IMPLEMENTATION OF CARDIAC EMERGENCY DRILLS ON A SCHOOL CAMPUS TO OBTAIN HEART SAFE SCHOOL STATUS

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Dedication and Acknowledgements

I want to both thank and acknowledge everyone who was a part of making this project possible.

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Lastly, to the families who have lost children to cardiac arrest, many of whom work tirelessly to expand AED placement and improve CPR/AED skills training. Your passion inspired me, and I hope this project will further the cause or, at a minimum, spark conversations around ways to keep kids safe.

Abstract

Background: Outside of the hospital, cardiac arrest (OHCA) has high morbidity and mortality if bystanders do not have the tools (AEDs) and knowledge (CPR/AED skills) to act appropriately in a cardiac emergency. Cardiac arrests can occur in individuals with no known history of cardiac disease and occur in both children and adults. **Purpose:** This quality improvement project aims to implement cardiac emergency drills on a school campus to obtain Heart Safe School Status through the Project ADAM Organization. **Methods:** This project involved planning a series of eight CPR/AED drills on a school campus. Quantitative data included the percentage of items completed in the Project ADAM Drill checklist. Qualitative data included participant feedback on the drill process. **Results:** The project was implemented on a large independent school campus with 245 faculty and staff members. 16% of faculty/staff participated in the drills (N = 38). The overall score on the Project ADAM Drill checklist was 86.67%. All qualitative feedback was positive. With the completion of the drills, the school successfully moved one step closer to Heart Safe School Status through the Project ADAM Organization. **Recommendations and Conclusions:** School nurses are in an ideal position to lead campus-wide emergency planning/preparedness by implementing CPR/AED drills on their campuses. Future exploration of CPR/AED drills could include initiating drills in other settings (gyms/recreational centers/college campuses), tracking progress over time, tracking progress when changes are made to emergency plans, and considering adding in the involvement of students in drills.

Keywords: community, cardiac arrest, bystander, CPR, AED, survival, cardiac arrest, sudden cardiac arrest, sudden cardiac death, and outside-of-hospital cardiac arrest

Background and Significance

The burden of cardiovascular disease comes at a great human and economic cost to the world; globally, it is the leading cause of death, and heart disease, specifically, is the leading cause of death in the United States (Tsao et al., 2022; World Health Organization, 2021). In 2020, roughly 697,000 people in the United States died from heart disease, that is one in every five deaths, averaging about one death every 34 seconds (Centers for Disease Control and Prevention, 2022). Heart disease in the United States is the leading cause of death across all genders and most racial and ethnic groups (Centers for Disease Control and Prevention, 2022). Heart disease in the United States costs $219 billion annually, including health care services, medications, and the burden of premature death (Centers for Disease Control and Prevention, 2022).

Sudden cardiac death or cardiac arrest is related to a malfunction in the heart's electrical system that leads to heartbeats becoming dangerously fast (ventricular tachycardia) or ventricles that flutter or quiver (ventricular fibrillation) (National Institute of Health, 2022). In either case, when blood cannot move through the heart effectively, the heart cannot pump sufficient oxygenated blood to the body and vital organs. Many cardiac arrests come with little clinical warning; half of all cardiac arrests occur in individuals with no known heart disease (National Institutes of Health, 2022). Unfortunately, when cardiac arrest occurs, the victim collapses without warning and immediately loses consciousness; organ damage and death will soon follow unless bystanders are present and prepared to act.

There are more than 356,000 out-of-hospital cardiac arrests (OHCA) annually in the U.S., which is nearly 1000 a day (Sudden Cardiac Arrest Foundation, 2022). Unfortunately, approximately 70%–90% of those individuals die before reaching the hospital (Office of Disease

Prevention and Health Promotion, 2020). In OHCA, only 40% of cases had bystanders initiate CPR (Sudden Cardiac Arrest Foundation, 2022). Barriers to starting CPR include, but are not limited to, lack of training, lack of confidence in skills, concern about harming, concern about disease transmission (especially in mouth-to-mouth rescue breathing), avoidance of bodily fluids, the emotional factor of doing compressions of a family member or loved one and thinking that someone else on the scene is better suited to help (Magid et al., 2021).

Public health emergencies can happen anytime, and being prepared can save lives. Individuals, communities, and organizations need to be prepared for disasters, disease outbreaks, and medical emergencies, according to the Office of Disease Prevention and Health Promotion (2020). They recognize several community-based interventions to decrease the morbidity and mortality associated with cardiac arrest: increase awareness of cardiac arrest/CPR/AED, encourage public access to AED, and promote effective AED use (Office of Disease Prevention and Health Promotion, 2020). Countless community projects and programs have been designed to improve lay bystander response to cardiac emergencies.

