement has come under much scrutiny in recent years, participating in such initiatives helps to improve community relations. It demonstrates that the department cares about citizens, particularly those who may be more vulnerable to injury or crime.

Sustainability

It is not suspected that the department will continue all the implementation efforts for this project. Hopefully, the education on communication disorders and awareness of the technology will continue to be beneficial to the officers. However, it is not foreseen that the department will designate a staff member to spend time reaching out to various community organizations. The department may consider promoting the utilization of the technology at community events, such as the town's monthly music festivals, if the opportunities present themselves. The department would also likely be willing to partner with another student to continue the project efforts, if the student were able to undertake the majority of the demands for manpower and time.

The department can afford to continue certain aspects of this project. In speaking with the site champion, the department could afford the approximate $100 that was spent on the flyers and plastic holders (T. Lincoln, personal communication, November 11, 2020). However, being a smaller police department, they do not have the ability to spare personnel to focus on sending emails out to churches, teachers, special-needs organizations, and health services to try to help promote the dissemination of information about this initiative in the community. They could afford to incorporate some dissemination efforts into their daily job activities, such as with the

aforementioned music festivals. They could also continue to promote awareness through the town's social media pages and website for free.

Dissemination Plan

The project details were initially disseminated to faculty and fellow students at East Carolina University's College of Nursing on April 6, 2021 via a poster presentation. The poster was then presented at Louisburg Police Department on April 20, 2021. This paper was provided for upload to The ScholarShip (East Carolina University's Institutional Repository) on April 28, 2021.

Although this project was completed in order to fulfill the requirements of the DNP Essentials (outlined in Appendix I), I hope to be able to disseminate the message and findings of this project beyond the university and project site. Other hopeful dissemination efforts include participating in the poster presentations at the annual conference for the Emergency Nurses Association (ENA), an organization that I have been an active member of for several years, and at conferences for the North Carolina Nurses Association (NCNA.) The next annual convention for NCNA is scheduled for September 23-24, 2021 in Charlotte (NCNA, 2021). There is also a symposium for nurse practitioners scheduled for March 20-23, 2022 in Asheville (NCNA, 2021). There is no information currently available regarding applying to present at either of these events. The next ENA annual conference is scheduled for September 22-25, 2021 (ENA, 2021). However, proposals for poster presentations were due on February 4, 2021 (ENA, 2021). Therefore, the next potential opportunity to present for that organization will be in 2022.

Section VI. Conclusion

Limitations

Limitations were encountered during the course of this project, particularly during the implementation phase. While I was not limited in my ability to communicate in person with the officers at the department or with my site champion, I was limited in my ability to communicate with community organizations and citizens in person. This was primarily due to COVID-19 pandemic restrictions. I originally desired to partner with the officers and attend one of the town's music festivals in order to disseminate information on the initiative in person to citizens. This would have allowed me to show samples of the QR code products available through EmergencyScan® and to demonstrate how to use the technology using EmergencyScan®'s sample profile. However, all of those events were cancelled because of the COVID-19 pandemic and mandated social distancing restrictions. Access to health care facilities, organizations, churches, and schools was also restricted because of the pandemic. As a result, email and web messages were my primary method of communication with individuals and organizations. In this, I was limited in my ability to know if my message was received and if organizations were willing to share information with their members about the initiative unless they took the time to respond to my message.

There were no significant limitations noted during the planning phase with the exception of the lack of knowledge of what restrictions I would encounter during implementation because of the pandemic. I did not have difficulty procuring a project site. The police chief and the site champion were accommodating throughout the process.

Much of the evaluation process for my project was dependent on receiving feedback from EmergencyScan®. The founder of the company was very accommodating. I initially intended to

review feedback on the sign-ups with EmergencyScan® on a set schedule. However, in being dependent on another party for that information and not wanting to inconvenience their staff, the feedback was provided in a more sporadic fashion. Evaluating the implementation with the officers at the department was not limited by getting response feedback. The staff were able to provide feedback immediately through their survey responses at the presentation. That being said, the full effect of the project cannot be solely displayed by the staff surveys or by the number of EmergencyScan® sign-ups. If the officers are now more cognizant of communication disorders and more mindful of looking for medical alerts, then the project has had a positive impact. If the project implementation and evaluation period were not time restricted, this information could have been obtained through repeat surveys and included in the evaluation process. There are also potential effects that are difficult to fully evaluate, such as the impact of the initiative on the opinions of citizens in regard to the officers and the police department as a whole.

