

Implementation of a CPR Training Program for Employees of a Migrant Farm Worker Health

Outreach

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Paper submitted in partial fulfillment of the  
requirements for the degree of

Doctor of Nursing Practice

East Carolina University  
College of Nursing

Date Finalized

### Acknowledgments

The past three years have been fraught with emotion and physical exhaustion. Without the help of my tribe, none of it would have been possible.

Angela and Denise; thank you for answering my frantic texts, reassuring me that all would be well, praying for me, and reminding me to laugh.

Drs. Skipper and Bell; thank you for your support, counsel, and editing. You both have been immeasurably helpful during this process.

Erica; our friendship will stand out as one of the best parts of grad school. I can't wait to have unlimited time for knitting project sharing and Harry Potter discussions with you.

Milf; I'm forever grateful to have had you as my school buddy and work bestie. You kept me sane, entertained me with gifs, and tolerated my random obsessions. I couldn't have done it without you.

Mom, Grammy, Guddy, and Marissa; you watched my circus and loved them when I couldn't be there. Knowing you were keeping them alive, reading them stories, and feeding them endless peanut butter sandwiches allowed me to make this happen. Thank you.

Chris, Henry, William, & Caroline; I wish I had an eloquent and funny thing ready to write, but there aren't words enough in the English language to express my gratitude to and for each of

you. You have sacrificed alongside me and supported me every step of the way. You have loved me, taken care of me, read patho books with me, laughed with me at my missteps, and snuggled and mugga'd me. You are my world, and I am eternally grateful.

### Dedication

Over the course of the past ten years I have had the privilege of caring for countless patients and families impacted by sudden cardiac death. I have been continually amazed at the perseverance, kindness, and tenacity they have allowed me to witness as I walked this road with them. My time caring for them has been one of the greatest gifts of my career. My deepest hope is that through this project, another family will be spared their pain. This project is for them.

### Abstract

Sudden cardiac death (SCD) is a growing public health issue that disproportionately impacts low socioeconomic status groups. Latinos are significantly more likely to suffer SCD and less likely to survive neurologically intact. This disparity is mainly believed to be due to low rates of bystander cardiopulmonary resuscitation (CPR) in this community. The aim of this DNP quality improvement project was to educate and equip employees of a migrant farmworker health outreach to provide hands-only CPR training to Latino migrant farmworkers. The participating outreach employees (n=3) were provided with an American Heart Association approved curriculum and ten inflatable mannequins. An initial hands-on training session was provided with a review of available resources. Over the course of two months, the participants provided hands-only CPR training sessions to migrant workers during regularly scheduled outreach visits. During implementation a total of 55 migrant workers were educated. Based on follow-up survey results, none of the participants felt comfortable teaching hands-only CPR, 66% felt well prepared, 100% felt the training and materials were appropriate for migrant farmworkers, and 100% planned to continue providing the education.

*Keywords:* bystander CPR, hands-only CPR, migrant farmworker, Latino, Sudden Cardiac Death

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## Chapter One: Overview of the Problem of Interest

Sudden cardiac death (SCD) is a growing concern in today's global healthcare climate. In spite of multiple national campaigns to increase awareness and prevention, heart disease remains a leading killer nationwide, with sudden cardiac arrest being the first symptom in many patients (Keller & Halperin, 2015). This is a rapidly evolving health issue, and in 2017, SCD surpassed all other causes of death for males in the United States (Benjamin et al., 2018). While no group is immune to SCD, Latinos and socioeconomically disadvantaged persons are disproportionately affected. They are more likely to suffer from out of hospital cardiac arrest (OHCA), and far less likely to survive (Carabello & Lorenzo, 2014). Advances in critical care management techniques, such as targeted temperature management post cardiac arrest, allow improved outcomes for patients post OHCA, but much room for improvement exists.

### Background of the Problem

**Epidemiology.** Nationally, the incidence rate of SCD is 50-100 per 100,000 people annually (IOM, 2015; Myerburg, 2017). Available data from North Carolina indicates incidence of SCD as 32.1 per 100,000 people annually (Lewis et al., 2016).

Lower socioeconomic status (SES) is positively correlated to SCD incidence. This disparity is starkest in those younger than 65. Many believe this is due to a lack of reliable and affordable access to healthcare, leading to greater incidence of undiagnosed and untreated cardiovascular disease (Reinier et al., 2011).

**Morbidity and Mortality.** Survival rates are an especially important measure for understanding the true cost of the disease with respect to SCD. In most discussions surrounding SCD, it is calculated based on the number of patients who survive to hospital discharge immediately following the event.

There is wide variation in reported survival rates. Within ten North American cities alone, the reported range is 7.7% to 39.9%. The national average survival rate is 6% (IOM, 2015). Survival rates in North Carolina increased dramatically in recent years. Data shows that survival to discharge rates increased from 11.3 per 100,000 to 15.1 per 100,000 over a three-year period which included extensive community training in hands-only CPR (Hansen et al., 2015).

In the case of SCD, the most common measure of morbidity is whether the patient survives neurologically intact. This measure is an important factor in analyzing interventions surrounding SCD, as survival alone does not clearly indicate the success of an intervention. Despite increasing survival rates, the potential for profound disabilities following SCD remains, creating a heavy impact globally and within individual communities. Furthermore, neurologic injury is a leading cause of death long term in this population (Nayeri et al., 2017).

Within the US, less than 10% of SCD victims leave the hospital with favorable neurologic outcomes. Patient age and length of time to achieve spontaneous circulation are inversely related to neurologic outcomes (Nayeri et al., 2017). Most hospitals reporting use different gradations of neurologic functioning, so while a patient may be considered “intact”, that does not always indicate a return to baseline functioning.

### **Significance of the Clinical Problem**

To date, the most important determinant of survival to hospital discharge and neurologic outcomes is high quality cardiopulmonary resuscitation (CPR). Unfortunately, while most SCDs occur out of the hospital, the rate of CPR in those situations is low. In North Carolina, data shows that only 23% of OHCA victims received bystander CPR (Hansen, Kragholm & Pearson, 2015).

Historically, CPR training was under the realm of health professionals, and a complicated process involving compressions and mouth-to-mouth resuscitative breathing. Recent advances show implementing hands-only CPR is an effective method for training laypersons to respond to out of hospital arrests, and can double or triple survival (Chang et al., 2017; Nuno et al., 2017). These advances in training allow education to take place in a large variety of venues and reach a vast array of participants. For low-income and minority communities, this lower-cost option opens an education avenue that was historically cost prohibitive (IOM, 2015). This permits far greater exposure than previously achieved; potentially resulting in an exponential increase in CPR trained community members.

Moreover, with recent advances in education and training materials, a layperson is now able to effectively provide training. Magid, Heard, and Sasson (2018) found that teachers using a pre-written curriculum could successfully teach their students the steps of hands-only CPR, and that 98% felt comfortable continuing to do so in the future. This creates the opportunity to expand education further into culturally diverse groups using trainers acceptable to target populations.

The unrealized benefit of increased knowledge of CPR is vast and has major public health implications. Sudden cardiac arrest is now the third leading cause of death in the United States, with an estimated 3.3 million years of life lost (Benjamin et al., 2018). A hands-only CPR training program within the community prepares members to address this problem at the local level with potentially profound results.

The benefit of effective bystander CPR cannot be understated. It is well known that rapid initiation of CPR results in higher survival rates, but the potential for anoxic injury and long-term health problems remains. However, in one region of North Carolina, survivors with favorable

neurologic outcomes increased from 3.2 to 4.8 per 100,000 people after expanding training to laypeople (Hansen, Kragholm, & Pearson, 2015). Additionally, Geri et al. (2017) calculated the average survivor alive at the five-year mark gained an additional 3.6 quality adjusted life years. Implementation of a hands-only CPR program not only increases survival rates, but most importantly, increases the chance of a patient making a meaningful recovery with reduced morbidity rates. While hands-only CPR education addresses one major cause of death in the immediate period, the long-term effect of survivors without new onset cognitive impairment, renal dysfunction, or heart failure leaves an indelible mark on the overall health of the community.

### **Question Guiding Inquiry (PICO)**

**Population.** The Latino community has disproportionately borne the burden of SCD. Residents of primarily Latino neighborhoods are two to three times more likely to experience SCD, and 30% more likely than their white counterparts to die as a result (Carabello & Lorenzo, 2014; Warden et al., 2012). Currently, 9% of the North Carolina population identifies as Latino, a number expected to continue growing (Tippett, 2017). Throughout the country it has been found that Latinos are less likely to recognize a cardiac arrest event, call 9-1-1, or perform bystander CPR (Moon et al., 2014; Sasson et al., 2015). Even after addressing barriers to calling 9-1-1, difficulty in communication resulted in double the time for the operator to recognize a cardiac arrest event and an increase in the time to the first compression, as well as a decrease in the quality of those compressions (Meischke et al., 2015; Nuno et al., 2017). The Latino community faces inherent barriers in caring for victims of SCD including insufficient community emergency systems and a lack of knowledge concerning SCD recognition and treatment.

Moreover, two-thirds of the farmworkers in North Carolina are migrant workers, with 90% of those workers identifying as Latino. This amounts to 98,000 migrant farm workers, each of whom are estimated to bring in \$12,000 annually to the state economy (Montz, Allen, & Monitz, 2011). These numbers reflect only documented workers, but the estimate of actual population is much higher. Nevertheless, North Carolina ranks number one in the country for the number of H2A workers, those given permission as non-immigrants to perform temporary or seasonal work (Montz, Allen, & Monitz, 2011; UCIS, 2019). These workers have limited access to healthcare, social support, transportation, and high rates of illness. In 2008, North Carolina had the highest number of heat related farm worker deaths in the country (Montz, Allen & Monitz, 2011). This clearly illustrates the difficulties these workers face in recognizing and responding to emergency situations.

**Intervention.** Understanding where the need is highest, interventions to teach CPR should focus on communities with the lowest rates of bystander CPR, and highest incidence. Targeted attention toward migrant farmworker communities is an effective way to address this problem with a high return on investment. Hands-only CPR education makes this a possibility, as it is low-cost, efficient, and efficacious.

This project had a goal to train 75% of outreach employees of a migrant health outreach to teach hands-only CPR classes to groups of migrant workers. The training used the AHA's CPR in Schools kit to provide the trainers with the tools necessary for instruction and give them a long-term resource for future classes. Employees then provided hands-only CPR instruction with an interactive practice component to farmworkers at regularly scheduled outreach events.

**Comparison.** The investigator administered a survey immediately post-intervention to assess for participant comfort and willingness to continue providing the education. Qualitative

data surrounding strengths and weaknesses of the intervention with regards to the specific population were solicited at that time.

**Outcome(s).** It was expected after participation in training, employees would show increased knowledge of and willingness to use hands-only CPR. Furthermore, participants were expected to report feeling prepared and empowered to teach hands-only CPR, and that they found this method effective in the migrant worker population.

### **Summary**

Increasing hands-only CPR trained laypersons provides major public health benefits to the region. This program serves to promote a healthier community and decrease incidence of one of the major causes of death in the United States. Additionally, survivors impacted by this program can expect a higher quality of life, to suffer from fewer long-term complications associated with the event, and potentially return to the same activities they enjoyed previously. Partnership with an existing and trusted agricultural outreach program allows for a broader and more sustainable impact on the community over the coming years.



## Chapter Two: Review of the Literature

Reviewing the available literature provides an abundance of information regarding the causes and prevalence of OHCA. It is a well-understood event, with clear treatment pathways. However, disparities between ethnic, socioeconomic, and cultural groups are only beginning to come to light. A deeper understanding of these differences illuminates the need for a targeted intervention addressing migrant farmworkers.

### Literature Appraisal Methodology

**Sampling strategies.** The literature search for this project was undertaken via the OneSearch, CINAHL, and Agris databases. Initial research focused on gaining understanding of SCD through the terms “sudden cardiac death, sudden death, cardiac arrest, and out-of-hospital cardiac arrest”. Subsequently, the terms “cardiopulmonary resuscitation, CPR, hands-only CPR, and bystander CPR” were used to evaluate successful intervention strategies. Lastly, focus turned to specific populations using the search terms “Latino AND CPR, Latino AND sudden cardiac death, bystander CPR AND Latino, emergency medical services AND Latino, socioeconomic AND CPR”. Search limits included a time frame from 2013-2019, full text availability, English-language, and peer-reviewed. Attempts were made to utilize each search engine equally; however, use of OneSearch proved overwhelmingly successful by comparison. Of the 607,726 total combined search results, 24 were utilized in the literature review (Appendix A).