Schools are generally associated with children, but many other community members are on school campuses daily: teachers, administrators, staff, visitors, and families. Some programs have focused on teaching CPR/AED skills to faculty/staff at schools because they are in daily contact with people at risk of OHCA (Villalobos et al., 2019). Project ADAM is one such program; Project ADAM was started in 1999 after a series of sudden deaths of high school students, including Adam Lemel, for whom the organization is named, who died of cardiac arrest while playing high school basketball (Project ADAM, 2022). The Project ADAM organization aims to increase community availability of AEDs, develop emergency response plans in places where children gather, provide staff at those facilities with CPR/AED training, and run

emergency drills to practice the skills they have learned (Project ADAM, 2022). Project ADAM developed the Heart Safe School Program, to recognize schools and other community locations that have implemented detailed cardiac emergency planning and training (Project ADAM, 2022). For these facilities, achieving Heart Safe School Status involves completing a 14-point cardiac safety checklist that includes, but is not limited to: doing AED drills, implementing a system to track staff CPR/AED certifications, having systems in place to communicate cardiac emergency plans with outside groups that may use the space after hours (Project ADAM, 2022)

Purpose

This DNP project aimed to answer the following question: In a community setting, does advanced preparedness for cardiac emergencies result in an improved bystander reaction (timely CPR initiation/timely AED initiation/timely 9-1-1 call)? The expectation is that increasing the cardiac emergency preparedness of lay bystanders will yield improved bystander response in a cardiac emergency, with the goal of better outcomes for victims of sudden cardiac arrest.

Review of Current Evidence

To support this project, a literature search was conducted to synthesize evidence on whether community-based programs increase the public's cardiac emergency preparedness. Databases utilized in the search include PubMed, Cochrane, CINAHL, and Scopus. While the proposed project topic is specific to schools, the literature search focuses on community programs; this is fitting as a school is part of a larger community, and the skills learned are not child/student/campus specific. The search included terms such as community, cardiac arrest, bystander, CPR, AED, survival, cardiac arrest, sudden cardiac arrest, sudden cardiac death, and outside-of-hospital cardiac arrest.

The literature review focused on four specific questions that address the clinical problem. The first question is: Is timely and appropriate bystander response to cardiac emergencies outside the hospital essential for cardiac arrest survival? The second question is: Does bystander training increase knowledge and skills in those trained? The third question: Does bystander training improve outcomes for victims of sudden cardiac arrest, sudden cardiac death, and outside-of-hospital cardiac arrest? The fourth and final question delves into the conceptual framework for the proposed DNP project by looking at the role of Izken Ajzen's Theory of Planned Behavior and how that theory is applied to lay people learning appropriate emergency response steps and building intent to respond in an emergency.

Timely and appropriate bystander responses to cardiac emergencies are critical. Panhuyzen-Goedkoop et al. (2021) evaluated cardiac arrests caught on video. The breakdown of the gathered video data is as follows: bystander CPR (initiated in less than 5 minutes) paired with defibrillation (initiated in less than 3 min) was associated with 100% survival, greater than a 5-minute delay in CPR/AED initiation was associated with poorer outcomes, and no bystander CPR and no bystander AED use was associated with death in all cases, they observed (Panhuyzen-Goedkoop et al., 2021). Grubic et al. (2022) used registry data from the Cardiac Arrest Registry to Enhance Survival (CARES) to quantify the impact of bystander CPR and AED use on survival. They found that bystander CPR (with or without AED use) is significantly associated with survival (Grubic et al., 2022). These two articles show that bystander response is a factor in survival from cardiac arrest, as bystander CPR is significantly associated with survival (Grubic et al., 2022 & Panhuyzen-Goedkoop et al., 2021).

Bystander training increases the knowledge and skills necessary to respond to a cardiac arrest in those trained. Ebunlomo et al. (2021) found that implementing a community training

program improved knowledge and skills in basic CPR and using an AED. Fortington et al. (2020) found success with emergency training and the AED initiative regarding equipment maintenance and the initial establishment of emergency planning (Fortington et al., 2020). Villalobos et al. (2019) found that their community training program improved knowledge and skills in basic CPR and recognition of OHCA (Villalobos et al., 2019). From these three articles, the research supports the fact that community training works. Community training programs improve knowledge and skills in emergency preparedness, basic CPR, AED use, and recognition of cardiac arrest (Ebunlomo et al., 2021; Fortington et al., 2020; Villalobos et al., 2019).

