An Electronic Health Record Intervention for Advance Care Planning in an Emergency Department

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Abstract

Advance directives help preserve patient autonomy and decision-making in situations where they cannot use their voice. Unfortunately, many individuals do not have an advance directive (AD), raising the concern for a poor patient experience, increased healthcare costs, and moral distress in family members and healthcare providers. The purpose of this quality improvement project was to design an AD screening tool to be utilized in an emergency department electronic health record (EHR) to improve screening and documentation of ADs and enhance patient awareness through education via the patient portal. Over 12-weeks, there was an improvement in screening tool utilization from 47% to an average of 56.6%, submission of 12 AD documents to the EHR, and 45 patients who requested education to be sent to their patient portal. Throughout implementation, the emergency department had 9,810 patient encounters, and 317 (3.2%) patients reported having an advance directive. Unfortunately, that leaves more than 90% of the patients without having an advance directive emphasizing the need to continue to improve patient awareness of the importance of advance care planning.

Keywords: advance directive, advance care planning, electronic health record, portal-based education, patient electronic messaging, patient autonomy, emergency department

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Section I. Introduction

Background

Emergency room staff frequently face providing care to individuals nearing the end of life. During the last year of life, healthcare costs increase due to medical advances; however, aggressive medical care is often inconsistent with patients' end-of-life wishes (Klingler et al., 2016). Advance directives serve as a document to preserve patient autonomy and communication when they cannot voice their preferences. Regrettably, only one in three United States adults have an advance directive, and documentation rates for those who possess one are significantly low (Platts-Mills et al., 2017; Yadav et al., 2017). As a result, there is often a disconnect between the care desired and care provided, which negatively impacts patient experience, end of life outcomes, and healthcare costs (Yadav et al., 2017).

The Doctor of Nursing Practice (DNP) project focused on upgrading the advance care planning (ACP) activity tab in the electronic health record (EHR) and standardizing the workflow surrounding the topic in an emergency department within a large, private, nonprofit medical center in central North Carolina. Previously, there was no standardized ACP process, resulting in inappropriate use of resources, moral distress in frontline providers, and conflict within families (Golding, 2018). The upgraded activity tab aimed to improve advance directive screening, increase documentation of advance directives in the electronic health record (EHR), and provide patients access to educational tools through the patient portal.

Organizational Needs Statement

The organization identified a need for a standardized process focusing on ACP. Previously, there was inconsistency of advance directive documentation in the EHR and reduced utilization of the screening tool ([redacted], personal communication, April 8, 2020). This

inconsistency led to the concern for lack of coordination between patient wishes and the care received, resulting in poor patient experience and an increase in healthcare costs (Yadav et al., 2017). Improving screening and documentation of ACP in the EHR would improve patient experience, quality of life and decrease healthcare costs, all of which are the core of the Triple Aim (Lehmann et al., 2019; Institute for Healthcare Improvement, 2020).

The organization additionally identified patient awareness of advance directives as a need to be enhanced. An analytical study evaluating advance directive influence on healthcare costs was conducted within the partnering facility for 12 months (Golding, 2018). During this time, a significant financial impact was observed in the cohort without an advance directive, specifically, $2,856 loss per case with an annual amount of 2,731 cases. During this analysis, the financial implications validated the significance of enhancing patient awareness on the importance of advance directives.

The Joint Commission partners with healthcare organizations to improve care and protect patients. The Patient Safety System chapter within the Joint Commission's Comprehensive Accreditation Manual for Hospitals provides methods that hospitals can follow to enhance the quality of care and patient outcomes regarding advance directives (Comprehensive Accreditation Manual for Hospitals, 2019). These performance measures are pertinent for the partnering facility to maintain accreditation. Performance elements listed under Rights and Responsibilities of Individuals, under standard RI.01.05.01 include the following: hospitals follow policies providing patients with information regarding advance directives, hospitals document patient advance directive status, and the hospital refers the patient if requested, to the appropriate resources to formulate an advance directive (Comprehensive Accreditation Manual for Hospitals, 2019). Each of these performance measures is in line with the Patient Self-Determination Act

(PSDA), which requires healthcare organizations to inquire about advance directive status and provide education regarding the topic (Gerontological Advanced Practice Nurses Association, 2020). Upgrading the ACP tab in the EHR and standardizing the workflow for ACP screening, documentation, and education led to greater compliance of these elements.