**Evaluation criteria.** Eligible articles for review included systematic reviews, meta-analyses, surveys, original research, non-randomized and randomized research, and cohort studies. Initial inclusion criteria centered on appropriate subject matter. Secondary exclusions included discussions of in-hospital events or treatments, interventions by healthcare professionals, or heavy inclusion of children in the sample. Melnyk and Fineout-Overholt’s

(2011) hierarchical rating system was used to grade literature. Grey literature was also included for review, specifically surrounding demographics, epidemiology, and position statements regarding training and use of hands-only CPR.

### **Literature Review Findings**

**SCD Background and Physiology.** Sudden cardiac death occurs as the result of an unexpected loss of mechanical functioning of the heart. This cessation can be the result of worsening chronic illness such as heart failure, or an abrupt cause such as myocardial infarction or dysrhythmia. It is generally understood that the majority of cases are the result of coronary atherosclerosis, while the remaining 20% involve cardiomyopathies, structural diseases and arrhythmia syndromes (Myerburg, 2017).

Regardless of the underlying cause, mechanical failure ultimately occurs in conjunction with electrical dysfunction. Historically, tachydysrhythmias such as ventricular tachycardia (VT) and ventricular fibrillation (VF) were thought to be the most commonly presenting, and thereby causative, rhythms. In recent years, first responders reported a change to this scenario, with asystole accounting for 50% of presenting rhythms in OHCA situations. Pulseless electrical activity (PEA) and the tachydysrhythmias each make up half of the remaining cases (Myerburg, 2017). Most interestingly, despite decreased EMS response times, the proportion of patients presenting in asystole and PEA continues to grow. This is unexpected as the classically held understanding of the sequelae of arrhythmias describes devolution from tachydysrhythmia to asystole or PEA. This further solidifies evidence that the causative rhythm in these patients was asystole or PEA, not a deteriorating tachydysrhythmia (Keller & Hallperin, 2017). This change has profound impact in determining successful treatment pathways.

There are multiple theories surrounding this unexpected change in presenting rhythms including better management of heart disease, especially use of beta adrenergic blockers which may predispose patients to developing asystole as a presenting rhythm. It is also important to note that the number of patients with an implantable cardiac defibrillator has increased, which likely affects the rates tachydysrhythmias (Myerburg, 2017). Other theories focus on the increasing incidence of death related to non-cardiac causes such as pulmonary embolism and opioid overdose, which are more likely to present as PEA or asystole (Keller & Hallperin, 2015).

**SCD Epidemiology.** Heart disease remains the leading cause of death in the United States (US) making up 24% of total deaths. Of these, half are the result of SCD (Keller & Hallperin, 2017). It is estimated that this amounts to 390,000 cases of OHCA each year in the US (Myerburg, 2017). In 49% of these cases the collapse is witnessed by either a healthcare provider or a layperson. Of patients who suffer an OHCA, only 9% will survive to hospital discharge without severely impaired functional status. The remainder live with profound neurologic defects. A large variation exists in reported survival to discharge percentages across the country. Much of this is believed to be attributable to rates of bystander CPR (Benjamin et al., 2018). Nevertheless, the overall survival rate is low and SCD carries significant morbidity. This is especially apparent when comparing the financial burden of care and loss of productive years to other diseases such as cancer (IOM, 2015).

Older adults are most likely to suffer OHCA, but only half of these have known cardiac histories (Reinier et al., 2011). The major lifestyle factors associated with SCD include smoking, exercise, diet, and obesity (Benjamin et al., 2018). Members of low socioeconomic classes are disproportionately affected by SCD, a trend that is most apparent in African American and Latino communities (Benjamin et al., 2018). These groups have a significantly higher incidence

of SCD (10.1 per 10,000 and 6.5 per 10,000, respectively) compared to Caucasians (5.8 per 10,000) (IOM, 2015; Reinier et al., 2011).

Survival rates are an important measure for understanding the true cost of SCD. These rates indicate the severity of the disease by calculating the proportion of people who suffer from SCD who achieve return of circulation and subsequently survive to hospital discharge. There is a large variation in reported survival rates, ranging from 7.7% to 39.9%. The national average survival rate is 6% (IOM, 2015). As noted previously, the incidence rate of SCD is higher among African Americans and Hispanics. Unfortunately, the survival rates are shockingly lower. In Chicago, the recently reported survival rate of African Americans was only 31% of that among white patients (Deo & Albert, 2012). It has been suggested that this difference is the result of a lower frequency of initially shockable rhythms, as well as lower rates of bystander CPR in low-income and African American neighborhoods which can be attributed to the high cost of traditional CPR training (IOM, 2015).

In the case of SCD, the most commonly used measure of morbidity is whether the patient survives neurologically intact. This measure is an extremely important factor in analyzing interventions surrounding SCD, as survival alone does not clearly indicate the success of interventions. Despite increasing survival rates, the potential for profound disabilities following SCD remains, creating a heavy impact globally and within communities. Furthermore, neurologic injury is a leading long-term cause of death in this population (Nayeri et al., 2017). Within the US, less than 10% of SCD victims are discharged with favorable neurologic outcomes. Most hospitals reporting outcomes use different gradations of neurologic functioning, so while a patient may be considered “intact”, that does not always indicate a return to baseline functioning.

**CPR.** Development of a treatment modality for SCD heralded a turning point in medical management. For almost 30 years, the American Heart Association's "Chain of Survival" has been the backbone of treatment. The chain focuses on steps to improve outcomes for cardiac arrest including; early access, early CPR, early defibrillation, early ACLS, and post-resuscitative care (IOM, 2015). While survival is dependent on each length of the chain functioning properly, quality CPR remains the cornerstone of treatment, and is the piece most likely to lead to meaningful survival (Geri et al., 2017).

As the majority of cardiac arrests occur in the community setting, provision of rapid CPR requires the cooperation of trained community members. The rate of bystander CPR performed during OHCA is currently 46.1% in the US. However, it is possible for one life to be saved for every 24-36 people who receive bystander CPR (Magid, 2018). When over 350,000 people suffer from cardiac arrest annually, consistent bystander CPR has the potential to save over four thousand lives each year.

Due to cost, CPR training has historically been reserved for health care providers. In recent years, the use of hands-only CPR, which focuses on compressions without ventilations, has given laypeople an accessible option for training. This recruitment of community members allows faster access to CPR during SCD events, an important step when each minute without treatment decreases the chance of survival (Chang et al., 2017; IOM, 2015). Hands-only CPR focuses on a two-step response to witnessing a sudden collapse; 1) Call 911, and 2) Push hard and fast in the center of the chest (AHA, n.d.). This simplified version of CPR increases accessibility of training and makes it economical and effective to provide training to a variety of groups. Hands-only CPR education has been used successfully in multiple settings including an airport kiosk, middle school, and community events (Chang et al., 2017; Hansen et al., 2015;

Magid, 2018). Of even greater importance, training in hands-only CPR is effective even when given by non-professionals, or via short training videos (Chang et al., 2017; Magid, 2018).

**Latino community.** The disparity between communities is clearly evident in discussions of SCD. Moon et al. (2014) found that within Latino neighborhoods in Arizona, the patients were far less likely to receive bystander CPR than their counterparts in non-Hispanic white neighborhoods. This is further highlighted in the reported survival rate of 4.9% in the Hispanic neighborhoods, compared to 10.5% for non-Hispanic neighborhoods (Moon et al., 2014).

While Moon et al. (2014) found that response times from emergency services were significantly shorter in Hispanic neighborhoods, use of emergency services is significantly decreased in this population with emergency services being called in only 6% of OHCA cases (Nuno et al., 2017). Commonly cited deterrents to calling 911 surround deportation concerns and language barriers (Sasson et al., 2015).

Even when the community is willing to call 911, multiple barriers exist preventing effective utilization in situations of OHCA. Overall, the implementation of guideline-based telephone cardiopulmonary resuscitation has improved the rates of bystander CPR and patient outcomes (Nuno et al., 2017). While many 911 centers have adopted this system, rapid access to a Spanish translator is rare. This extends the time it takes to recognize a cardiac event has occurred, causes a delay in beginning CPR, and results in poor performance while giving compressions (Meischke, 2015).

Sasson et al. (2015) also assessed obstacles to performing CPR in Latino communities. Respondents noted concerns about legal ramifications depending on the outcome, expressed a general lack of understanding of the purpose and use of CPR, and reported the inability to seek out classes due to transportation and financial disincentives.

### **Limitations of Literature Review Process**

Unfortunately, the majority of the available topical literature is comprised of observational cohort studies. As CPR is the only known effective treatment for SCD, the use of randomized control trials is severely limited from an ethical perspective. Researchers are currently performing a meta-analysis of the use of community first-responders for OHCA. Once completed, this will hopefully provide further clarity on the topic.

Additionally, the use of hands-only CPR training is often done without a standardized curriculum or formal certification process. While this encourages broader dissemination of education, it raises questions concerning the generalizability of research findings.

In the case of SCD, the data is frequently interpreted differently depending on the study, causing a wide range of reported incidence rates. The concept definition of SCD is a major player in this discrepancy, as differences mean that the numerator may be defined as any patient who dies unexpectedly, any death with a presumed cardiac etiology, or even any time EMS treats a patient in ventricular fibrillation (IOM, 2015).

In understanding the data presented, it is also important to recognize the major limitations that result from reporting differences among countries and regions. While multiple databases exist both nationally and internationally to monitor SCD outcomes and interventions, the contributing organizations tend to be large teaching hospitals from limited regions, as reporting is voluntary. This lack of geographic diversity prevents a true understanding of the burden of the disease or success of interventions.

Limited data exists regarding migrant communities and OHCA. Language barriers, the transient nature of the community, lack of preventative care and potential lack of recognition of arrest events all contribute to the difficulty in ascertaining the prevalence of OHCA in this

population. This combined with the fact that research into community differences regarding OHCA and bystander CPR is relatively new, makes a complete understanding of this problem in the migrant farmworker community difficult.

## **Discussion**

**Conclusion of findings.** OHCA continues to be a major community health concern. While advances in treatment have led to improved outcomes, the survival and morbidity rates remain abysmal. As the use of CPR continues to be the most effective intervention, increased dissemination has the potential to profoundly impact lives. There is a great deal of interest in access to defibrillation, with many community sites purchasing automatic external defibrillators to decrease time to defibrillation. While this is an important step in the chain of survival, the increasing rates of asystole and PEA as presenting rhythms indicate the growing importance of CPR as an intervention strategy. These rhythms, which account for 75% of OHCA, do not respond to defibrillation, and high-quality CPR is necessary to prevent irreversible damage before access to a higher level of care.

However, the probability of an OHCA occurring in front of a trained healthcare provider is low. While 49% of OHCAs are witnessed, only 12% are witnessed by an EMS provider (Benjamin et al., 2018). Unfortunately, traditional CPR training is time-intensive, expensive, and complicated. Hands-only CPR avoids those pitfalls and broadens the accessibility of training. The efficacy of this training is being assessed in multiple populations, with a notable increase in effective chest compressions after even brief educational programs. While the quality of the compressions is not always optimal, the use of any quality compressions versus no compressions likely confers at least some increase in survival and functional status (Chang et al., 2017).



The migrant farmworker community is at clear risk for suffering SCD. While there is limited data on this population, members tend to be Latino and of a low socioeconomic status, two groups likely to experience OHCA. Additionally, the language barrier in this population is likely more severe due to lack of extended time in-country, making use of 911 services less likely and less helpful. General health access is inadequate, and the reported impediments to calling 911 and seeking CPR training are likely magnified in this group, especially concerns surrounding deportation. While no clear evidence exists confirming these traits within the migrant farmworker community, based on the evidence available it is highly likely they stand to benefit greatly from a hands-only CPR intervention.