Recommendations for Others

If another student was going to continue the original project with the current organization, I would encourage that student to wait and conduct the implementation portion of the project when face-to-face interaction is not restricted due to the COVID-19 pandemic. In speaking with the founder of EmergencyScan®, he gave feedback that their organization has noticed better uptake when they have been able to give live demonstrations of the technology (D. Darroh, personal communication, October 22, 2020). I would also suggest working with the police department liaison to form partnerships with local health care offices with the goal of having the providers to inform their patients about the initiative.

If extending the project or starting with another organization, I would again recommend waiting until a time when face-to-face contact is not limited. I would also suggest trying to get buy-in from key partners in the community during the planning phase. If they are involved and able to give feedback and suggestions during the planning phase, there may be better response and increased involvement in the implementation phase.

I believe employing multiple implementation methods is helpful. You can reach some individuals better through social media whereas others avoid social media and may be more apt to read or take a flyer in a business. That said, I would encourage more direct implementation with the site champion to see if community uptake improves. There may be a greater response if email communication is coming from the first responder's email address instead of the student's email address. Also, if the community members are seeing the first responder actively promoting the initiative, they may be more willing to participate.

Recommendations Further Study

It would be beneficial to survey or poll the participants at the project site to determine their baseline knowledge on communication disorders. This would be helpful to complete during the planning phase as this information could then be used to create a more refined presentation on communication disorders that builds on what the participants already know. I would then re-survey or test the participants after the educational presentation to ascertain if they had an increase in knowledge on communication disorders from the presentation.

In doing the literature review, it was noted that there was a lack of a set standard by which to measure efforts to improve communication between first responders and persons with communication disorders. Further trial efforts may allow one of the methods to become a standard that further methods may be measured against. Nevertheless, it is recognized that much

of the measurement of such initiatives is subjective, which makes it more difficult to establish a true standard of care.

Overall Conclusion

Although there were no sign-ups with EmergencyScan® using the unique coupon codes during the implementation period, I do believe that this project impacted the community for the better. Officers received some additional training in communication disorders, and they were reminded to look for indicators like medical ID bracelets that can help alert them to an individual's special need. There were limitations and barriers encountered along the way, and I feel that it would be beneficial to attempt implementation again when those hindrances can be modified or overcome. The project can then have an even greater impact on the community, if there is success in getting the general public to utilize the QR code technology.

References

Anderson, M. (2019, April 13). *How one mother's battle is changing police training on disabilities*. NPR. https://www.npr.org/2019/04/13/705887493/how-one-mothers-battle-is-changing-police-training-on-disabilities

Andone, D. (2017, September 21). *'He can't hear you': Officers shoot, kill deaf man after giving verbal order*. CNN. https://www.cnn.com/2017/09/21/us/police-shoot-deaf-man-oklahoma-city-trnd/index.html

Autism Society of North Carolina. (2020*). Our mission*. https://www.autismsociety-nc.org/our-mission/

Blocker, K. (2015, October 22). The Arc works to improve law, disabled interactions. *Journal of Business, 30*(22), 13. https://search.proquest.com/docview/1733941144?accountid=10639

Brodsky, R. (2019, March 10). New ID cards may help those with disabilities. *Newsday (Combined editions),* 20. https://search.proquest.com/docview/2189257160?accountid=10639

Copenhaver, A., & Tewksbury, R. (2018). Interactions between autistic individuals and law enforcement: A mixed-methods exploratory study. *American Journal of Criminal Justice, 44*, 309-333. https://doi.org/10.1007/s12103-018-9452-8

Eischens, R. (2019, July 14). Sheriff launching Project First Responder this summer. *The News Leader*, B5. https://search.proquest.com/docview/2257164236?accountid=10639

Emergency Nurses Association. (2021). *Emergency Nurses Association call for content 2021*. https://www.ena.org/call-for-content

Families for Effective Autism Treatment. (n.d.). *What to expect*. https://featoflouisville.org/autism-friendly-community/kentucky-autism-training-center/

Garner, B. (2017). Training first responders to respond better. *The Exceptional Parent, 47*(10), 52-55. https://link.gale.com/apps/doc/A521162492/HRCA?u=ncliveecu&sid=HRCA&xid=cd34343d

Health ENC. (2019). *Franklin County 2018 community survey results (*Version May 23, 2019) [Data Set]. Health ENC. https://www.healthenc.org/2018-community-survey-results/