Community-based bystander training improves outcomes for cardiac arrests occurring outside the hospital. Barry et al. (2019) undertook a Cochran review exploring the data from two international studies; they found that the survival of OHCA patients is increased when police and fire services are equipped with defibrillators and that the rates of CPR initiation (before EMS arrival) increased with the training of laypeople (and first responders) through community-based training (Barry et al., 2019). Blewer et al. (2020*)* found that the rates of bystander CPR increased with CPR/AED community-based training, and survival to hospital discharge increased with community CPR/AED training (Blewer et al., 2020). Boland et al. (2017*)* found that rates of bystanders-initiated CPR (or first responders CPR) before ambulance arrival increased with community-based CPR/AED training (Boland et al., 2017*)*. Wissenberg et al. (2013) found that rates of bystander CPR increased significantly with national CPR/AED initiatives and that bystander CPR was positively associated with 30-day survival (Wissenberg et al., 2013). In summary, these studies find that the rates of bystander CPR increase following community efforts to train lay bystanders in CPR/AED use (Barry et al., 2019; Blewer et al., 2020; Boland et al., 2017 & Wissenberg et al., 2013). Two of these studies further extrapolate

that survival rates increased following community efforts to train lay bystanders in CPR (Blewer et al., 2020; Wissenberg et al., 2013).

There are some gaps in the research; the most significant for this project is a need for more research specific to schools, the training of teachers/school staff, and the role of school-based drills in training. It should also be noted that there is no unified registry of cardiac arrest data in the United States from which researchers can gather information and evaluate trends over time; the Centers for Disease Control and Prevention encourages further growth of the current system (Cardiac Arrest Registry to Enhance Survival, 2023).

Theoretical Model

The proposed project will examine the initiation of cardiac emergency drills through the theoretical lens of the Theory of Planned Behavior (TPB). Icek Ajzen created TBP to understand and predict human behavior (Ajzen, 2020). TPB is one of the most utilized theories in social and behavioral sciences; it has applications in health sciences and educational research (Bosnjak et al., 2020; McEachan et al., 2011; Ajzen, 2020). In the realm of health sciences, TBP has been used to explore personal health behaviors such as oral health behaviors, cervical cancer screening compliance, sun-protective behaviors, and recently COVID screening/masking behaviors (Durand et al., 2022; Nagata et al., 2022; Dsouza et al., 2022; Magid et al., 2021; Rajeh et al., 2022). There have been several studies that have used TPB to explore issues surrounding CPR/AED, specifically improving perception and confidence towards bystander cardiopulmonary resuscitation, understanding intentions to perform bystander CPR, and the role of perceived risk related to emergency planning (Liaw et al., 2020; Magid et al., 2021; Tan et al., 2022).

TPB theorizes that three beliefs guide human behavior: beliefs about the consequences of the behavior (behavioral beliefs), beliefs about the expectations of others (normative beliefs), and beliefs about factors that may influence performance (control beliefs) (Bosnjak et al., 2020). TPB theorizes that these three beliefs influence an individual's *intent* to participate in specific behavior and, ultimately, their decision to *participate* at a given time. To put TPB in terms of cardiac emergency response: "behavioral beliefs" equate to an individual believing that performing CPR and AED use save lives, and "normative beliefs" equate to an individual believing that those around them expect them to respond a certain way in a cardiac emergency, and lastly, "control beliefs" equate to an individual believing that they have the skills and knowledge to perform CPR and correctly apply/run the AED machine (Liaw et al., 2020).

The aim of implementing cardiac emergency drills (paired with a timely debriefing) is to effectively contribute to all three TPB theory beliefs. Drills/debriefings are done as group activities with peers so that one would anticipate a significant effect on "normative beliefs." Humans are social creatures who consider what society and people think of their behavior; the social interaction in the drill/debriefing should help normalize the social expectation of performing CPR and AED use (Liaw et al., 2020). Another critical belief that drills/debriefings aim to influence is the "control belief." As one goes through the drill/debriefing, they will get reinforcement of their ability to react appropriately to a cardiac emergency.

Methods

Design

This was a quality improvement project based on the work done by the Project ADAM organization. Project ADAM is an organization based out of the Children's Hospital of

Wisconsin that aims to improve outcomes for sudden cardiac arrest in youth. They have a four-pronged approach. One is to increase the community availability of Automated External Defibrillators (AEDs). Two, develop emergency response plans (in places where children gather, e.g., schools). Third, provide staff at those facilities with CPR/AED training. Fourth, cardiac emergency drills should be conducted to practice the skills they have learned. This project focused on the fourth and final prong, specifically bringing drills to a school campus.

Translational framework

For the proposed project, the Plan-Do-Study-Act (PDSA) model was chosen as the translational framework to guide the implementation of cardiac emergency drills and debriefing. The project aimed to document the implementation process, adjust the execution of the drills to improve reaction time, and incorporate participant feedback (where appropriate and feasible).