**Advantages and disadvantages of findings.** The available research clearly shows poor OHCA outcomes in Latino and socioeconomically disadvantaged communities. Furthermore, there is a clear link between rapid initiation of bystander CPR and improvement in outcomes. This rapid initiation has been largely absent in Latino communities due to lack of available CPR education. While bystander CPR is an important factor in all populations, the knowledge that Latinos suffer from predominantly non-shockable rhythms, increases the usefulness of CPR. Understanding these factors points to a clear need in socioeconomically disadvantaged and Latino communities for low-cost CPR training interventions. While not all migrant workers belong to these subgroups, the vast majority are in one, if not both. Accordingly, they are poised to benefit greatly from such a program.

Unfortunately, there is little evidence that hands-only CPR is an effective intervention in this specific population. For instance, much of the training literature encourages performing compressions in tune to “Stayin’ Alive”, a song that is deeply ingrained in American pop culture, but not necessarily a song familiar to migrant workers. Moreover, hesitancy to use the

emergency medical system and inability to recognize a cardiac event serve as risk factors for poor outcomes, and hands-only CPR training will not necessarily address these factors.

Regrettably, if the event is not recognized, or 911 is not called, no amount of CPR training will improve outcomes.

**Utilization of findings in practice change.** Previous research has found the Latino population is interested in receiving CPR training but is uncertain where to do this or how to seek further information. While migrant farmworker specific data is not available, the interest shown by the Latino community makes them prime candidates to receive training, especially when hands-on practice is incorporated (Sasson et al., 2015).

This project involved implementation of hands-only CPR training through an existing migrant farmworker health outreach program. Employees received training specially designed to address common barriers to CPR performance in Latino communities in conjunction with the CPR in Schools curriculum. Subsequently, they provided training to migrant workers during regularly scheduled outreach programs.

On site, AHA Spanish language videos were used to provide migrant farmworkers with introductory education regarding hands-only CPR. Then employees provided hands-on instruction and performance validation through the use of mannequins. The CPR in Schools training kit, which has been successfully shown to prepare non-healthcare workers to provide CPR instruction, served as a resource for the employees throughout the training and in subsequent seasons (Magid et al., 2018).

Two validated interventions, the AHA videos and CPR in Schools curriculum, will be used in conjunction with information addressing common hurdles to CPR use in the Latino

community. Utilization of such an integrative program will provide a comprehensive and evidence-based intervention to address the poor OHCA outcomes in this community.

### **Summary**

Implementation of a hands-only CPR program for migrant farmworkers will not only increase probability of survival, but most importantly, increase the chance of a patient making a meaningful recovery with reduced morbidity rates.

A short training session with practice opportunities incorporated into routine health screenings increased uptake and sustainability of the intervention. Additionally, it met several Healthy People 2020 goals, including improving emergency preparedness and social determinants of health. This intervention increased health literacy and provided quality education to promote better health and extend life for an underserved community. It also encouraged timely awareness for faster detection and utilization of resources necessary to promote public health and increase the effectiveness of emergency services for at-risk individuals (ODPHP, 2019).

Furthermore, this project addressed each of the Triple Aim dimensions (IHI, 2019). A hands-only CPR program improves the care experience of migrant workers by tailoring training to meet their unique needs and provide them with education through a trusted and accessible venue. Per capita cost is decreased by utilizing an economical intervention to decrease mortality and morbidity. Lastly, while population health is improved by addressing one major cause of death in the immediate period, the long-term effect of survivors without new onset cognitive impairment, renal dysfunction, or heart failure leaves an indelible mark on the overall health of the community.

The potential benefit of increased knowledge of CPR is vast and has major public health implications. A hands-only CPR training program within the community prepares members to address this problem at the local level with potentially profound results.

### **Chapter Three: Theory and Concept Model for Evidence-based Practice**

Implementation of this project required extensive deliberation of concepts involved, and appropriate grounding theories upon which to base interventions. Recognized concepts included SCD, OHCA, migrant workers, Latino population, hands-only CPR, participants, and being adequately equipped. Jean Watson's Theory of Human Caring provided the underpinning for a holistic, relationship centered intervention to improve health outcomes in a disenfranchised population. Successful enactment relied on the Iowa Model for evidence-based practice implementation.

#### **Concept Analysis**

SCD may be defined as abrupt cessation of cardiac function that results in sudden collapse and subsequent death (Benjamin et al., 2018). Practically speaking, it is difficult to ascertain whether cases of sudden death are the result of a primary cardiac malfunction. However, the benefit of CPR in non-cardiac cases makes them relevant to this project. For the purposes of this project, SCD is understood to mean include any unexpected collapse during which the victim is no longer responsive, and meaningful cardiac activity is absent.

OHCA occurs when a SCD occurs outside of a hospital setting. While this can include witnessed and un-witnessed events, this intervention was targeted towards OHCA witnessed by non-healthcare personnel.

Migrant worker is a broad term encompassing workers from many geographic regions working in a variety of settings. These workers may live in the United States seasonally before returning home to their families, or travel with their families for extended periods. They may travel legally as H2A temporary agricultural workers, or have illegally entered the country (Montz, Allen & Monitz, 2011). This project sought to address disparities for people who have

traveled from their home country to work in agricultural settings, either permanently or temporarily, regardless of legal status.

The terms Latino and Hispanic are used interchangeably throughout this project to denote persons with an ethnic background originating from Latin American, primarily Spanish-speaking, countries.

Hands-only CPR describes a CPR method that involves compressions without ventilations. This project utilized the two-step process approved by the AHA: 1. Call 911, 2. Push hard and fast in the center of the chest (AHA, n.d.).

The primary participants of this project were the employees of the North Carolina Farmworker Health Program. While the project will have a lasting effect on the health of the migrant farmworker community, the primary focus was on equipping employees with the knowledge, skills, and supplies necessary to competently and confidently provide hands-only CPR training.

The concept of being adequately equipped includes comfort level providing training, and willingness to continue training. Surveys distributed at the completion of the intervention will measure this concept and evaluate areas in which the intervention can be strengthened in the future.

### **Theoretical Framework**

**Naming the Theory.** Jean Watson created the Theory of Human Caring in an attempt to delineate the distinct profession of nursing (Butts & Rich, 2015). As is the case today, it was difficult at the time to describe the discipline of nursing apart from its role in the medical model. To counter this, Watson posited the term “caring” as an antonym for the medically oriented term, “curing” (Pajnkihar, McKenna, Stiglic, & Vrbnjak, 2017; Watson, 2009). Working from

the belief that caring is the moral ideal of nursing, Watson describes nursing as a person centered profession, which seeks to bring forth wholeness of mind, body, and soul (Pajnkihar et al., 2017). This view is clearly in opposition to the medical model, which focuses on healing as it relates to the disease process alone, thereby treating humans as mechanistic processes. In contrast, the Theory of Human Caring is based on a paradigm which respects humans as unique individuals (Pajnkihar et al., 2017), who can not be healed as objects (Ozan, Okumus, & Lash, 2015). While the term caring serves to distinguish nursing from medicine, it also describes what constitutes the actual practice of nursing.

The concept of caring is a central tenet of the model and is considered integral to the practice of nursing. Caring occurs when the nurse and patient come together as unique individuals, seeking to connect to each other in the present moment (Butts & Rich, 2015). This meeting is termed the “caring occasion” and transpires when two people create a unique subjective reality which "transcends time and space" and results in healing that "extends into the universe" (Pajnkihar et al., 2017, p 244). Through these encounters the most important human values (life, the spiritual dimensions of life, and the internal power of human relationships) are recognized (Pajnkihar et al., 2017) and both parties benefit from growth and learning (Butts & Rich, 2015). The consent and intentionality required of both participants to create such an atmosphere renders nursing a reciprocal relationship. Moreover, it necessitates a shift in focus from the disease process, to the relationship as central to healing. In this shift from physiologic needs to higher level needs, Watson aligns the theory closely with Maslow’s hierarchy (Clark, 2016). Such a shift places nurses in a position to meet the self-actualization needs of patients in the pursuit of optimal health.

The 10 *caritas* processes of the theory were created to support operationalization of the transpersonal caring moment and reframe the theory in such a way as to be useful in the day-to-day process of nursing. The processes are: practicing loving-kindness and composure towards self and other, being authentically present and honoring the subjective experience of both individuals, intentionally developing individual spiritual practices, nurturing a sustainable and authentic relationship, practicing presence and support for the full spectrum of emotional expression, practicing the art of nursing practice, creating teaching-learning environments that recognize the person holistically, developing an environment of healing, honoring the individual while assisting with the most basic of needs in a dignified way, and being open to the spiritual realms of care (Watson, 2007).

**Application to practice change.** In the process of project implementation Watson's Theory served to undergird decision-making. The focus *caritas* processes included practicing loving kindness and composure towards self and other, nurturing a sustainable and authentic relationship, being authentically present and honoring the subjective experience of both parties, creating teaching-learning environments that recognize a person holistically, and honoring the individual while assisting with the most basic of needs.

Focusing the intervention on an underserved population in a politically charged climate is an example of practicing loving kindness in action and honoring and maintaining the dignity of the individual. Working with the migrant community was a decision driven by the desire to recognize and validate the humanity of each individual in an effort to help them achieve self-actualization and optimal health.

The decision to partner with a community organization with a developed relationship with the target community was based on the desire to develop and sustain an authentic caring



relationship. The outreach employees have worked extensively with this community and are already in the process of creating the caring relationship so essential to the Theory of Human Caring. Providing these employees with the means necessary to sustain this education intervention after this project ends, promoted sustainability and avoided using the individuals involved as a means to an end.

Moreover, individualizing the intervention met the specific needs of this population by attending to the person, and community, as a whole. By tailoring the intervention to be language appropriate and address specific barriers, the project gives dignity to the individual and focuses on caring for this group within their setting, not curing them.

Watson's Theory of Human Caring is woven throughout the fabric of this intervention. From the choice of participants to the details of the education given, an attempt to focus on the relationship between unique and loved persons is evident. Moreover, the decision to center the intervention around helping participants meet self-actualization needs, instead of focusing on them as objects or disease states, provided space for the caring occasion to occur throughout the intervention.

### **EBP Change Theory**

**Naming the Change Model.** The Iowa Model of Evidence Based Practice (Iowa Model) was created to assist nurses as they sought to engage in translational research. It is a multi-step process that grew out of Roger's Diffusion of Innovation theory and has undergone refinement over the years (Iowa Model, 2017). This iterative process begins with identifying the clinical problem, known as a trigger. This trigger can emerge from one of five categories: clinical or patient identified issue, organizational issue, the development of new evidence, regulatory issues, or philosophy of care issues (Iowa Model, 2017). After the triggering issue has been clearly

formulated into a clinical question it is imperative to determine whether the issue is a priority for the organization. This prioritization is apt to change based on financial and strategic planning shifts. If the identified problem is a current priority, the next step is to organize a team.

The Iowa Model is unique in that the process encourages an interdisciplinary team, including stakeholders outside nursing. The composition of the team should optimally change based on the focus of the clinical problem. This team then works together to conduct a literature review, critiquing available studies and determining whether existing research supports a practice change (Brown, 2014). During the planning phase, the team collects baseline data, develops an implementation plans, prepares clinicians and materials, and promotes adoption of the intervention (Iowa Model, 2017). The team then creates an intervention, which is piloted in a small setting. The Iowa Model recommends multiple strategies to assist with implementation including creating awareness and interest in the target audience, building knowledge and commitment to the intervention, promoting action and adoption, and finally pursuing integration and sustained use. There are two pieces to each of these implementation strategies, one addresses ways to connect with clinicians and organizational leaders, the other focuses on building organizational system support (Appendix B) (White & Spruce, 2015).

Evaluation of data from the pilot implementation will provide the team with a clear picture of whether the intervention worked. If results are not indicative of success, the team creates the necessary changes prior to broader implementation. Once an effective practice change is developed and tested, the final steps of the model include integrating and sustaining the practice change and disseminating the results (Iowa Model, 2017).

**Application to practice change.** The Iowa Model was chosen for its focus on organization and collaboration (White & Spruce, 2015). This project utilized the skills and

knowledge of a variety of stakeholders, including evidence from the target population, in order to develop a sound intervention. The literature review process informed the decision to partner with an existing outreach program, whose employees could serve as change agents (White & Spruce, 2015). Choosing to work with this interdisciplinary team, necessitated the need to purchase a validated training tool for non-healthcare workers. As a result, the CPR in Schools kit was used, which has been found to adequately prepare laypersons to teach hands-only CPR (Magid, 2018).