Institute for Healthcare Improvement. (2020a). *Science of improvement: Testing changes*. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx

Institute for Healthcare Improvement. (2020b). *The IHI Triple Aim*. http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx

Kelly, E., & Hassett-Walker, C. (2016). The training of New Jersey emergency service first responders in autism awareness. *Police Practice and Research, 17*(6), 543-554. https://doi.org/10.1080/15614263.2015.1121390

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979, April 18). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research.* https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf

Neave-Ditoro, D., Fuse, A., & Bergen, M. (2019). Law enforcement interactions: The role of communication sciences and disorders professionals. *Communication Disorders Quarterly, 40*(4), 250-256. https://doi.org/10.1177/1525740118810898

North Carolina Department of Justice. (2019). *2020 in-service training frequently asked questions.* https://ncdoj.gov/law-enforcement-training/criminal-justice/forms-and-publications/#112-wpfd-in-service

North Carolina Institute of Medicine. (2020). *Healthy North Carolina 2020: A path toward health*. Retrieved from March 28, 2020 from http://nciom.org/wp-content/uploads/2020/01/HNC-REPORT-FINAL-Spread2.pdf

North Carolina Justice Academy. (2019). *Basic law enforcement training.* https://ncdoj.gov/law-enforcement-training/criminal-justice/forms-and-publications/#107-wpfd-blet-1564147522

North Carolina Nurses Association. (2021). *Future conference dates*. https://www.ncnurses.org/events/future-conference-dates/

Star Tribune. (2019, February 14). App is helping keep the vulnerable safe. *Star Tribune,* A12. https://search.proquest.com/docview/2180065825?accountid=10639

Stephens, N., & Sauber, E. (2017, November 5). Fairview father urges police training for interaction with autistic, mentally disabled. *The Tennessean,* W5. https://search.proquest.com/docview/1959998580?accountid=10639

Stepzinski, T. (2019, April 6). OP police launch Take Me Home Program. *Florida Times Union,* 2. https://search.proquest.com/docview/2204282898?accountid=10639

The Miracle League. (2019). *About.* https://www.miracleleague.com/about-2/

Town of Louisburg, N.C. (2020). *Useful information*. https://townoflouisburg.org/

U.S. Census Bureau. (n.d.). *Quick facts: Franklin County, North Carolina*. https://www.census.gov/quickfacts/franklincountynorthcarolina

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2020). *Healthy People 2020: Disability and health*. Retrieved March 28,

2020 from https://www.healthypeople.gov/2020/topics-objectives/topic/disability-and-health

Waldman, H. B., Perlman, S. P., & Seiver, J. (2019). Understanding is a lot like sex. It's got a practical purpose, but that's not why people do it normally. *The Exceptional Parent, 49*(4), 18-20. https://search.proquest.com/docview/2220171621?accountid=10639

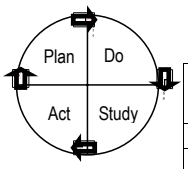
Warren, B. (2018, January 8). Boy's death becomes lesson. *Courier-Journal (Louisville, Ky.)*, A6. https://search.proquest.com/docview/1985536612?accountid=10639

Appendix A

DNP Project Flyer

Appendix B

PDSA Worksheet – Officer Cycle #1



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/20	Completion Date of Implementation: 02/04/21	**Officer Cycle #1**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The initial test will involve educating the officers at the project site about the availability of QR code technology for making health information available in emergencies. The session will also involve training on how to scan the QR codes.

How will you know that the change is an improvement? Improvement will first be measured by training at least 90% of the full-time officers/staff at the department on the coding system. It will subsequently be measured by having at least 75% of those trained say they agree or strongly agree that they would be able to scan and use the code if available in an emergency.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? I predict that there will be increased awareness among the officers about QR code technology for making health information available in emergencies.

PLAN

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Establish partnership with project site	ECU/Meagan	Summer 2020	Online/in person
2. Develop a presentation for the project site that discusses the problem, the proposed solution, and how to use the technology	Meagan	July 2020	Online data collection, presentation made at student's home
3. Deliver the presentation to PD staff	Meagan/Site champion	August 2020	Project site
4. Administer surveys to officers	Meagan/Site champion	August 2020	Project site
5. Compare attendance from session with department roster and review surveys to evaluate if desired goals were achieved	Meagan	Late August 2020	Student's home

Plan for collection of data: Attendance will be recorded via a sign-in sheet at the training. Surveys will be administered and collected. Data will then be compiled into an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☒ Yes ☐ No

Record data and observations.
The training session was held on 8/18/20. Out of 16 total full-time staff members, 15 attended the training (93.75%.) For the 15 people that attended the session, four indicated that they "agree" with their ability to utilize the QR codes and 11 indicated that they "strongly agree." Combined together, 100% of the full-time staff who were trained agreed that they would be able to scan and use the code if available in an emergency.