The PDSA model (Figure 1) was used to guide quality improvement. There are four essential steps: P for planning what will be done, D for doing it, S for studying, and A for analyzing and acting based on results (Morelli, 2016). The "A" in the PDSA model includes the following: *adopt* if it worked well, *adapt* if changes are needed, or *abandon* if you only saw slight improvement or if things worsened (Johns Hopkins, 2022). The most frequently used visual representation of the PDSA cycle (a circle, cut into quarters (one for each element: PDSA), with four arrows circling clockwise) is an iterative process, a good reminder to continually work on improving quality, in all settings, but especially healthcare (Edwards Deming Institute, n.d.).

The PDSA model was selected for three key reasons. The first reason is that the PDSA model is widely accepted as a strategy for quality improvement that works well for small-scale initiatives and in settings with little formal quality improvement infrastructure (Polit & Beck,

2021). The second reason is that working with the PDSA model provides a solid foundation for growing the quality improvement process in a given setting (Morelli, 2016). Lastly, PDSA allows for/encourages multiple investigation cycles, which appears to be a good fit for drill-based interventions (Polit & Beck, 2021). An example of recent drill-based interventions that utilize the PDSA model for quality improvement was Hollister et al. (2021); they used PDSA to evaluate the implementation of small-scale drills for mass casualty events in a trauma surgery department.

Population

The population for this quality improvement project was all adult faculty, staff, and administrators employed at the school from May 2023 to October 2023. It was anticipated that 3-4 people would participate in each drill, specifically members of the previously established emergency response team (each building on campus has a 2-4-member response team) and general faculty and staff members.

Setting

The setting for this project was a twelve-hundred-student independent school in the suburban south, serving pre-K to 12th-grade students. It was located on a large, one-hundred-and-fifty-acre campus, with student and school activities spread throughout nine buildings. Eight cardiac emergency drills were implemented over six months, from May 2023 through October 2023. All the drills were conducted after the school day to minimize the involvement of students and the impact on the education environment.

Instruments

The instrument utilized for data collection was the "AED Drill Checklist 1 – basic." It was the checklist provided by Project ADAM organization (Appendix A). Pencil and paper were

used to collect the information. The "AED Drill Checklist 1 – basic" included an area to collect names; for this DNP project participant, no names were collected or stored; in place of names, the number of participants was recorded for each drill. The instrument included a checklist of action items one would observe in a successful drill, including, but not limited to: 911 was called, CPR was started, AED arrived on the scene in under 2 minutes, and crowd control took place. The instrument also included questions to guide the debriefing and qualitative data collection, including, but not limited to: What did we do right? What was easy to remember to do? What could we do better/quicker?

Project Implementation

Initially, one of the campus' nine buildings was selected to conduct a drill. The selection was based on the presence of staff at the school. For example, our lower school building with preK-5 grade students, teachers, and staff did not have a drill in June or July when teachers were off campus for summer break. Drills in June and July occurred in buildings with year-round staffing, such as our maintenance department, admissions, or business office. Drills during the school year were done after school hours to minimize the involvement of students. Once IRB approval was secured, an information sheet about the project was shared with the school's faculty and staff (Appendix B). Communication via email was sent before each drill. Email number 1: An email was sent to critical members on campus (leadership teams and campus security for their awareness) to alert them to the drill-specific place and time. Based on their feedback, the drill scheduled date/time was updated (for example, if it conflicted with activities in that building) (Appendix C). Email number 2: An email was sent 2-weeks before the drill to all faculty and staff working in the specific building. This is a general announcement of the drill and did not include a specific date/time, as the drill was intended to be unexpected to

mimic an actual emergency (Appendix C). A copy of the information sheet was attached to that email (Appendix B). Email number 3: An email reminder was sent to the building's administrative assistant the day before the drill, reminding them that they should not call 9-1-1 during the drill (Appendix C).

Drill procedures are as follows: A dressed CPR manikin was placed on the floor along with the AED Training Unit (since actual AED units cannot be used for simulation). Participants practiced bringing the actual unit to the scene. When the drill participants arrived at the scene, the actual AED unit was "swapped out" with the training version for the drill. The AED unit was returned to its designated location following the drill.

The DNP student stood beside the manikin, checklist, phone/timer, and pen, with the Project ADAM organization-provided checklist (Appendix A). The DNP student called the front office advising them that "we are conducting a drill of the cardiac emergency response. There is an unresponsive victim in [location]." The front office were provided script/prompts for the drill; the entire building would be notified using the established code (i.e., "we have a Code Blue Drill; _____ (location)") using the team's established communication system (this will differ from building to building: overhead announcements will be used where available). Members of the building's emergency response team and other faculty/staff members were expected to respond and arrive at the drill scene.