This project was a pilot project, and the first iteration of what will be a series of interventions over multiple seasons that seeks to best educate outreach workers to provide quality hands-only CPR education. Data collection occurred prior to the initial education, and post-intervention in order to assess for areas of growth in coming seasons. This careful tailoring to meet the changing needs of the participants as they grow in their role as CPR educators encouraged long-term integration and sustained use.

### **Summary**

Jean Watson's Theory of Human Caring heavily informed the choice of subject, as well as the intervention methodology. Throughout the process, the focus on migrant workers as unique individuals with unique health problems and barriers, guided the choice of site partner and crafting of specialized education. Working through an existing caring relationship made the caring occasion more likely to occur, and successfully empowered both the participants and migrant workers.

In order to ensure a successful design and implementation, the Iowa Model served as a guide in each step of the process. From trigger identification, to team development, to pilot implementation, this project leaned heavily on the Iowa Model guidelines. This is especially apparent in the choice to begin this intervention as a pilot project before state-wide

dissemination. Moreover, the choice to purchase and donate the equipment, and work to educate employees as instructors, was borne out of the Model's push to encourage sustainability and permanently embed the intervention in the organizational culture.

The use of these two theories allowed for the creation of a highly individualized and targeted outreach. Both the humanistic and logistic side of the intervention were fully developed and robustly implemented as a result (Appendix C).

## Chapter Four: Pre-implementation Plan

### Project Purpose

The aim of this project was to provide training to health outreach employees to empower them to provide hands-only CPR education to migrant farmworkers. Train the trainer sessions and educational materials tailored to meet the unique needs of migrant farmworkers allowed participants to reach this goal. Implementation took place at a migrant farmworker health outreach satellite center in North Carolina.

### Project Management

**Organizational readiness for change.** The site expressed interest in the development of this intervention. However, employees were inundated with a large number of migrant workers who had urgent healthcare needs. While interest in the project was high, the availability of staff to fully buy-in to organizational change was questionable. Personalizing education tools was one significant way this concern was addressed. Indicating the urgency of this intervention promoted interest and provided tangible and time-sensitive encouragement to follow through. In addition, the continued presence of DNP team members, and their offer to be available during migrant worker training sessions helped prevent the prioritization of other programs. An additional cue to action was the presence of CPR mannequins and education materials. These provided consistent refreshers to the employees and encouraged action on their part. As this program was an external intervention, it could have easily been dismissed amidst the numerous other ongoing programs. Consistent team member and material presence helped combat this.

**Interprofessional collaboration.** Members of this project included five site employees and two DNP students. The project site champion was a licensed dietician who served as the site administrator. As a result of her background and experience, she was able to facilitate

interprofessional discussions and collaborations as they pertained to this specific population. Employees engaged in the process of teaching hands-only CPR had backgrounds ranging from missionary chicken farmers to public health fellows. This close connection provided collective wisdom that all members of the team could access to better design the interventions to meet the population's needs.

**Risk management assessment.** The strengths of the project included multiple internal factors. Initial funding was secured through a grant that allowed the purchase of the CPR in Schools curriculum, which included ten CPR mannequins. The securement of the grant provided a smooth start for the project while also ensuring the possibility of long-term growth through the provision of reusable materials. The site has a long-standing relationship with migrant workers in the community. This ensured that a trusting relationship was already in place, in keeping with the use of Watson's Theory of Human Caring as the grounding framework. The site employees were bilingual, and accustomed to using medical Spanish interpretation, easing the adoption of the CPR in Schools curriculum for migrant workers. Fortunately, the Spring season is a time when the outreach programs historically have completed the more time-intensive assessments and interventions, freeing up the outreach employees to conduct this new program and remain invested in its outcome during the Fall. Most importantly, this project is a multifaceted approach to hands-only CPR education. Addressing community-specific barriers to bystander CPR significantly strengthens the intervention, allowing it to serve the migrant community better.

However, there are several serious weaknesses to consider. There were a limited number of employees who underwent training. The programs in place served large numbers of migrant farmworkers, and each employee was heavily burdened with multiple ongoing programs and assessments. Throughout the project, it was difficult to reach site members because of this. It is

possible that the employees felt overburdened and therefore resistant to implementation. Moreover, the site had recently experienced a high number of staff turnover. This had the potential to negatively affect the relationship building between the employees and the farmworkers.

Fortunately, many opportunities were also evident. The current political climate is focused on immigrants, which could potentially provide sources of additional funding for further expansion of the project. The site is a satellite of a state-wide program that serves over twelve locations. There is clear potential for expansion throughout the state in the coming seasons following this pilot implementation.

Significant threats to the project included natural disasters and policy changes. North Carolina is at high risk for hurricane weather during the Fall season. Such a natural disaster could have derailed this time-sensitive project, as more emergent health care outreach needs would take precedence. Furthermore, while the focus on immigration could be beneficial to the project, it also had the potential to dissuade the migrant farmworkers from participating out of fear of exposure and deportation.

**Organizational approval process.** To establish a relationship, the site was first contacted through the Health Outreach Manager. After initial discussions regarding timing, process, and goals, an agreement was reached to coordinate this project. A signed site approval letter was obtained, and a contract with the East Carolina University College of Nursing was approved by the site administrator (Appendix D).

**Information technology.** Several pieces of technology were utilized during both the employee training sessions and the implementation of the migrant worker teaching sessions. A laptop and projector owned by the DNP students allowed for an in-depth presentation and

viewing of multiple training videos. When working with the migrant workers, such a set-up was not feasible, but smartphones with a data connection allowed training videos from the American Heart Association to be viewed on site. Due to site constraints associated with working in an outdoor, rural, agricultural setting, limiting the use of technology to what was most readily accessible to employees was paramount to success.

**Cost Analysis of Materials Needed for Project.** The implementation costs for this project were minimal. The majority of the training utilized readily available technology that did not require additional purchasing. Smartphones with data connectivity provided streaming necessary for viewing of AHA's Spanish language videos. These were already owned and in use by the participants. The mannequins, cleansing wipes, and curriculum were the highest cost items, totaling \$673.96 (Appendix E). Indirect costs included the time devoted by the DNP students, totaling 500 hours each.

### **Plans for Institutional Review Board Approval**

Institutional review board (IRB) approval was sought from both involved venues. Required documentation was submitted with the assistance of the site champion and approved by the site IRB. As a quality improvement project, this intervention was waived from undergoing a full IRB process through East Carolina University (Appendix F).

### **Plan for Project Evaluation**

**Demographics.** To gain a complete understanding of the participants involved, several demographic questions were asked. These questions focused on work experience, education level, and previous experience with CPR training.



**Outcome measurement.** Measured outcomes included comfort teaching hands-only CPR, willingness to continue to provide the education, and assessment of the appropriateness of the intervention to meet the needs of the migrant worker population.

**Evaluation tool.** Program evaluation was completed through a post-implementation survey (Appendix G). This tool was administered to involved employees at project completion during the final group debriefing. At this time, qualitative data was also gathered using a series of specific questions (Appendix H) to guide the group discussion. Throughout the project implementation period, employees cataloged each migrant worker teaching session by noting the date, number of participants, and any obstacles faced during the sessions (Appendix I).

**Data analysis.** Data were analyzed through SPSS software. Survey responses were evaluated for mode and frequency. Additionally, the number of participants at each migrant training session was analyzed and reported. Empowerment and willingness to continue teaching were measured via question four, six and nine and were considered affirmative if the participant noted “agree” or “strongly agree”. Feedback and reported obstacles were reported in Appendix J.

**Data management.** To secure data, no personally identifying information was collected. Information collected was promptly inputted into SPSS, and paper surveys were shredded. During transport, surveys were protected under double lock. Computers used for data analysis were accessible via password only.

## **Summary**

Pre-implementation planning for this project included site contracts, IRB approval, acquiring appropriate technology, and creating a data plan. This pre-planning allowed for a proactive approach to potential implementation barriers and a clear understanding of internal strengths.



## Chapter 5: Implementation Process

This quality improvement project was implemented over a two-month period. During this time employee training, project implementation, and data collection were completed. The implementation site was a unique community center with a vision and mission which closely aligned with the project's underpinnings. This eased the process of recruitment and implementation. However, as expected, there were some deviations from the intended plan.

### Setting

The intervention took place at a community health center in rural North Carolina. The health center is a satellite of a non-profit organization that aims to provide quality primary care in a community setting, with a special focus on disadvantaged populations. Services provided by this organization include medical care, behavioral health, immunizations, nutrition therapy, dental care, pharmacy, care management, and WIC. Additionally, some satellites, including this project site, engage in special interventions that target the needs of migrant farm workers. Site funding is provided entirely by donations and grants. Personal and organizational donations make up a large portion of the budget. State and federal grants comprise the remaining funds.

The partner site's goal to provide quality healthcare to all members of the community in a timely fashion is closely aligned with the aims of this project. Educating at-risk individuals who are unlikely to access emergency services is a tangible way to improve the health of this community. Equipping the organization's employees to better serve the community helped the site achieve its strategic mission while also meeting the indirect goal of this DNP project, which was to increase the number of migrant farm workers who are competent to provide hands-only CPR.

## **Participants**

The participants in this project were the employees of the site who work under the NC Farmworker Health Program. These employees were tasked with providing health care outreach and education to migrant farm workers in the region. Outreach consists of screening, provision of direct care, case management, and health promotion and education. All employees directly involved in providing these services to migrant farm workers were considered for participation. Exclusion criteria included employees not directly involved with in-person migrant farm worker outreach.

## **Recruitment**

Participation in the training was mandated by the program supervisor. As a result, individual investment in the project was likely to be low. Workers serve a large number of migrant farmers through a number of programs and were extremely busy. At the outset it was expected that fully engaging them in an additional project would be difficult. However, the low time-commitment involved in teaching hands-only CPR was heavily stressed in order to buoy interest.

## **Implementation Process**

A three-step plan based on the Iowa Model was used for the implementation process. The first phase of implementation was educating the participants. An in-person training session reviewed the CPR in Schools curriculum, explained how to inflate and use the provided mannequins, and previewed the AHA hands-only CPR videos. Participants were provided with a more extensive education than basic hands-only CPR in order to ensure their willingness to serve as instructors. Opportunity for demonstration, questions, and practice was provided. The session was not completed until each participant verbalized their comfort with the tools and education.

Phase two was the provision of the education to migrant workers. The mannequins and educational materials were distributed amongst the participants, who were then free to choose when to provide training sessions. The DNP students were available to assist with these sessions as needed upon request. After each session, participants were asked to chart the date of the training, number of migrant worker participants, and note any concerns or problems encountered (Appendix I).

The final phase involved data collection. A group debriefing took place at the end of project implementation. A series of questions provided qualitative data regarding the successes and barriers to the program's continued feasibility (Appendix H). At the close of this group meeting a survey was provided to the participants to evaluate their comfort teaching hands-only CPR, their willingness to continue to provide the training, and the perceived appropriateness of this intervention for the migrant farm worker population (Appendix G). Success was measured via questions four, six, and nine, and considered affirmative if the participant marked "agree" or "strongly agree".

### **Plan Variation**

At the outset of implementation, plans were made for frequent contact with participants. Offers to participate in the education as a support person were given and frequently reinforced by email. However, the nature of the outreach work made consistent contact, or planning follow-ups, extremely difficult. Throughout the project, there was minimal interaction with the participants, making continued education to improve confidence, or ongoing data collection, impossible.

### **Summary**

The implementation of this project went smoothly in spite of pre-existing concerns regarding the investment of the participants. This was partially due to the unique mission of the partner site and the organizational values espoused by its employees. The three-step plan based on the Iowa Model was shown to be an appropriate choice, especially considering the time constraints of the project. However, some deviation did occur due to difficulty maintaining contact with participants, including inability to receive regular project updates.

## **Chapter Six: Evaluation of the Practice Change Initiative**

The aim of this project was to educate and empower employees of a migrant farmworker health outreach program to incorporate hands-only CPR training as one of their educational offerings. An initial training session took place in which the topic was reviewed, materials were introduced, and opportunities for further questions were provided. A two-month implementation period followed this training. Data was collected from remaining participants at the end of implementation.