What did you observe that was not part of the plan?
One officer expressed that he was interested in learning more about EmergencyScan® because he has a child who has autism.

STUDY:

Did the results match your predictions? ☒ Yes ☐ No

Compare the result of your test to your previous performance: N/A

What did you learn? The training session was included as part of one of the department's mandatory staff meetings, which made it optimal for reaching the majority of the staff at one time. Based on the survey responses, the staff feel comfortable with their own ability to scan and use the QR code technology if it's available in an emergency.

ACT: Decide to Adopt, Adapt, or Abandon.

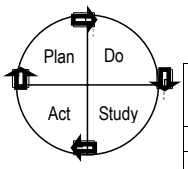
☐ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test:

☒ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix C

PDSA Worksheet – Community Cycle #1



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/2020	Completion Date of Implementation: 02/04/21	**COMMUNITY CYCLE #1**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The initial test will involve contacting a local business for permission to place information flyers about the technology in the establishment. It will also involve contacting two organizations that serve two special populations for permission to share info with their participants and supporters via email and/or social media. Flyers will also be placed at the project site, and information will be shared via their social media.

How will you know that the change is an improvement? EmergencyScan® has provided the student with special coupon codes to share with the public. These codes will be placed on the flyers and shared via email/social media. EmergencyScan® will then provide feedback on the utilization of these codes to register for their service and purchase their products. Use of the codes will indicate an improvement. The goal is to have at least 25 people utilize the codes to sign-up.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? There will be increased awareness in the community about the availability of QR code technology to be utilized for sharing vital health information.

PLAN

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Establish partnership with project site	Meagan/ECU	Summer 2020	Online/in person
2. Identify potential ways to share info with community members	Meagan	Summer 2020	Louisburg/Franklin County
3. Contact local business for permission to leave flyers	Meagan	8/10/20 – 8/16/20	Online
4. Get flyers made	Meagan	8/17/20-8/23/20	Online/Printing store
5. Initially place flyers at local business & project site	Meagan/LPD	8/24/20-8/30/20	Louisburg
6. Contact local organizations for permission to share info	Meagan	8/24/20-8/30/20	Online
7. Distribute info to key organizations & town via social media/email	Meagan/LPD	8/26/20-9/6/20	Online

Plan for collection of data: EmergencyScan® will track the usage of the coupon codes and then provide this information to the student. This data will then be tracked over time using an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☐ Yes ☒ No

Record data and observations.

The interventions that were in the control of the student were completed in a timely fashion and as planned. There was no initial response to messages/emails sent to the leadership of the coffee shop and local organizations. Therefore, the student reached out in person at the coffee shop and posted on the Facebook pages for the local organizations.

What did you observe that was not part of the plan?

1. The town manager offered to have flyers placed at the town administration building.
2. The coffee shop where flyers were placed shared a photo of the flyer on their Facebook page.
3. Individuals and groups shared the Facebook post made on the town's (project site's) Facebook page.

STUDY:

Did the results match your predictions? ☐ Yes ☒ No

Compare the result of your test to your previous performance: N/A

What did you learn? There were no sign-ups for EmergencyScan® using the provided coupon codes during the period of 08/10/2020 and 09/06/2020. While individuals and organizations in the community seemed excited about the service and willing to share the information, no one actually chose to register for the service. This project does not specifically explore why. One concern mentioned on Facebook was safety of personal and medical information. Cost could be another.

ACT: Decide to Adopt, Adapt, or Abandon.

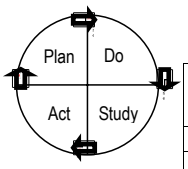
☒ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test: Reach out to the local school system and local charter school to try to share information with parents and guardians that way. Although the original intent was to share information at a town musical festival, that event has been canceled due to the COVID-19 pandemic. As an alternative, I will continue to reach out to local businesses to try to place flyers out in the community.