Problem Statement

The emergency department lacked a standardized process for ACP. As a result, there was inconsistency among screening for and documentation of advance directives in the EHR ([redacted], personal communication, April 8, 2020). This discrepancy leads to inappropriate resource utilization and financial burden as there is a lack of communication between desired care and the care provided (Golding, 2018).

Purpose Statement

The purpose of the DNP project was to upgrade the ACP activity tab in the EHR and standardize the workflow for ACP in an emergency department in North Carolina. This improvement would increase the screening and documentation of ACP in the EHR and heighten patient awareness of the topic's importance through access to education via the patient portal. These areas of improvement identified support the Triple Aim by promoting an increase in patient experience and quality of life, health outcomes, and a decrease in healthcare costs.

Section II. Evidence

Literature Review

A Literature Search Log was utilized to guide the literature search within databases, including The Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed (Appendix A). The search focused on articles discussing using the electronic health record (EHR) for advance care planning (ACP) improvement. The titles and abstracts of the articles found within each database were reviewed to determine applicability to the project. Inclusion criteria included publication within the last five years, English language, mention of electronic health records and their effect on advance directive processes and ACP, and advance directives as they relate to emergency departments. Exclusion criteria included studies focusing on those with a known terminal illness, known specific comorbidities, and articles that did not relate to the topic. Articles from evidence levels I-V were considered. Melnyk & Fineout-Overholt's level of evidence model presented by Melnyk (2011) was used to evaluate quantitative studies, and Daly et al. (2007) model was used to assess the level of evidence for qualitative studies. Appendix B displays the literature matrix containing all articles kept from the literature search.

Three searches were performed through PubMed. MeSH terms utilized in the initial search were “advance directives” and “electronic health records.” The search terms used produced 77 articles. Limits were applied to narrow the search, including publication dates within the last five years and the English language. These limits narrowed the search from 77 articles to 52. After a review of the title and abstracts of these articles, nine were selected for further evaluation. Each article was read entirely, and five were retained. Two additional PubMed searches were conducted with the application of similar limits in addition to article

types, including metanalysis, systematic review, and randomized controlled trial. The MeSH terms entered for the second and third PubMed search were “advance directives” and “advance care planning,” resulting in 1,213 and 2,894 articles, respectively. Limits were applied, narrowing the second and third searches to 79 and 206 articles. Many articles were duplicates and redundant from the initial search; however, four new articles were identified and retained.

CINAHL was the second database used with the search term "advance directives.” This search resulted in 3,265 articles. Limits applied to narrow the search included publication within five years, English language, geographic location USA, peer-reviewed, and specific article types including metanalysis, systematic reviews, and randomized controlled trial. These limits refined the search to 44 articles. Many of the articles found were duplicates from the PubMed search. After a review of titles and abstracts, five articles were retained. Further analysis revealed redundancy to the articles selected from PubMed; however, one new article was reviewed and kept.

Current State of Knowledge

The Patient Self-Determination Act (PSDA) was implemented in 1991 to ensure that hospitals inquire and document patients' advance directive status in the medical record (Gerontological Advanced Practice Nurses Association, 2020; Oulton et al., 2015). As of 2015, 80% of hospitals have converted to an EHR allowing access to documents in multiple locations (Huber et al., 2018). Regardless of the PSDA implementation and increasing use of EHRs, a discrepancy in advance directive documentation and accessibility continues to be problematic (Lemon et al., 2019; Lum et al., 2019; Oulton et al., 2015). Platts-Mills et al. (2017) conducted a cross-sectional study comparing patient-reported completion of advance directives to documentation in the EHR. Of the 109 patients, 13% of older patients who reported having an

advance directive had documentation in the EHR (Platts-Mills et al., 2017). Another study performed by Oulton et al. (2015) found that 22 of 39 patients that presented to an emergency department with indications for cardiopulmonary resuscitation did not have an advance directive documented. This lack of documentation results in a lack of coordination between patient preferences and the care provided, potentially leading to compromised patient autonomy and increased healthcare costs (Klingler et al., 2016). A systematic review of seven articles revealed an increase in healthcare costs ranging from $1,041 to $64,827 per patient due to poor ACP (Klingler et al., 2016). Aging populations and healthcare costs are growing due to medical advancements making ACP imperative as it relates to emergency department staff who are most likely to provide care to those nearing the end of life (Oulton et al., 2015).