The DNP student would observe the response to the drill and document each response step as it happens using the AED Drill Checklist. We would proceed like this was an actual cardiac arrest situation, stopping between 6-7 minutes by announcing EMS is on the scene and taking over care.

Respondents would be asked to stay for a 5–10-minute debriefing and feedback session. The debriefing questions are provided by Project ADAM and designed to facilitate improved response by identifying potential barriers and acknowledging effort and success. Debriefing questions include: What did we do right? What was easy to remember to do? What could we do better/quicker? What was hard to remember? The purpose of post-drill feedback was to help improve the implementation of subsequent drills. Feedback questions included: Was the drill helpful? What about the drill did you like? What about the drill? Didn't you like it? Any recommendations for drills moving forward?

The drill was repeated, 1-2 drills monthly, in different buildings on campus, using the PDSA cycle translational framework to incorporate participants' qualitative feedback to improve the implementation of subsequent drills.

Both quantitative and qualitative data will be collected. The DNP student would record with pencil/paper the number of items completed on the drill checklist (15-item checklist, Appendix A). The DNP student will also record with pencil/paper, using a phone as a timer, the time from drill start to simulated EMS notification, the time to initiate chest compressions on CPR mannequin, and the time to correct AED lead placement. Lastly, the DNP student would collect with pencil/paper qualitative feedback from the post-drill focus group.

Data Analysis

The data collected falls into two categories: formative and summative data. The formative data would be qualitative feedback collected in the post-drill debriefings and will shape and guide the implementation/running of subsequent drills. The summative data would be quantitative data collected during the drills, which will be categorical and compared to the

national benchmarks. The quantitative data will be evaluated with means and standard deviations.

Results

Eight CPR/AED drills were conducted from July 27, 2023, to October 5, 2023, in eight different buildings on campus. In total, there were 38 unique participants, representing 15.5% of the school's 245 full- and part-time staff (Figure 1).

The number of completed items on the cardiac emergency drill checklist was recorded immediately following the drill. Item completed ranged from 20% to 100%. Half (50%) of groups reached 100% proficiency for checklist items. The mean completed items for the eight drills was 13 (86.67%), with a standard deviation of 4.16 (Figure 2).

Maintaining an accurate time recording during the drills quickly became unfeasible, and the aim of collecting timed data was abandoned after drill #1. A modification of collecting timed data was attempted for three additional drills before all timing was abandoned.

Feedback was collected during the post-drill debriefing and recorded immediately following the drill. Not all drill groups offered answers/feedback to all the questions. Examples of responses: What did you think of the drill overall? "great" and "super helpful." What could we do better? "Practice more." What was easy to remember to do? "Calling 9-1-1". What was hard to remember? "To get the AED."

Discussion

The issue of sudden cardiac death in the United States is significant, with nearly 1000 a day (Sudden Cardiac Arrest Foundation, 2022). The Office of Disease Prevention and Health Promotion (2020) stresses the importance of appropriate preparation since public health emergencies can happen anytime and being prepared can save lives. Specifically for school

settings, organizations such as Project ADAM have clearly outlined steps schools can take to be prepared for cardiac emergencies; an important part of that preparation is conducting CPR/AED drills (Project ADAM, 2022). This project was successful in conducting CPR/AED drills. Implementing cardiac emergency drills yielded multiple benefits, some anticipated and others not.

The project met the goals stated in the project title; since the drills were conducted, the school moved closer to achieving Project ADAM Heart Safe School status. Completing the project also clearly demonstrates that a low time and low financial investment had a relatively high yield in terms of the percentage of staff who participated in cardiac emergency drills (38 participants represent 15% of the school's faculty/staff).

Two results of drill implementation were unanticipated; these examples speak to the power of conducting drills and what can happen when you prioritize emergency preparedness.

The first unanticipated result is that while running the drills, weaknesses were identified in emergency plans. One example of such weaknesses was discovering how challenging it was to quickly gather an emergency response team in a large building without a public address system. The stakeholders have also been receptive to reviewing and optimizing emergency plans, including exploring methods to optimize communication in the larger buildings.

The second unanticipated result was that conducting drills started a growing dialogue on campus around cardiac emergencies, specifically CPR/AED training availability. Again, stakeholder response has been exceedingly positive, and requests have already been made to increase the number of CRP/AED instructors on campus and the frequency of CPR/AED training opportunities.