☐ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix D

PDSA Worksheet – Community Cycle #2



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/2020	Completion Date of Implementation: 02/04/21	**COMMUNITY CYCLE #2**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The adapted test will build upon the tasks done in the initial test. The plan is to continue to try to inform members of the community about the availability of the QR code technology for use in emergencies by attempting to share information through local schools as well as local businesses.

How will you know that the change is an improvement? EmergencyScan® has provided the student with special coupon codes to share with the public. These codes will be placed on the flyers and shared via email/social media. EmergencyScan® will then provide feedback on the utilization of these codes to register for their service and purchase their products. Use of the codes will indicate an improvement. The goal is to have at least 25 people utilize the codes to sign-up. However, as there were no sign-ups in the initial period, any sign-ups will be an improvement.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? There will be increased awareness in the community about the availability of QR code technology to be utilized for sharing vital health information.

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Contact the local public school system to ask about sharing info with parents of exceptional students.	Meagan	9/7/20 – 9/13/20	Online (via email)
2. Contact the local charter school to ask about sharing info with parents of exceptional students.	Meagan	9/14/20 – 9/20/20	Online (via email)
3. Contact the local gym about placing a flyer on the informational bulletin board	Meagan	9/14/20-9/20/20	Online or in person
4. Follow up on prior efforts	Meagan	9/21/20-9/27/20	Online/In person
5. Contact local pediatric office and local health department about placing flyers in clinics	Meagan	9/28/20-10/4/20	Online

Plan for collection of data: EmergencyScan® will track the usage of the coupon codes and then provide this information to the student. This data will then be tracked over time using an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☒ Yes ☐ No

Record data and observations.
I received no response from either the EC director for the public school system or the local charter school. I also received no response to my emails to the local pediatrician office or health department. I did get to place flyers in the local gym. I checked the project site and the local coffee shop in my follow-up efforts, and both sites still had flyers available.

What did you observe that was not part of the plan? I did not observe anything in particular that was not part of the plan.

STUDY:

Did the results match your predictions? ☐ Yes ☒ No

Compare the result of your test to your previous performance: Results have remained consistent with previous performance with no known purchases using the special coupon code.

What did you learn? There still have been no sign-ups for EmergencyScan® using the provided coupon code up through October 4, 2020. From September 14-20, 21 people from NC visited the EmergencyScan website (32.31% of all visitors.) Between September 21 and October 4, seven visitors (7.22% of total) to the website were from NC. While I cannot say how many of these visitors are from my specific area of NC, it does show that there is interest in the state about the service.

ACT: Decide to Adopt, Adapt, or Abandon.

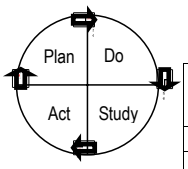
☒ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test: I can try to reach individual educators with the public school system since I never heard back from the EC director for the system. I also need to continue to reach out to local businesses regarding placing flyers in their establishments. I can also contact local churches to share the information with their memberships.

☐ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix E

PDSA Worksheet – Community Cycle #3



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/2020	Completion Date of Implementation: 02/04/21	**COMMUNITY CYCLE #3**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The adapted test will build upon the tasks done in the initial test. The plan is to continue to try to inform members of the community about the availability of the QR code technology for use in emergencies by attempting to share information through local schools as well as local businesses.

How will you know that the change is an improvement? EmergencyScan® has provided the student with special coupon codes to share with the public. These codes will be placed on the flyers and shared via email/social media. EmergencyScan® will then provide feedback on the utilization of these codes to register for their service and purchase their products. Use of the codes will indicate an improvement. The goal is to have at least 25 people utilize the codes to sign-up. However, as there were no sign-ups in the initial period, any sign-ups will be an improvement.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? There will be increased awareness in the community about the availability of QR code technology to be utilized for sharing vital health information.

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Contact individual EC instructors at the schools in the public school system in the county.	Meagan	10/7/20 – 10/11/20	Online (via email)
2. Contact local churches to request they share information with their memberships.	Meagan	10/12/20 – 10/18/20	Online (via email)
3. Follow up on prior efforts (see if additional flyers are needed at prior sites, re-post information on social media, etc.)	Meagan	10/19/20 – 10/21/20	Online/In person

Plan for collection of data: EmergencyScan® will track the usage of the coupon codes and then provide this information to the student. This data will then be tracked over time using an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☒ Yes ☐ No

Record data and observations.
I emailed 50 EC instructors in the local public school system about the initiative. I also sent emails/website messages to nine churches located in or immediately outside of the town limits.