Current Approaches to Solving Population Problem(s)

The utilization of the EHR to address ACP processes is mentioned throughout the literature. A retrospective study performed by Turley et al. (2016) showed an improvement in advance directive documentation and accessibility with the use of a centralized ACP tab within the EHR. Other effective EHR interventions were identified through a systematic review of 15 articles by Lemon et al. (2019), including advance directive templates, order sets, and electronic chart reminders. Additionally, many EHRs provide patients with access to the medical record, web-based education, and engagement tools via patient portals (Lum et al., 2019). Patient portals offer an excellent opportunity to educate patients regarding ACP without a face-face visit with a provider. A quality improvement initiative performed by Lum et al. (2019) demonstrated improved patient engagement and ACP completion with the use of portal-based ACP tools, including educational resources, communication access to an ACP support team member, and the ability to view advance directives in the EHR. During the 15-month project, more than 2,500

patients used the portal-based ACP tools, and 89% created a Medical Durable Power of Attorney.

Through collaboration with the DNP project team, an EHR intervention to support increasing screening, documentation, and patient awareness of the importance of ACP was decided upon based on the literature review. The previous EHR ACP tab in the emergency department was upgraded, and the surrounding workflow was standardized. Constructing a more user-friendly ACP tab aimed to improve screening and documentation of ACP. Patient records indicating possession of an advance directive without documentation would have an option for staff to select in the screening tool, which would trigger an alert to select staff members to scan the document into the EHR. Additionally, within the ACP tab, those without an advance directive would be offered access to ACP education via the patient portal, resulting in heightened patient awareness.

Evidence to Support the Intervention

EHRs promote information accessibility and communication amongst providers as information is available in a central location (Turley et al., 2016). Throughout the literature, EHR interventions surrounding ACP promote improved documentation and heightened awareness (Lemon et al., 2019; Lum et al., 2019; Tieu et al., 2017; Turley et al., 2016). Tieu et al. (2017) conducted a randomized controlled intervention with 200 patients measuring the impact of electronic messaging of ACP tools via patient portals on ACP completion. Findings revealed a 5.5% advance directive completion rate in the intervention group, whereas the control group had only 2%. Additionally, a retrospective observational study conducted by Turley et al. (2016) measured an activity tab's impact on documentation of ACP in the EHR. Patient encounters that used the activity tab were found to have higher ACP documentation rates of 3.5% to 9.6% higher

than if not completed. The activity tab aims to ensure all documentation is complete and accessible in one location, providing access to patient preferences without difficulty. An additional intervention applied to the patient chart was an alert when the activity tab was not completed entirely. Lemon et al. (2019) found in a systematic review that electronic reminders improved ACP documentation. Specifically, one study in this systematic review conducted by Hayek et al. (2014) revealed 76% of those who received an automatic reminder for ACP documentation had a completed advance directive by the end of the trial.

Evidence from the literature indicates that ACP tools through patient portals enhance patient engagement in ACP (Jordan et al., 2019; Lum et al., 2019). Lum et al. (2019) implemented a portal-based ACP tool to improve patient engagement. It was concluded that greater than two-thirds of the patients who completed the electronic medical durable power of attorney form in the patient portal had no previous documentation of advance directives. Patient perspectives of ACP via patient portals were explored by Jordan et al. (2019) in a qualitative study. Findings revealed ACP tools accessible through patient portals were highly accepted by patients. Another interesting finding from this qualitative study showed patients who utilized the patient portal for ACP were younger than those in previous studies of patients engaging in ACP.