Looking at the drills' results through the theoretical framework of the Theory of Planned Behavior lens. When we put TPB in terms of cardiac emergency response: "behavioral beliefs" equate to an individual believing that performing CPR and AED use save lives, and "normative beliefs" equate to an individual believing that those around them expect them to respond a certain way in a cardiac emergency, and lastly, "control beliefs" equate to an individual believing that they have the skills and knowledge to perform CPR and correctly apply/run the AED machine (Liaw et al., 2020). The drills were kept positive; in each case, there were ample opportunities to discuss the importance of CPR/AED use and correctly identify and reinforce what the participants were doing. This was done to accomplish three separate things: one, stress that CPR/AED skills save lives; two, reinforce participants' ability to react appropriately to a cardiac emergency; and third, establish group norms. Based on TPB, this should increase participants' chances of performing CPR/AED skills in a true cardiac emergency.

Looking at the drills' results through the conceptual framework of the PDSA model. The only change in the drill process was adding someone knowledgeable about emergency protocols and CPR/AED use. In this case, a second school nurse was available for four of the last six drills to assist in offering feedback and answering questions.

Based on this project's quantitative and qualitative results, one can make a strong case for continuing CPR/AED drills on this campus. The quantitative results mean scores of the mean completed items for the eight drills was 13 (86.67%), with a standard deviation of 4.16 (Figure 1). This indicates room for improvement, as the goal is for all the responders to complete all 15 skills without coaching/assistance (as one would need to be able to do in an actual emergency to optimize outcomes). Additionally, the qualitative feedback was uniformly positive for the experience of participating in a drill.

Conclusion

All school nurses should be encouraged to participate in campus-wide cardiac emergency planning and preparedness and consider starting CPR/AED drills on their campuses. The best time to prepare for an emergency is before it happens. The drills themselves are low-cost and low-time investment and a fantastic opportunity to demonstrate and reinforce the importance of CPR/AED skills with faculty/staff.

One would expect the speed and proficiency of CPR/AED skills to rise over time; however, this project's limitations did not allow for that effect to be quantified. There is room for future exploration of CPR/AED drills: other settings (gyms/recreational centers/college campuses), tracking progress over time, tracking progress when changes are made to emergency plans, video recording then reviewing drills with participants, and the possibility of adding in the involvement of students. I would encourage other DNP students to consider this topic or other topics related to reducing cardiac death in youth; these projects not only explore tangible steps to take to reduce cardiac deaths but also increase awareness of the issue of sudden cardiac death in our communities.