What did you observe that was not part of the plan?
The only thing that I observed that was not part of the initial plan was that one instructor offered to share information about the QR code technology with her friends who are first responders.

STUDY:

Did the results match your predictions? ☐ Yes ☒ No

Compare the result of your test to your previous performance:
As of October 19, 2020, there have been no sign-ups with Emergency Scan using the personal access code.

What did you learn?
Although there have been no sign-ups using the coupon codes, there were 18 new visitors to the EmergencyScan® website between October 5, 2020 and October 19, 2020. This was 10% of all new site visits during that time frame. While these visits may not have all been from my area, it likely reflects the collective efforts of several students to raise awareness about the technology across the state.

ACT: Decide to Adopt, Adapt, or Abandon.

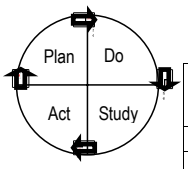
☒ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test: I plan to reach out to churches further out in the county. I can continue to search for organizations and businesses that may have a special interest in the initiative and share information with them.

☐ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix F

PDSA Worksheet – Community Cycle #4



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/2020	Completion Date of Implementation: 02/04/21	**COMMUNITY CYCLE #4**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The adapted test will build upon the tasks done in the initial test. The plan is to continue to try to inform members of the community about the availability of the QR code technology for use in emergencies by attempting to share information through local schools as well as local businesses.

How will you know that the change is an improvement? EmergencyScan® has provided the student with special coupon codes to share with the public. These codes will be placed on the flyers and shared via email/social media. EmergencyScan® will then provide feedback on the utilization of these codes to register for their service and purchase their products. Use of the codes will indicate an improvement. The goal is to have at least 25 people utilize the codes to sign-up. However, as there were no sign-ups in the initial period, any sign-ups will be an improvement.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? There will be increased awareness in the community about the availability of QR code technology to be utilized for sharing vital health information.

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Follow up on prior efforts (see if additional flyers are needed at prior sites, re-post information on social media, etc.)	Meagan	10/21/20 – 10/25/20	Online/In person
2. Reach out to churches throughout the county to ask if they will share information about the initiative with members/attendees.	Meagan	10/26/20 – 11/01/20	Online (via email)
3. Follow up on prior efforts.	Meagan	11/02/2020 – 11/04/2020	Online/In person

Plan for collection of data: EmergencyScan® will track the usage of the coupon codes and then provide this information to the student. This data will then be tracked over time using an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☒ Yes ☐ No

Record data and observations.
I was able to visit the project site and gym to ensure they still had flyers available. I also reposted the announcement about the initiative on the local Miracle League and Autism Society Facebook pages. I then reached out to 75 churches to share information on the initiative. This process did carry over though 11/03/2020.

What did you observe that was not part of the plan?
There were a couple additional actions take that were not part of the original plan. The first was that I sent information to the town manager about EmergencyScan® and the possibility of getting insurance discounts for having employees register for the service. The second was that I attempted to reach the DHHS staff member that is responsible for the area CDSA. This was to inquire about local therapy centers that they refer to. However, I did not receive a response from either party.

STUDY:

Did the results match your predictions? ☐ Yes ☒ No

Compare the result of your test to your previous performance:
I do not have data at this time from EmergencyScan® to evaluate the true effectiveness of the performance as determined by registrations and product purchases. However, I did hear back from three church leaders. Two indicated that they would consider sharing the information with their parishioners while the other indicated that she was not interested as they have a lack of technology at her church.

What did you learn?
While online communication is more time efficient and feasible in certain situations, it does not truly let individuals see the full potential of the proposed service. It also does not force individuals to give you a response or allow you to ascertain that the message was received and understood.

ACT: Decide to Adopt, Adapt, or Abandon.

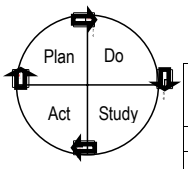
☒ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test: I plan to try to reach out to CDSA again and find local therapy sites to share the initiative information with. I will also follow up on prior efforts.

☐ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix G

PDSA Worksheet – Community Cycle #5



PDSA WORKSHEET

Project Site: Louisburg Police Dept.	Start Date of Implementation: 08/10/2020	Completion Date of Implementation: 02/04/2021	**COMMUNITY CYCLE #5**
Overall organization/project aim: Improve communication between first responders and persons with communication disorders			
What is the objective of the test? To increase the awareness about and utilization of QR code technology for sharing health information in emergencies			

PLAN:

Briefly describe the test: The adapted test will build upon the tasks done in the initial test. The plan is to continue to try to inform members of the community about the availability of the QR code technology for use in emergencies by attempting to share information through local schools as well as local businesses.