### **Participant Demographics**

Five participants attended the initial training session. Of these, one was the project champion who does not provide outreach education as part of her job duties, and one was a public health intern whose time with the program ended prior to the completion of implementation. As a result, three participants provided data via the final survey. Two were female and one was male. They varied in education level from associate degree (n=1) to bachelor's degree (n=2). None of the participants had been employed by the outreach for longer than one year. Each had received prior CPR training at least twice, with two participants having completed more than three sessions. Demographic data was not solicited from the migrant farmworkers as the focus of the project was on preparing and empowering the outreach employees. However, based on data collection, a total of 55 migrant workers were educated throughout the two-month period, all of whom were male, with the estimated average age of 70.

### **Intended Outcomes**

Empowerment and willingness to continue providing hands-only CPR education were the main goals of this intervention. These aspects were measured through questions four, six, and nine on the post-implementation survey (Appendix G). These short-term goals served as

indicators of whether the intermediate goal of continued utilization of hands-only CPR education and eventual incorporation into the outreach's permanent infrastructure was likely. Additionally, the employees were asked a series of questions regarding the obstacles faced during implementation and the appropriateness of the educational model for the target population (Appendix H). The full record of commentary gathered from these questions is available in Appendix J.

Assessing these two aspects of implementation provided insight to allow for the success of the intermediate goal and the long-term goal of increased uptake and usage of hands-only CPR in migrant farmworkers.

### **Findings**

Based on the participants' record keeping via the provided tracking sheets (Appendix I), education was provided on eight separate occasions, to a total of 55 migrant workers. None of the participants reported they felt comfortable teaching hands-only CPR; however, 66% agreed that the provided training well-prepared them to provide the education.

All the participants agreed that the materials provided were effective for educational purposes, and easy to manage. Additionally, 100% felt this education was effective for migrant farmworkers, and 100% planned to continue providing the education after the implementation period ended.

### **Summary**

Based on the goal of achieving empowerment and willingness to continue the education, the project was successful. While participants did not express comfort teaching hands-only CPR, they did feel the materials were appropriate for the target audience and were very willing to continue providing the education.



## Chapter Seven: Implications for Nursing Practice

The increasing complexity of patients and the healthcare delivery system in the United States necessitated the creation of a role for nurses involved in professional practice at the highest level. As a result, the American Association of Colleges of Nursing (AACN) developed a clearly delineated Doctor of Nursing Practice (DNP) degree. The conferral of this degree would come after extensive education and development of nursing expertise at the highest level. In order to ensure homogeneity across educational programs, eight essentials were described to guide curricula development. The creation and implementation of this project stemmed from mastery of these Essentials.

### Practice Implications

**Essential I: Scientific underpinnings for practice.** The first DNP essential prepares the advanced practice registered nurse (APRN) to understand and analyze data. Data from a variety of fields must be sought out and incorporated into the nursing model in order to develop and promote best practices (AACN, 2006).

The purpose of this project is closely aligned with this DNP essential as it seamlessly incorporates understanding from biological, medical, nursing, and ethical sciences to formulate a tailored intervention (AACN, 2006). Understanding the vast body of knowledge available regarding OHCA and at-risk populations, as well as the most effective treatment methodology was necessary for the molding and development of this intervention. Furthermore, solid foundation based on Jean Watson's Theory of Human Caring, allowed a deeper and more person-centered approach to ensure the holistic well being of the migrant farmworker population, as well as promote self-actualization of the participants.

These aspects of the project show a clear development of DNP Essential I. Through the use and understanding of a multitude of interdisciplinary research, this project was able to profoundly impact, and measure the effect, of this novel educational outreach. Such a program has not previously been attempted to ameliorate healthcare outcomes in the migrant farmworker population. While available research has shown this method to be effective for laypersons, such a specific utilization is a novel idea. This project clearly demonstrates the potential for hands-only CPR to be widely effective when taught to, and by, a vast array of people, regardless of language, education, or prior knowledge. Adapting the current practice of CPR education for underserved populations will allow nursing to have a broader impact on the health outcomes for these patients.

**Essential II: Organization and systems leadership for quality improvement and systems thinking.** DNP prepared APRNs are prepared to work in and on systems of care to improve healthcare quality and delivery. This requires sophisticated understanding of leadership, problem identification, facilitation of changes, and promotion of sustainability (AACN, 2006).

Utilization of existing systems was paramount to the infrastructure of this project. Understanding the unorthodox method of healthcare delivery and education available to migrant farmworkers allowed for the creation of an intervention that provided the greatest return on investment. Targeting the people poised to do the most good for migrant farmworkers required a deep knowledge of the plight of this population, as well as the systems currently in place to provide care for them. Moreover, it accounted for the diverse cultural and ethnic backgrounds that would be involved in successfully enacting this quality improvement project.

Furthermore, understanding the economic and time constraints that exist within this system, required allowances to promote sustainability. For instance, the provision of both

mannequins and additional curriculum, ensured that this project could be incorporated into the regular health outreach provided by the site in coming years, regardless of budgetary constraint or employee turnover.

Any future attempts at quality improvement for this population should closely examine the systems currently in place, and their interactions with the target population, prior to implementation. Without this consideration, it is unlikely that an effective, or sustainable, intervention can take place.

**Essential III: Clinical scholarship and analytical methods for evidence-based practice.** Understanding and subsequent application of relevant data is the hallmark of Essential III. The DNP prepared APRN must possess a nuanced and integrated capacity for the pragmatic application of research. This requires integration of multidisciplinary knowledge, as well as the leadership skills necessary to translate knowledge to practice change (AACN, 2006).

The development and implementation of this project was heavily based on this essential. While a plethora of research exists detailing causes and risks for OHCA, further discussion of how this impacts the Latino community is lacking. Currently researchers are turning towards population specific discussion of this public health disparity, but it will be some time before such a specific subset as migrant workers might hope to be addressed. However, this project was able to compile the emerging information and create an intervention that targeted the known unique needs of this population. By recognizing the factors that inhibit Latino immigrants' performance of CPR and understanding what methods have previously proved successful in educating laypeople, this project recognized a gap in health education and was able to implement an evidence-based intervention. Hopefully, the data from this quality improvement project will

inform and guide further research into better addressing OHCA in the migrant farmworker and Latino populations.

**Essential IV: Information systems/technology and patient care technology for the improvement and transformation of health care.** Technology plays an increasingly important role in the administration of quality, patient-centered healthcare. Essential IV focuses on the necessity of discerning what technology may be helpful in promoting evidence-based practice, and adeptness at the technical skills required to do so (AACN, 2006). While traditional modes such as electronic health records were not utilized during this project, technology nevertheless played an integral role.

The implementation of this education would have been next to impossible without the use of technology. Both the educational format via online videos and hands-on practice with specialized CPR mannequins, were essential. These tools gave the participants and the farmworkers the opportunity to ensure confidence and competence as they gave and received education in hands-only CPR. Moreover, the evaluation and storing of data utilized software designed to manage and analyze large-scale datasets to create meaningful information.

**Essential V: Healthcare policy for advocacy in healthcare.** Delivery of high-quality healthcare is heavily influenced by development and implementation of policy at national, state, community, and organizational levels. The DNP prepared APRN must be well versed in, and adept at navigating, policy development and implementation. Essential V focuses on this particular attribute of nursing at the advanced level.

While the site and participants for this project, were well versed in policy regarding disparities for the migrant worker population on a state level, they were less abreast of specific disparities relating to OHCA. As such, CPR education was non-existent, and no policy was in

place to allow the addition of such training. The structure of this project was specially designed to allow a seamless integration of new outreach into existing processes. As the participants worked regularly providing health education outreach, the addition of hands-only CPR became another tool in their arsenal, instead of an entirely foreign process. This promoted sustainability and incorporation into organizational policy. The ability of the DNP prepared nurse to design and implement a project that can be readily translated into a lasting policy is paramount to affecting long-term change in healthcare systems.

**Essential VI: Interprofessional collaboration for improving patient and population health outcomes.** The increasing complexity of the healthcare delivery team necessitates the skilled collaboration with members from multiple disciplines. Essential VI focuses on the importance of the DNP's role as facilitator and leader of interdisciplinary teams (AACN, 2016). As this project was designed for use by participants without a healthcare background, this skill set was imperative for the success of the project.

Resources and tools were carefully chosen for their ability to serve populations with diverse educational and social backgrounds without sacrificing efficacy. While the site champion had a nursing background, the remainder of the participants was from a variety of disciplines. Consequently, input from the social work, nutrition, and education disciplines contributed to the discussion of project outcomes, and formulated ideas on the success and failures of the project as it was implemented. As a result of this variety of input, a much stronger variation of the implementation is possible for anyone who wishes to take up the reins.

**Essential VII: Clinical prevention and population health for improving the nation's health.** In order to meet the national goals regarding health promotion and disease prevention, DNP preparation requires a deep understanding of population health. Essential VII prepares the

DNP to move from data to practice change and the improvement of population health (AACN, 2006).

Utilization of public health data for clinical prevention was the foundational principle of this project. Understanding the disparities present, the potential health outcomes, and the modifiable risk factors drove the formulation of the project. Extensive analysis of the demographic data, government reports, and environmental data allowed a clear picture to form concerning why the migrant community was less likely to perform CPR, and how this could best be addressed in a culturally sensitive way.

Moving from a broader focus on improving bystander CPR rates, to the more specific attempt to impact the migrant farmworker community was born from a deep dive into the literature available, and the limited public health data that exists for this population. Targeting education to reach the migrant farmworkers will improve clinical outcomes for these patients in the event of OHCA in the coming years.

Not only does this project show the potential impact of education in a rather non-traditional setting, it also indicates the potential success a change in care delivery models may have when addressing health concerns of transient populations.

**Essential VIII: Advanced nursing practice.** Essential VIII's focus on advanced practice seeks to ensure that DNP prepared APRNs have acquired advanced skills in decision-making, critical thinking, outcomes evaluation, and leadership (AACN, 2006).

By working diligently to develop a comprehensive and culturally sensitive approach to the issue of OHCA, this project exemplified advanced nursing practice. Systems level thinking and an understanding of the complex social and political climate surrounding this population, informed the decision to work with an in-place multidisciplinary team. Targeting the education

to participants who have existing relationships with migrant workers made the uptake and sustainability of this program feasible. Moreover, the advanced application of nursing science and theory guided the holistic and person-centered approach that defined the nature of this project.

### **Summary**

The DNP prepared APRN undergoes extensive education in order to meet the increasingly complex needs of the modern patient. This education is clearly defined by the AACN's eight DNP Essentials, which ensure that the graduate is prepared to understand the unique needs of patients and populations, seek out evidence-based recommendations, and apply this knowledge through practice. During the creation and implementation of this project, each Essential was thoroughly met. In the course of this quality improvement project, several opportunities for nursing advancement were noted including further adaptation of CPR training to meet the needs of migrant and transient populations, the importance of working within existing outreach organizations to provide this education, and the potential to expand the health education of migrant workers via a multi-disciplinary approach.

## **Chapter Eight: Final Conclusions**

Sudden cardiac death (SCD) has risen to be the third leading cause of death in the United States, and disproportionately affects Latino communities. Current data suggests that Latinos are two to three times more likely to suffer a cardiac arrest, and 30% more likely to die as a result when compared to their white counterparts (Carabello & Lorenzo, 2014; Warden et al., 2012). At this point, 9% of the North Carolina population identifies as Latino, and North Carolina is home to the largest number of H2A workers in the country (Montz, Allen, & Monitz, 2011; Tippett, 2017). These migrant farmworkers represent a vulnerable community highly likely to experience a cardiac event, yet extremely unlikely to receive CPR education.

### **Significance of Findings**

The aim of this project was to equip and empower employees of a health outreach program to provide hands-only CPR to migrant farmworkers in North Carolina. Through the use of portable mannequins, targeted training, and provision of supplemental curriculum, this project was successful in meeting that aim. While the participants did not report feeling comfortable providing the education, they did feel well-prepared, and intend to continue the educating migrant workers.