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Figure 1: PDSA figure

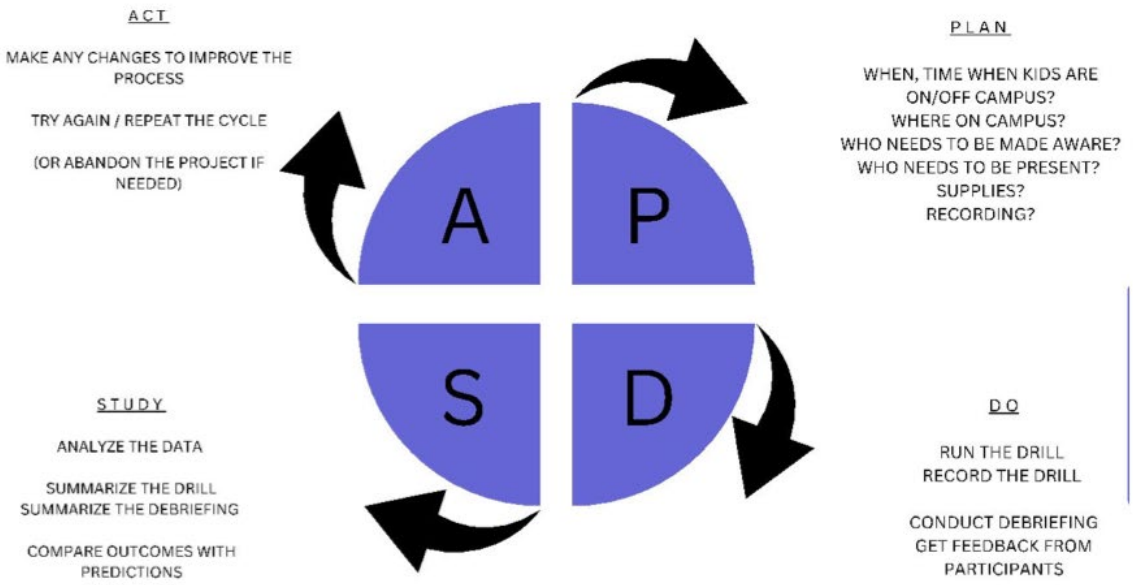


Figure 2: Run Chart

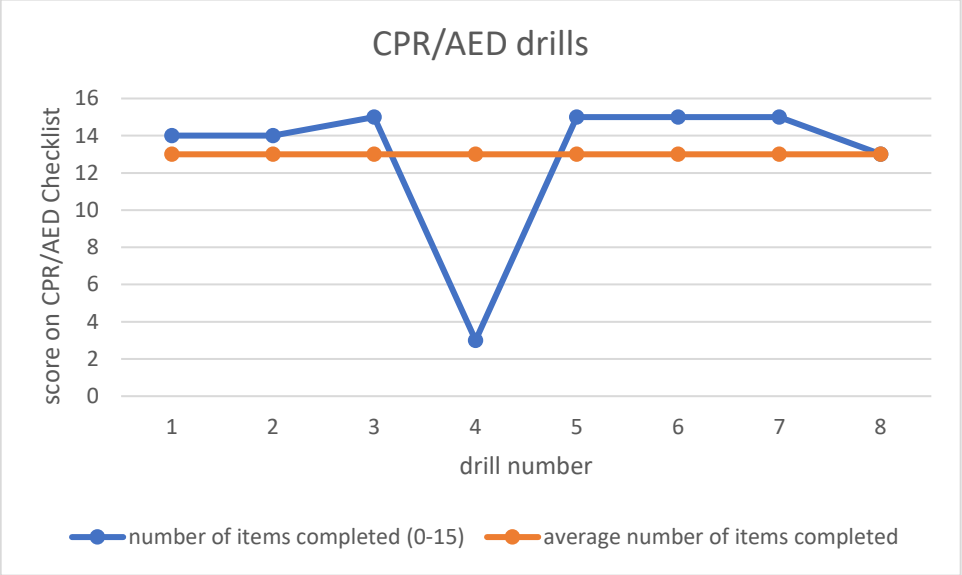
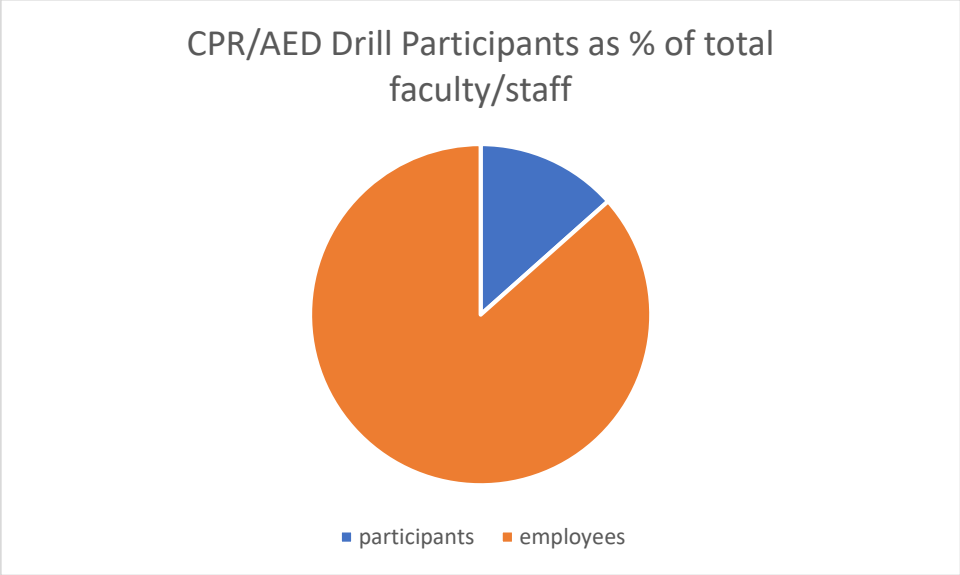


Figure 3: Drill Participants



Appendix A: AED Drill Checklist

Correction to below: no names or identifying information was collected.

AED Drill Checklist I - Basic

Directions: Utilize this AED drill checklist during your first few AED drills to ensure your team implements the basic elements of an AED drill.

Date/Time: _____ School: _____ Drill Location: _____

RESPONSE ACTION	YES	NO
Victim unresponsiveness was determined	YES	NO
Office was called	YES	NO
Cardiac Emergency Response Team was called	YES	NO
EMS/911 was called	YES	NO
Cardiac Emergency Response Team arrived	YES	NO
CPR was started	YES	NO
AED arrived to the scene within two minutes	YES	NO
AED pads were placed immediately on the victims bare chest	YES	NO
AED advised a first shock	YES	NO
Proper body mechanics re: CPR	YES	NO
Use of schools chosen CPR barrier device	YES	NO
Proper AED pad placement	YES	NO
Office obtained necessary information for EMS call	YES	NO
Did someone go to meet/direct EMS	YES	NO
Crowd control took place	YES	NO

Post-Drill Review:

What did we do right? What was easy to remember to do?