How will you know that the change is an improvement? EmergencyScan® has provided the student with special coupon codes to share with the public. These codes will be placed on the flyers and shared via email/social media. EmergencyScan® will then provide feedback on the utilization of these codes to register for their service and purchase their products. Use of the codes will indicate an improvement. The goal is to have at least 25 people utilize the codes to sign-up. However, as there were no sign-ups in the initial period, any sign-ups will be an improvement.

What system (driver) does the change impact? Improves public safety

What do you predict will happen? There will be increased awareness in the community about the availability of QR code technology to be utilized for sharing vital health information.

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1.Attempt to reach the area CDSA official to share information.	Meagan	11/05/20-11/08/20	Online/Via phone
2. Reach out to local therapy centers and behavioral health centers to share information that they can potentially share with clients.	Meagan	11/09/20-11/15/20	Online/Via email/In person
3. Follow up on prior efforts and collect final data.	Meagan	11/16/20-02/04/21	Online/In person

Plan for collection of data: EmergencyScan® will track the usage of the coupon codes and then provide this information to the student. This data will then be tracked over time using an Excel sheet.

DO: Test the changes.

Was the cycle carried out as planned? ☒ Yes ☐ No

Record data and observations.
I reached out to CDSA to inquire about the therapy centers that they refer to and to ask if they would share information with the families they assist. The staff member that responded indicated that she felt the children they serve were too young to benefit. I also reached out to behavioral health and therapy offices in the area, but I did not receive a response from them. In the follow-up efforts, I shared the flyer on my personal Facebook page and the town of Louisburg re-shared it on their social media. No new implementation efforts were undertaken after December 1, 2020. However, data on registrations with EmergencyScan® were collected through February 4, 2021. As of that time, there were no sign-ups using the coupon codes.

What did you observe that was not part of the plan?
I had one individual reach out to me after my post on my personal Facebook page to request more information on EmergencyScan®.

STUDY:

Did the results match your predictions? ☐ Yes ☒ No

Compare the result of your test to your previous performance: There were no sign-ups with EmergencyScan® using the coupon codes, so I did not meet my goal of getting 25 registrations for the QR code profile service.

What did you learn? There is some community interest in this service.

ACT: Decide to Adopt, Adapt, or Abandon.

☒ **Adapt: Improve the change and continue testing plan.**
Plans/changes for next test: The idea of utilizing QR code medical profiles for improved communications is still believed to be beneficial. In addition to the tried implementation methods, it is recommended for future efforts to be made when there are no restrictions on in-person outreach due to the COVID-19 pandemic. It is thought that live demonstrations of the technology would likely garner better uptake of the service by community members.

☐ **Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability**

☐ **Abandon: Discard this change idea and try a different one**

Appendix H

Proposed Project Budgets

Table H1

Proposed Project Budget for Louisburg Police Department for QR Code Training

Occupation	Average hourly salary in NC	Number of staff	Total cost for 30 min of training
Police officer	$19.00	18	$171.00
Administrative assistant	$14.96	1	$7.48
Grand total			$178.48

Note. Average NC hourly salary rates located on Indeed.com

Table H2

Proposed Project Budget for Promoting Community Awareness of QR Code Medical Profiles

Supply	Quantity	Cost per unit	Total cost (with tax)
Flyers	100	$0.55	$59.20*
Flyer holders	4	$6.31	$26.92
Grand total			$86.12

*A coupon was used to lower the final cost.