Furthermore, the participants reported the migrant workers were aware of the importance of CPR and very interested in the training. This confirms the project team's assumption that migrant farmworkers are an untapped population that deserves targeted training programs through existing relationships. Additionally, it is important to note that the reported age range of most migrant farmworkers who participate in the outreach program is over 60, making them at even higher risk of SCD, an unexpected benefit.



### **Project Strengths and Weaknesses**

As with any intervention, there were multiple strengths and weaknesses of the project. Originally there was some concern that employees would not be fully invested in the project as it added to their already large body of responsibilities. However, the participants were extremely interested and willing to partake in the original training. They felt comfortable with the materials and well prepared to complete the training. The commitment of the participants was an integral piece of this project, especially in securing long-term feasibility.

Provision of grant funding to provide the exceptional CPR in Schools curriculum kit gave the participants access to portable, easy to use mannequins as well as a future resource for training and refreshers. The addition of this aspect truly cemented the possibility for long-term continuation, especially when considering how staff attrition could impact the availability of trained outreach employees in future seasons. It is unlikely this project would have been economically feasible without this funding.

As anticipated, the use of an existing health outreach program was a major strength. Even though many of the participants did not have prior relationships with the migrant workers, the program was well known, and the pattern of educational offerings was anticipated by the migrant workers. This encouraged attendance by migrants when sessions were offered, especially as this was a novel topic.

It was initially assumed that keeping the participant training brief would both encourage the health outreach manager's participation in the project and prove to participants how simple this training would be. However, the brevity of the training proved to be one of two major weaknesses in the project. It was known prior to providing training that all of the participants had recently participated in basic life support CPR training. As a result of this knowledge, and the

desire to remain succinct, the training consisted of demonstrating the equipment, reviewing the basic concepts of hands-only CPR, and providing opportunities for practice and questions. The CPR in Schools curriculum was explained as a resource, but not utilized or extensively discussed. At the end of training, participants did not feel comfortable teaching hands-only CPR, one of the main goals of the project. This likely could have been avoided through the use of the formal curriculum, even though it may have reduced initial willingness to participate.

Additionally, failure to secure reliable access to participants throughout implementation was a weakness that likely negatively impacted participants' comfort providing education. During the initial training the email addresses of employees was provided to allow for follow-up and questions. However, throughout implementation only one email response was garnered from employees. Verifying which method of contact the participants preferred and used most often would likely have improved communication, and thereby comfort level. Moreover, arranging pre-scheduled conference times to review the material and answer questions would likely have increased feelings of confidence.

### **Project Limitations**

One of the important aspects of project planning was the intent to rely on existing relationships between outreach workers and migrant workers to build trust and willing participation. Unexpectedly, none of the employees had more than a year of experience in the role, and only one had previously been at the outreach during a time when education was being offered. This impacted the project in two ways. The first was that it removed the expected benefit of pre-existing personal relationships. While familiarity with the outreach program likely tempered this effect, it is anticipated that it may have had unintended effects on the migrant workers' perception of the education, especially as many of the workers have returned to this

area for multiple seasons. Second, the simultaneous work on the part of the participants of adapting to a new employment position and incorporating an untested educational topic, likely negatively affected the participants' comfort level in providing hands-only CPR education.

As previously mentioned, interaction with the participants during implementation was limited. While multiple attempts were made at outreach, including offers for further training, these went unanswered. It is impossible to know how this impacted the participants' empowerment, but it is presumed that follow-up education and opportunities for questions would only have strengthened the project.

At the outset, it was known that this project would be an additional education burden on participants. Each year the health outreach employees are required to provide education on five pre-determined topics to all the participating migrant workers in their district. This mandatory education severely limited the opportunity to provide hands-only CPR education, as that could only be started once all other topics were covered.

Unexpectedly, the inconsistency of training environments was also a limitation. Participants noted a situation in which the floor was too dirty to use for practice, so they had to improvise on a kitchen table. This understandably created conflict for the participants, who had to improvise their implementation, potentially creating undue stress surrounding training.

Originally it was thought that implementing at the end of the season would ensure that mandatory education would be completed, opening up opportunities for the additional topic. However, participants noted they were actually more stressed at the end of the season and felt the opportunity to incorporate the education into visits from the beginning of the season would have allowed more opportunities to provide training sessions.

### **Project Benefits**

Provision of hands-only CPR education to migrant farmworkers addressed the IHI Triple Aim Initiative (IHI, 2019). Tailoring the education to be provided at migrant farmworker camps improved the experience of care for a vulnerable population while providing them with high-quality, much needed education.

This training ameliorated the high risk of long-term morbidity experienced by Latino communities as a result of SCD, thereby addressing the final two Aims. Overall, the health of this population is improved by decreasing response times to OHCA. As bystander CPR rates improve, more victims should survive the immediate insult, and long-term outcomes will likely be more favorable. A reduction in community members with chronic illnesses, especially neurologic defects, will result in a decrease in healthcare expenditures related to care of victims over time. Moreover, encouraging continued collaboration between the migrant farmworkers and the health outreach by providing a novel educational topic likely strengthens the existing bond and increases the farmworker's access to healthcare.

### **Practice Recommendations**

The success of this intervention has multiple implications for future practice. Most importantly, broader implementation through the existing statewide outreach system should be incorporated for future planning. The success of hands-only CPR education from the point-of-view of both the outreach employees and migrant workers, proves it to be feasible for use as an outreach program, and an applicable topic for this population. While many sites asked to participate were resistant due to fears of excessive time commitment, the successful pilot program has alleviated this fear, and multiple sites are now considering adopting this training program after hearing reports from the pilot program participants. The potential impact this

adoption could have if implemented statewide is remarkable and should be a serious consideration.

While avoiding an extended review of the CPR in Schools curriculum was necessary to promote program adoption in this case, in the future the curriculum should be utilized. This will serve two purposes. It is understandable that outreach employees would report some discomfort with providing hands-only CPR education, as it is a new topic, and a process with which they are likely not intimately familiar. However, an organized and methodical approach to the first educational session, as provided by the CPR in Schools curriculum, would likely ameliorate this concern. Moreover, use of the curriculum would allow continued review and training of new employees without the requirement of a DNP student.

An important lesson learned during this project was the necessity of clarifying best means of communication with participants. The expectation that email would be an effective method proved to be a major hurdle, as the participants did not check their email on a regular basis. While email may be an appropriate method in many cases, clarifying this may have allowed for more consistent communication throughout, and should be considered in future implementation.

It is well known that low socioeconomic status groups disproportionately bear the burden of OHCA morbidity due to their lack of CPR training. This project shows that working with existing community outreach programs, and empowering employees of these programs to provide hands-only CPR training, is a feasible and effective way to combat this disparity. Future implementation in African American and Spanish language church communities, YMCA centers, and community centers in low SES neighborhoods should be at the forefront of future project planning.

## **Final Summary**

Migrant farmworkers represent an intersection of two groups, Latinos and low-income persons, who are desperately in need of hands-only CPR education. Multiple barriers exist when considering providing this education including cost, material availability, and fear of litigation. However, equipping health outreach workers who are well-versed in caring for this unique population proved to be an effective method to address this disparity.

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## Appendix A

Article (APA Citation)	Level of Evidence	Data/Evidence Findings	Conclusion or Summary	Use of Evidence in EBP
Magid, K.H., Heard, D., and Sasson, C.(2018). Addressing gaps in cardiopulmonary resuscitation education: Training middle school students in hands-only cardiopulmonary resuscitation. <i>Journal of School Health</i> , 88(7).524-530. doi:10.1111/josh.12634.	Level 4	76% of students stated they were comfortable performing CPR. <i>98% of teachers felt comfortable continuing to teach CPR in the future.</i>	Utilizing AHA training kits and non-medical personnel to teach middle school students hands-only CPR. Students and teachers were happy with the implementation and felt it was effective.	Non-medical personnel can be comfortable and effective teaching hands-only CPR with limited training.
Moon, S., Bobrow, B.J., Vadeboncouer, T.F., Kortuem, W., Kisakye, M., Sasson, C., Stolz, U., and Spaite, D.W. (2014). Disparities in bystander CPR provision and survival from out-of-hospital cardiac arrest according to neighborhood ethnicity. <i>The American Journal of Emergency Medicine</i> , 32(9). 1041-1045. doi: 10.1016/j.ajem.2014.06.019.	Level 6	Significantly less bystander CPR was performed in hispanic neighborhood in Az compared to non-hispanic white neighborhoods. Survival to discharge was also significantly less.	The hispanic community is in need of a targeted public health intervention to increase bystander CPR rates	While in AZ, this could potentially be extrapolated to general hispanic communities. However, interesting to note that presenting rhythms were also different-although this could be attributed to lack of CPR and subsequent escalation of arrhythmicity.

<p>Meischke, H., Ike, B., Painter, I., Chavez, D., Yip, M.P., Bradley, S.M., and Tu, S.P. (2015). Delivering 9-1-1 CPR instructions to limited English proficient callers: A simulation experiment. <i>Journal of Immigrant and Minority Health</i>, 17(4).1049-1054. doi:10.1007/s10903-014-0017-8.</p>	Level 2	<p>Limited English proficiency significantly increased time to compressions and quality even when verbal instructions given by emergency operators.</p>	<p>LEP community has multiple challenges in accessing and interacting with emergency car. CPR training needs to be expanded to better reach this community.</p>	<p>There are inherent barriers to emergency care for this population and in place interventions to promote CPR for English speaking population may not be effective. Further validation of need for CPR training in LEP community.</p>
<p>Nuno, T., Bobrow, B.J., Rogge-Miller, K.A., Pancyzk, M., Mullins, T., Tormala, W., . . . , Spaite, D.W. (2017). Disparities in telephone CPR access and timing during out-of-hospital cardiac arrest. <i>Resuscitation</i>, 115. 11-16. doi:10.1016/j.resuscitation.2017.03.028.</p>	Level 4	<p>It took almost double the amount of time for the operator to recognize an OHCA, start CPR instructions, and for CPR to actually be initiated when compared to calls where there was no language barrier.</p>	<p>Hispanic callers underutilize the 911 system for multiple reasons, and when they do utilize it for OHCA there are significant delays in initiating CPR.</p>	<p>Current in-place community systems to address lack of CPR knowledge remain insufficient to assist callers for whom English is not their primary language.</p>

<p>Sasson, C., Haukoos, J.S., Ben-Youssef, L., Ramirez, L., Bull, S., Eigel, B., . . . , Padilla, R. (2015). Barriers to calling 911 and learning and performing cardiopulmonary resuscitation for residents of primarily Latino, high-risk neighborhoods in Denver, Colorado. <i>Annals of Emergency Medicine</i>, 65(5). 545-552. doi:10/1016/j.annemergmed.2014.10.028.</p>	<p>Level 4</p>	<p>Found 6 key barriers to calling 911: distrust of law enforcement, financial, immigration status, lack of recognition of cardiac event, language, and violence. 7 key barriers to starting CPR: age, sex, immigration status, language, racism, strangers, fear of touching someone.</p>	<p>Specific barriers exist when addressing rates of bystander CPR in Hispanic communities.</p>	<p>Need definitely exists; however, will need to tailor project to address the key barriers. Perhaps specifically recognition of event as the others are slightly out of control of the project.</p>
<p>Caraballo, H., and De Lorenzo, R.A. (2015). Overcoming the 911 fear factor. <i>Annals of Emergency Medicine</i>, 65(5). 553-555. doi:10.1016/j.annemergmed.2014.12.006</p>	<p>Level 7</p>	<p>Editorial about above article</p>		<p>Great ideas on how to address the barriers from above article (Sasson et al., 2015). Discusses how some interventions such as requirement for grad are irrelevant to this community as high percentage do not graduate.</p>
<p>Montz, B.E., Allen, T.R., and Monitz, G.I. (2011). Systemic trends in disaster vulnerability: Migrant and seasonal farm workers in North Carolina. <i>Risk, Hazard and Crisis in Public Policy</i>, 2(1).</p>	<p>Level 5</p>	<p>90% of migrant farmworkers in NC are Latino</p>	<p>Migrant workers are vulnerable to disaster due to the nature of their work, poor housing, and lack of access to social networks and healthcare. Programs aimed at disaster preparedness and risk</p>	<p>Demographics</p>