_____
_____
_____

What could we do better? If needed, discuss with staff how the time from delivery of the AED to delivery of first shock may be made quicker. What was hard to remember?

_____
_____

Cardiac Emergency Response Team Members who attended drill:

1 _____ 2 _____ 3 _____
4 _____ 5 _____ 6 _____
7 _____ 8 _____ 9 _____

Goal: Complete the drill in under three minutes.

Project ADAM National, Updated February 2018
For an up-to-date version, please visit www.projectadam.com

Appendix B: Information sheet

Project Title: Implementing Cardiac Emergency Drills on a School Campus to attain Project ADAM's "Heart Safe School" Designation, an Evidenced Based Practice project.

Principal Investigator: Rebecca Garrett Nelson, rgnelson@uncg.edu

Faculty Advisor: Dr. Crystal Epstein, cmepstein@uncg.edu

What is this all about?
I am doing this evidence-based practice project as a part of the requirements for a Doctorate of Nursing Practice (DNP) degree from UNC Greensboro School of Nursing. The purpose of the project is to evaluate the implementation of cardiac emergency drills on a school campus. This project will only take about 10 -15 minutes of your time and will involve you participating in a cardiac emergency drill and a short post-drill debriefing. Your participation in this project is completely voluntary.

How will this negatively affect me?
Other than the time you spend, no known or foreseeable risks are involved with participating in this project.

What do I get out of this project?
The personal benefit is the opportunity to practice CPR/AED skills. The benefit to our community is that we, as a whole, will be better at responding to cardiac emergencies. Ultimately, I hope my final project will help other independent school nurses implement cardiac emergency drills at their schools.

Will I get paid for participating?
No, there is no compensation.

What about my confidentiality?
I will not be collecting or documenting your name or any other identifying information.

What if I do not want to be part of this project?
You do not have to be part of this project. This project is voluntary, and it is up to you to decide to participate. You may stop participating at any time without penalty.

What if I have questions?
If you have any questions/or concerns about the project, you can contact Rebecca Nelson, rgnelson@uncg.edu or her faculty advisor Dr. Crystal Epstein, cmepstein@uncg.edu.

If you have concerns about how you have been treated in this project, call the UNCG Office of Research Integrity Director at 1-855-251-2351.

Appendix C: Emails

Email #1: Drill notification email, sent 2-weeks before the drill, sent to the leadership teams and campus security for their awareness

> We will be conducting a drill of cardiac emergency response in _____ building on _____(date/time).
>
> The following email has been sent to the faculty/staff in that location:
>
> *In the next two weeks, we will conduct a cardiac emergency response drill in your building. The drill will be announced as "Code Blue Drill," and the location will be given.*
>
> *We welcome your participation and appreciate your help as we practice responding to cardiac emergencies on campus.*

Email #2: Drill notification email sent 2-weeks before the drill, sent to all employees in the building plus administration and campus security for their awareness

> In the next two weeks, we will conduct a cardiac emergency response drill in your building. The drill will be announced as "Code Blue Drill," and the location will be given.
>
> We welcome your participation and appreciate your help as we practice responding to cardiac emergencies on campus.

Email #3: Drill notification email, sent 1 day before the drill, send to administrative assistants for their awareness

> We will conduct a drill of cardiac emergency response in your building tomorrow. You will announce the "Code Blue DRILL and its location" when prompted. Reminder during Code Blue Drills, we do not call 9-1-1, as we would in a true cardiac emergency.
>
> We welcome your participation and appreciate your help as we practice responding to cardiac emergencies on campus.

Appendix D: Budget, Time and Resource Plan

MARCH	IRB application submitted
APRIL	
MAY	DRILL 1, review quantitative drill feedback and adjust drill plan as needed
JUNE	DRILL 2, review quantitative drill feedback and adjust drill plan as needed
JULY	DRILL 3 AND 4, review quantitative drill feedback and adjust drill plan as needed
AUGUST	DRILL 5 AND 6, review quantitative drill feedback and adjust drill plan as needed
SEPTEMBER	DRILL 7 AND 8, review quantitative drill feedback and adjust drill plan as needed
OCTOBER	DRILL 9
NOVEMBER	Data analysis, meet with statistician
DECEMBER	
JANUARY	Write results and discussion
FEBRUARY	Finalize paper

Adjusted schedule:

JULY	DRILL 1 AND 2, review quantitative drill feedback and adjust drill plan as needed
AUGUST	DRILL 3 AND 4, review quantitative drill feedback and adjust drill plan as needed
SEPTEMBER	DRILL 5 AND 6, review quantitative drill feedback and adjust drill plan as needed
OCTOBER	DRILL 7, review quantitative drill feedback and adjust drill plan as needed
NOVEMBER	Data analysis, meet with statistician