Appendix I

DNP Essentials Mapping

	Description	Demonstration of Knowledge
Essential I: Scientific Underpinning for Practice	**Competency:** Analyzes and uses information to develop practice **Competency:** Integrates knowledge for humanities and science into context of nursing **Competency:** Translates research to improve practice **Competency:** Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes	1. Literature review conducted to determine if there was widespread concern on the impact of communication disorders on communication between first responders and citizens in emergencies 2. Literature also reviewed to ascertain what interventions had been previously implemented to address this concern and to determine if one intervention appeared to be more effective than the others
Essential II: Organizational & Systems Leadership for Quality Improvement & Systems Thinking	**Competency:** Develops and evaluates practice based on science and integrates policy and humanities **Competency:** Assumes and ensures accountability for quality care and patient safety **Competency:** Demonstrates critical and reflective thinking **Competency:** Advocates for improved quality, access, and cost of health care; monitors costs and budgets **Competency:** Develops and implements innovations incorporating principles of change **Competency:** Effectively communicates practice knowledge in writing and orally to improve quality **Competency:** Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems	1. Promoted the utilization of QR code medical profiles, a newer method, as none of the previously found methods was established as a standard of care 2. Ensured supply costs were kept low by searching for lower prices and using coupons 3. Held a presentation at the project site to review common communication disorders and to educate officers on how to utilize the QR code medical profiles 4. Contacted community stakeholder primarily via email to promote the project initiative due to the COVID-19 pandemic

Essential III: Clinical Scholarship & Analytical Methods for Evidenced-Based Practice	**Competency:** Critically analyzes literature to determine best practices **Competency:** Implements evaluation processes to measure process and patient outcomes **Competency:** Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality of care for patients **Competency:** Applies knowledge to develop practice guidelines **Competency:** Uses informatics to identify, analyze, and predict best practice patient outcomes **Competency:** Collaborate in research and disseminate findings	1. Searched the literature for a best practice method aimed at targeting the project problem 2. Obtained data (informatics) from EmergencyScan® on registrations with their service using special coupon codes for my project 3. Used the PDSA framework to evaluate my project implementation
Essential IV: Information Systems – Technology & Patient Care Technology for the Improvement & Transformation of Health Care	**Competency:** Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery and quality of care **Competency:** Analyze and operationalize patient care technologies **Competency:** Evaluate technology regarding ethics, efficiency, and accuracy **Competency:** Evaluates systems of care using health information technologies	1. Promoted the utilization of QR code medical profiles for communicating personal and health information in emergencies 2. Addressed ethical and safety concerns that were raised by citizens about the technology 3. Used Microsoft PowerPoint to develop a presentation on communication disorders 4. Educated officers on the availability of the QR code medical profiles and how to access them
Essential V: Health Care Policy of Advocacy in Health Care	**Competency:** Analyzes health policy form the perspective of patients, nursing, and other stakeholders **Competency:** Provides leadership in developing and implementing health policy **Competency:** Influences policymakers, formally and informally, in local and global settings	1. Completed CITI training and a questionnaire to determine that IRB approval was not needed for my project 2. Advocated for the promotion of the QR code medical profiles with key community leaders

	Competency: Educates stakeholders regarding policy **Competency:** Advocates for nursing within the policy arena **Competency:** Participates in policy agendas that assist with finance, regulation, and health care delivery **Competency:** Advocates for equitable and ethical health care	3. Expressed how the utilization of the QR code profiles would allow first responders to provide safer, more individualized care to citizens
Essential VI: Interprofessional Collaboration for Improving Patient & Population Health Outcomes	**Competency:** Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship **Competency:** Provide leadership to interprofessional care teams **Competency:** Consult intraprofessionally and interprofessionally to develop systems of care in complex settings	1. Consulted with my DNP faculty on how to best implement my project and disseminate findings 2. Collaborated with my site champion and with the founder of EmergencyScan® to promote the utilization of QR code medical profiles in my area
Essential VII: Clinical Prevention & Population Health for Improving the Nation's Health	**Competency:** Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery **Competency:** Synthesizes information and cultural competency to develop and use health promotion/disease prevention strategies to address gaps in care **Competency:** Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity	1. Synthesized information from a variety of sources to develop a presentation on common communication disorders and how law enforcement can best interact with those individuals 2. Established the need for the project through the review of statistics and popular media, both on the local and national levels
Essential VIII: Advanced Nursing Practice	**Competency:** Melds diversity and cultural sensitivity to conduct systematic assessment of health parameters in varied settings **Competency:** Design, implement, and evaluate nursing interventions to promote quality **Competency:** Develop and maintain patient relationships **Competency:** Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes	1. Reached out to key stakeholders to promote dissemination of information on QR code medical profiles 2. Encouraged that citizens reach out to me if they had any questions or concerns about the QR profiles 3. Recognized the benefit of the technology across

	Competency: Mentor and support fellow nurses **Competency:** Provide support for individuals and systems experiencing change and transitions **Competency:** Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures	systems and the continuum of care 4. Collaborated with three other students who were conducting similar projects for ideas and support 5. Reviewed effectiveness of project interventions at achieving project goals and made recommendations for future practice