<p>doi:10.2202/1944-4079.1070.</p>			<p>reduction for this group are severely lacking.</p>	
<p>UCIS. (2019). H2A temporary agricultural workers. Retrieved from <a href="https://www.uscis.gov/working-united-states/temporary-workers/h-2a-temporary-agricultural-workers">https://www.uscis.gov/working-united-states/temporary-workers/h-2a-temporary-agricultural-workers</a>.</p>	<p>Gov't document</p>	<p>Explanation of H2A status</p>		
<p>Benjamin, E.J., Virani, S.S., Callaway, C.W., Chang, A.R., Cheng, S., Chui, S.E., . . . , &amp; Muntner, P. (2018). Heart disease and stroke statistics- 2018 update. <i>Circulation</i>, 37(10). doi:10.1161/CIR.0000000000000558</p>	<p>Level 5</p>	<p>Epidemiology of heart disease</p>	<p>AHA's yearly report on the prevalence/incidence of CV disease in US. 1 in every 7.4 will experience cardiac death. Most vulnerable populations include Hispanic/Latino, elderly, low-income, low education. Much of the variation in survival can be r/t bystander CPR.</p>	<p>This is a common problem that can be addressed especially through bridging the gap in education between groups. Limitation: doesn't discuss further issues about why groups more vulnerable-could be presentable rhythms are less likely to have ROS</p>

<p>Chang, M.P., Gent, L.M., Sweet, M., Potts, J., Ahtone, J., &amp; Idris, A.H. (2017). A novel educational outreach approach to teach hands-only cardiopulmonary resuscitation to the public. <i>Resuscitation</i>, 116, 22-26. doi: 10.1016/j.resuscitation.2017.04.028.</p>	Level 4	Use of hands-only CPR training kiosk in airport	<p>AHA goal to train 20 million people annually in CPR and double bystander response by 2020. Ultra-brief video was shown to be effective training tool. Major difficulty was correct compression rate/depth.</p>	<p>Limitations- did not have background so some may have been healthcare workers, not all participants chose to attempt compressions, all English speaking. Did confirm the public is interested in receiving training.</p>
<p>Geri, G., Fahrenbruch, C., Meischke, H., Painter, I., White, L., Rea, T.D., &amp; Wever, M.R. (2017). Effects of bystander CPR following out-of-hospital cardiac arrest on hospital costs and long-term survival. <i>Resuscitation</i>, 115, 129-134. doi: 10.1016/j.resuscitation.2017.04.016.</p>	Level 4	Assesses cost effectiveness of CPR and costs of SCD	<p>5 yr survival rate higher in group that received bystander CPR. Cost effectiveness ratio was 48,044 per Quality Adjusted Life Year (QALY)</p>	<p>Gives financial aspect of the cost of untreated SCD.</p>
<p>Hansen, C.M., Kragholm, K., and Pearson, D.A. (2015). Association of bystander and first-responder intervention with survival after out-of-hospital cardiac arrest in North Carolina, 2010-2013. <i>Journal of the American Medical Association</i>, 314(3). 255-264. Doi:</p>	Level 3	<p>Rates of bystander CPR and EMS defibrillation increased from 14 to 23%. Survival rates with favorable neurological outcome increased from 7 to 9% and was closely associated with bystander CPR.</p>	<p>After a state-wide initiative in bystander CPR and early defibrillation, bystander CPR and survival rates increased dramatically.</p>	<p>Great NC data- covered 30% of the state's population. Example of how a hands-only intervention worked well in the state. Limitations- no control</p>



10.1001/jama.2015.7938.				
IOM (Institute of Medicine). 2015. Strategies to improve cardiac arrest survival: A time to act. Washington, DC: The National Academies Press. Retrieved from <a href="https://www.ncbi.nlm.nih.gov/jproxy.lib.ecu.edu/books/NBK305685/pdf/Bookshelf_NBK305685.pdf">https://www.ncbi.nlm.nih.gov/jproxy.lib.ecu.edu/books/NBK305685/pdf/Bookshelf_NBK305685.pdf</a>	Level 7	Discusses data limitations for OHCA data, gaps in knowledge,	Too many to list--> covers cause, tx, risks, complications in disseminating treatment	Data discussing the why of hands-only CPR training and need to target low-income groups.
Keller, S.P., & Halperin, H.H. (2015). Cardiac arrest: The changing incidence of ventricular fibrillation. Current treatment options in cardiology medicine, 17(29), 1-11. doi: 10.1007/s11936-015-0392-z.	Level 6	VT/VF is decreasing as presenting rhythm in OHCA in many cases	Due to improvement in CHD management, PEA is becoming a more prevalent rhythm.	Limitations- non-experimental, no control group. Great discussion of pathophysiology and risk factors.

Myerburg, R.J. (2017). Sudden cardiac death: Interface between pathophysiology and epidemiology. <i>Cardiac Electrophysiology Clinic</i> , 9(4). 515-524. doi: 10.1016/j.ccep.2017.07.003.	Level 7			Discusses pathophysiology and epidemiology of SCD
Reinier, K., Thomas, E., Andrusiek, D.L., Aufderheide, T.P., Brooks, S.C., and Callaway, C.W. (2011). Socioeconomic status and incidence of sudden cardiac arrest. <i>Canadian Medical Association Journal</i> , 183(15). Doi:10.1503/cmaj.101512	Level 4	The incidence of SCD in the lowest quartile of SES was nearly double that of the highest quarter.	Incidence of SCD is higher in low SES populations, most strikingly in those <65. Interventions to address this are needed.	Limitations: cohort study. However did have very large sample size (n=9235)
Tippett, R. (2017). The Hispanic/Latino Community in North Carolina. Retrieved from <a href="https://demography.cpc.unc.edu/2017/10/10/the-hispaniclatino-community-in-north-carolina/">https://demography.cpc.unc.edu/2017/10/10/the-hispaniclatino-community-in-north-carolina/</a> .	Level 6	1 million North Carolinians identify as Latino (9% of population). The vast majority (60%) are from Mexico, 23% are from Honduras, El Salvador or Guatemala		State level demographics re Latino population. Does not discuss migrant farmworkers.

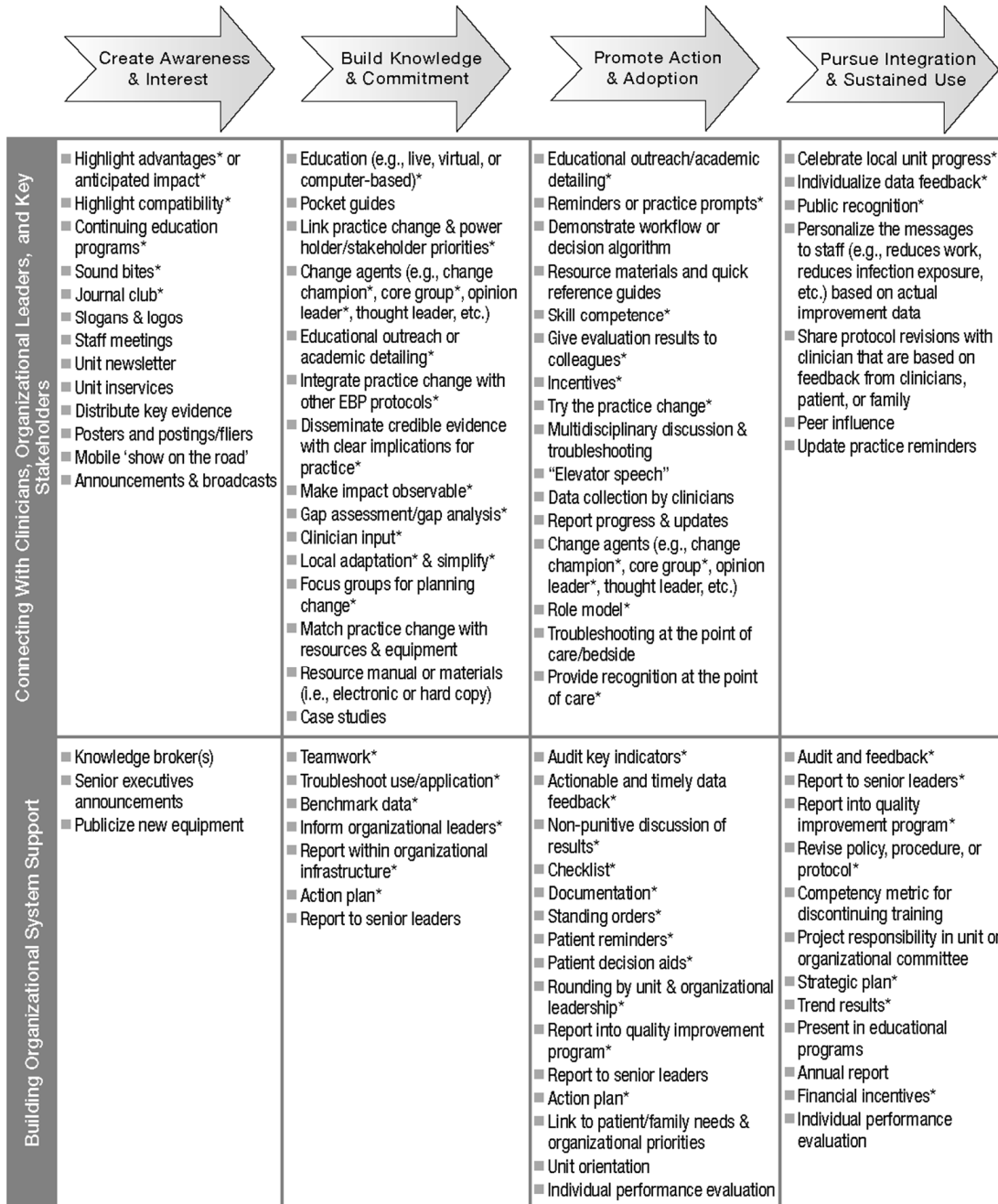
<p>Nayeri, A., Bhatia, N., Holmes, B., Borges, N., Young, M.N., Wells, Q.S., and McPherson, J.A. (2017). Pre-existing medical comorbidity is not associated with neurological outcomes in patients undergoing targeted temperature management following cardiac arrest. <i>Heart and Vessels</i>, 32(11). 1358-1363. doi: 10.1007/s00380-017-1005-4.</p>	Level 4	<p>Pre-existing morbidities were not found to be a significant factor OHCA outcomes. Increasing age, length of time to ROSC, and non-shockable rhythms had a negative effect on outcomes.</p>	<p>There is no evidence that chronic illnesses affect acute outcomes in OHCA. However, length of time to ROSC, age, and presenting rhythm have significant effects.</p>	<p>Solidifies importance of CPR as a primary intervention in order to achieve ROSC.</p>
<p>Lewis, M.E., Feng-Chang, L., Nanavati, P., Mehta, N., Mounsey, L., Nwosu, A., . . . , Simpson, R.J. (2016). Estimated incidence and risk factors of sudden unexpected death. <i>Open Heart</i>, 3(1). 1-7. doi: 10.1136/openhrt-2015-000321.</p>	Level 4	<p>Within Wake County the incidence of OHCA was significantly higher in AA women (43% vs 23%). This was not similar to the race distribution of the county. More women than men (99 vs 91%) had unwitnessed arrests.</p>	<p>Most cohort deaths occurred in white, unmarried, hypertensive men. However, AA women were at significantly higher risk for experiencing OHCA.</p>	<p>Provides local data on disparities, unfortunately not Latino specific.</p>
<p>Melnyk, B.M. &amp; Fineout-Overholt, E. (2011). <i>Evidence-based practice in nursing and healthcare: A guide to best practice</i>. Philadelphia: Lippincott, Williams &amp; Wilkins. Retrieved from</p>				<p>Literature grading</p>

<p><a href="http://guides.lib.umich.edu/c.php?g=282802&amp;p=1888246">http://guides.lib.umich.edu/c.php?g=282802&amp;p=1888246</a></p>				
<p>Deo, R., and Albert, C. (2012). Epidemiology and genetics of sudden cardiac death. <i>Circulation</i>, 125(4). 620-637. doi: 10.1161/CIRCULATIONAHA.111.023838.</p>	Level 5	AA 31% more likely to die from SCD than white counterparts.		Great data on background of SCD- causes & risk factors. Current population based studies. Heavy focus on AA disparities.
<p>Oh, S.J., Kim, J.J., Jang, J.H., Hwang, I.C., and Woo, J.H. (2018). Age is related to neurological outcomes with out-of-hospital cardiac arrest (OHCA) receiving therapeutic hypothermia (TH). <i>The American Journal of Emergency Medicine</i>, 36(2). 243-247. doi:10.1016/j.ajem.2017.07.087.</p>	Level 4	Young age, high hemoglobin level, non-diabetic status, cardiogenic arrest, bystander CPR, early ACLS were more likely to have positive neurological outcomes. Increasing age was a risk for poor neurologic outcomes.	Interventions in elderly patients suffering SCD are less effective overall.	Discussion of risk factors for poor outcomes regardless of interventions.

Appendix B

Implementation Strategies for Evidence-Based Practice

Figure 8.2 Implementation Strategies for Evidence-Based Practice



\* Implementation strategy is supported by at least some empirical evidence in healthcare.

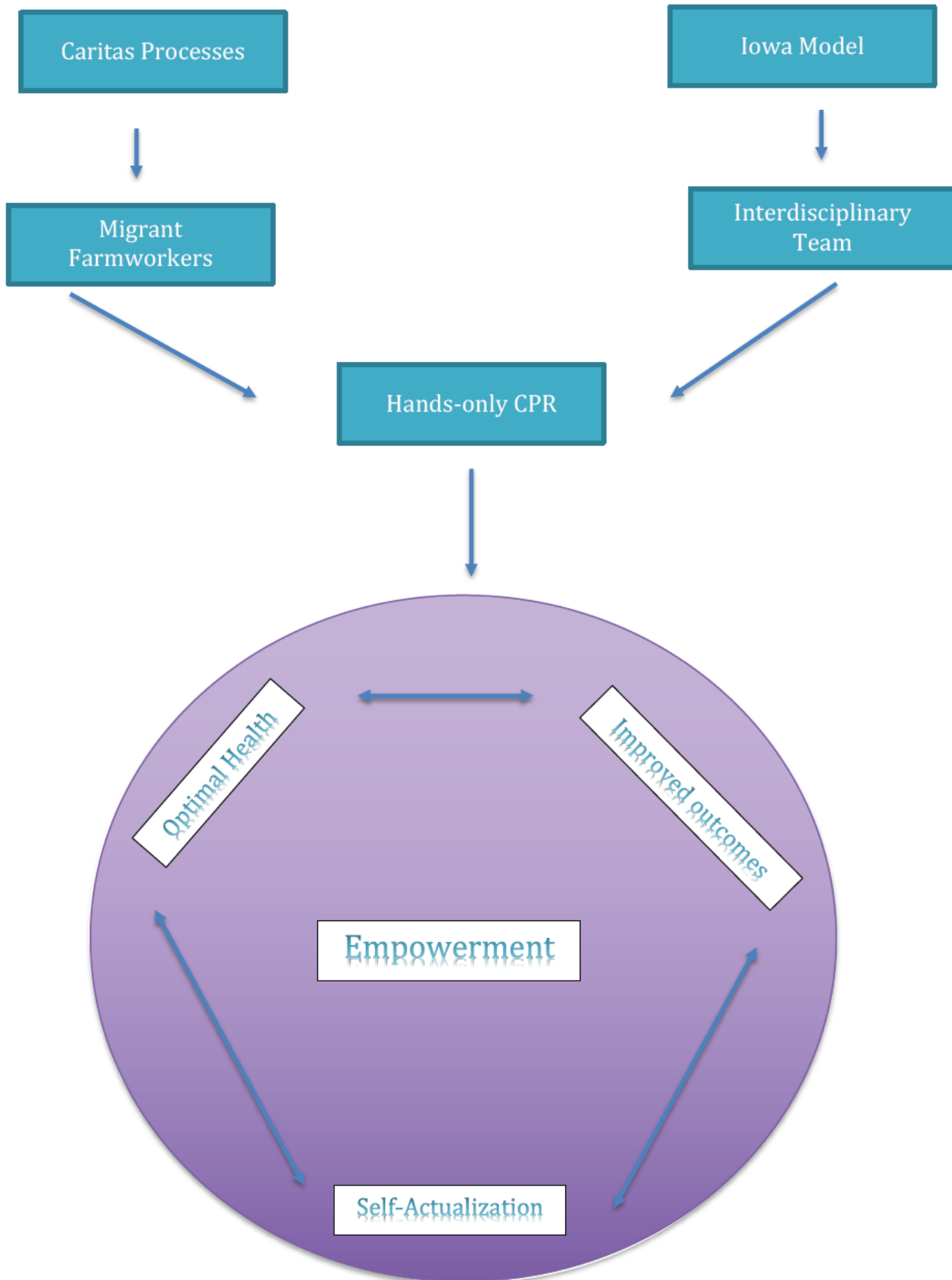
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Cullen, L., & Adams, S. L. (2012). Planning for implementation of evidence-based practice. *Journal of Nursing Administration, 42*(4), 222–230.

doi:10.1097/NNA.0B013E31824CCD0A

Appendix C  
Concept Map




Appendix D

Project Support Letter



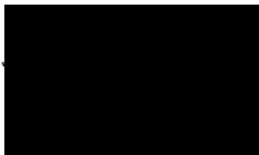
May 7, 2019

To East Carolina University College of Nursing:

We at  have reviewed Traci Gregory's and Jessica Merchant's DNP Project Proposals "Implementation of a CPR training program for migrant farmworkers" and "Educating Hispanic migrant farm workers on bystander hands-only CPR". Mrs. Gregory and Ms. Merchant have organizational support and approval to conduct their project within our institution.

We understand that the timeframe for this project is from the date of this letter through April 30, 2020. Implementation at the project site will occur August/September through November 30, 2019, unless otherwise negotiated. We understand that for Mrs. Gregory and Ms. Merchant to achieve completion of the DNP program, dissemination of the project will be required by the University which will include a public presentation related to the project and a manuscript submission will be encouraged.

Our organization has deemed this project as a quality improvement initiative. Our organization is aware that this project will be processed first through our organizational IRB and then through the University and Medical Center Internal Review Board of East Carolina University (UMCIRB). Our organization does have an Internal Review Board (IRB).



## Appendix E

## Budget

Line Item	Unit Cost	Quantity	Total
AHA CPR in Schools Training Kit <sub>1</sub>	649.00	1	649.00
Manikin wipes	12.48	2	24.96
Total:			673.96

1. <https://www.schoolhealth.com/american-heart-association-cpr-in-schools-training-kit-0153?acc=c20ad4d76fe97759aa27a0c99bff6710>



Appendix F  
ECU IRB Waiver

Click "download PDF" to save a copy of this page for your records. Note: The IRB Office does not maintain copies of your responses.

Below is a summary of your [Download PDF](#) responses



### **Quality Improvement/Program Evaluation Self-Certification Tool**

**Purpose:**

Projects that do not meet the federal definition of human research pursuant to 45 CFR 46 do not require IRB review. This tool was developed to assist in the determination of when a project falls outside of the IRB's purview.

**Instructions:**

Please complete the requested project information, as this document may be used for documentation that IRB review is not required. Select the appropriate answers to each question in the order they appear below. Additional questions may appear based on your answers. If you do not receive a STOP HERE message, the form may be printed as certification that the project is "not research", and does not require IRB review. The IRB will not review your responses as part of the self-certification process.

Name of Project Leader:

Project Title:

Traci Gregory

---

Implementing a hands-only CPR train the trainer program for employees of a migrant worker health outreach program

**Brief description of Project/Goals:**

This project is a joint effort with fellow DNP student Jessica Merchant. It aims to increase the number of hands-only CPR trained migrant farmworkers in North Carolina through a collaboration with the North Carolina Farmworker Health Program. In order to meet this goal, outreach workers will be provided with

Will the project involve testing an experimental drug, device (including medical software or assays), or biologic?

Yes No

Has the project received funding (e.g. federal, industry) to be conducted as a human subject research study?

Yes No

Is this a multi-site project (e.g. there is a coordinating or lead center, more than one site participating, and/or a study-wide protocol)?

Yes No

Is this a systematic investigation designed with the intent to contribute to generalizable knowledge (e.g. testing a hypothesis; randomization of subjects; comparison of case vs. control; observational research; comparative effectiveness research; or comparable criteria in alternative research paradigms)?

Yes No

Will the results of the project be published, presented or disseminated outside of the institution or program conducting it?

Yes No

Based on your responses, the project appears to constitute QI and/or Program Evaluation and IRB review is not required because, in accordance with federal regulations, your project does not constitute research as defined under 45 CFR 46.102(d). If the project results are



the training and supplies necessary to implement hands-only CPR training sessions with migrant farmworkers as well as written pamphlets of information about the Good Samaritan laws in NC. This training will then be disseminated to the migrant farmworker population in the Piedmont region of North Carolina. Outcomes include empowerment of outreach staff, and their reported confidence teaching hands-only CPR. This will be measured by a pre and post-intervention survey.

disseminated, they should be characterized as QI and/or Program Evaluation findings.

disseminated, they should be characterized as QI and/or Program Evaluation findings.

Finally, if the project changes in any way that might affect the intent or design, please complete this self-certification again to ensure that IRB review is still not required. Click the button below to view a printable version of this form to save with your files, as it serves as documentation that IRB review is not required for this project. 7/12/2019

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## Appendix G

## Post-Survey

## Post Hands-Only CPR Education Questionnaire

1. How many years have you worked for this outreach program?
  - Less than 1 year
  - 1-2 years
  - 2-3 years
  - Greater than 3 years
  
2. What is your level of education?
  - Less than High school
  - High school
  - Some College
  - Associates degree
  - Bachelors
  - Graduate degree
  
3. Have you received formal CPR training prior to this session?
  - Never
  - Once
  - Greater than 2 times
  
4. I feel comfortable teaching hands-only CPR
  - Strongly Disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly Agree
  
5. The materials were effective and easily manageable
  - Strongly Disagree
  - Disagree
  - Neutral
  - Strongly Agree
  - Agree
  
6. I feel well-prepared to teach this class after receiving this education
  - Strongly Disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly Agree

7. This class was will be effective for migrant workers

- |  |                                   |
|--|-----------------------------------|
| <input type="checkbox"/> Strongly Disagree | <input type="checkbox"/> Disagree |
| <input type="checkbox"/> Neutral           | <input type="checkbox"/> Agree    |
| <input type="checkbox"/> Strongly Agree    |                                   |

8. This intervention meets the unique needs of the migrant worker population

- |  |                                   |
|--|-----------------------------------|
| <input type="checkbox"/> Strongly Disagree | <input type="checkbox"/> Disagree |
| <input type="checkbox"/> Neutral           | <input type="checkbox"/> Agree    |
| <input type="checkbox"/> Strongly Agree    |                                   |

9. I will continue to teach this material to the migrant worker population in the future

- |  |                                   |
|--|-----------------------------------|
| <input type="checkbox"/> Strongly Disagree | <input type="checkbox"/> Disagree |
| <input type="checkbox"/> Neutral           | <input type="checkbox"/> Agree    |
| <input type="checkbox"/> Strongly Agree    |                                   |

Appendix H  
Post Project Debriefing Questions

1. As a whole, would you consider this program a success?
2. What prevented it from being more effective?
3. If you could change one thing about the project, what would you change?
4. Did this intervention match the needs of the migrant workers?
5. What are your thoughts on continuing to teach this class?

Appendix I  
Class Tracking Tool for Employees

Date of Class	Number of Participants	What went well?	What could have been better?

## Appendix J

## Commentary Captured from Participants During Final Data Collection

4) What prevented it from being more effective?

“They are sometimes tired after working and don’t want to do education.”

“Guys wanted more information.”

“Should have approved this project earlier to have more time.”

“No clean place to put the mannequins.”

“Workers had lots of different backgrounds. Some of them asked questions we couldn’t answer.”

“Rain changed the availability of the workers for education sessions- when it rained they were happy to participate, but if it was good weather they wanted to work. That meant we couldn’t always get through everything.”

5) If you could change one thing about the project, what would you change?

“I wish we had done more role playing in training.”

“This should have been part of our required five topics so we would have time to get through it with everyone.”