The literature supports the use of an ACP tab in the EHR. The upgraded activity tab promoted ACP documentation for those with advance directives and provided educational tools via the patient portal for those without advance directives. Electronic reminders were triggered when ACP tabs were not completed. This intervention aimed to improve the screening, documentation, and awareness of ACP in patients seen in the emergency department.

Evidence-Based Practice Framework

The framework that provided a foundation for this project was the Model for Improvement. This model consists of three questions addressing what change will occur, how the change will be recognized as an improvement, and what changes need to be made to result in improvement (Langley et al., 2009). The project focused on the quality improvement in ACP in an emergency department by updating the EHR activity tab and standardizing the workflow surrounding the topic. Three outcome measures to identify the improvement of ACP included an increase in screening for ACP, an increase in ACP documentation, and enhanced patient awareness, as evidenced by the ACP tools' access via the patient portal. Three necessary changes that were required to result in improvement included: updating the ACP tab in the EHR, embedding the ability to trigger an alert on the chart if a document needed to be scanned into the EHR, and adding the ability to send ACP tools via the patient portal.

The three questions combined with the Plan-Do-Study-Act (PDSA) cycle lead to improvement (Langley et al., 2009). Phase one of the cycle is *plan*, where the change to be implemented is discovered. During phase two, *do*, the change is tested. Phase three, *study*, involves reviewing the results from phase two to make changes. Lastly, phase four, *act*, is based on the previous phases' results (Langley et al., 2009). This model allowed for multiple cycles to be completed with continuous evaluation.

Ethical Considerations & Protection of Human Subjects

Ethical considerations are imperative with any project, as respect for human life is essential (Moran et al., 2020). Necessary moral points to consider include ensuring an equal opportunity for all individuals, minimizing harm, maximizing benefit, and protecting identifying information for all individuals targeted by the project. Data collected for the project did not

include any staff or patient identifiers. In addition to this, the data collected was stored on a password-protected computer only accessible by the project lead.

The project targeted staff were specifically nurses and secretaries. Nurses and secretaries were vital for increasing screening and documentation of ACP. To ensure these staff members were provided with an equal opportunity for education regarding the project, mandatory education was provided on the web-based platform used by department staff to schedule and review assigned shifts and weekly review of huddle messages. A staff email with the same instruction presented on the platform was also sent out explaining the project details, including using the revised activity tab, how to scan advance directives into the EHR, and information regarding ACP tools that would be sent to the patient portal. Reminders to review the instructions were provided at all nursing huddles the week before implementation. Providing education through the department-specific platform, email, and at each staff huddle offered an equal opportunity for all staff members targeted in this project to have a thorough understanding of project objectives and expected roles and responsibilities.

Additionally, patients were targeted within the project by aiming to enhance patient awareness of the importance of ACP. A potential limitation for equality identified was the patient portal's use, as there may be a risk of bias for individuals with higher socioeconomic status and access to electronic devices. This limitation was addressed by providing written instructions in the discharge paperwork for those who did not have access to the patient portals. Ethical considerations regarding the patient population included the maintenance of patient confidentiality. There was no breach in patient confidentiality, as patient-identifiers were not necessary for the measurement of outcomes.

Potential harms to staff and patients were limited to psychological. Many individuals may unwillingly associate ACP with nearing the end of life, which may be a sensitive subject of discussion. Positive outcomes that were possible due to increased screening, documentation, and enhanced patient awareness of ACP included improved quality of care and heightened patient autonomy as patient wishes would be more accessible to providers. The benefits discussed outweighed the potential psychological harms. There was no potential for anyone in the targeted populations to be taken advantage of during implementation.

To ensure human subjects' protection, the university and project site have formal approval processes for projects. The project lead completed a total of 16 Collaborative Institutional Training Initiative (CITI) Biomedical Research Modules to have a concrete foundation of knowledge regarding ethical considerations involved in research as a mandatory requirement for the university and the project site's approval processes. Once the CITI modules were completed, the project lead completed the University Institutional Review Board (IRB) verification process using the IRB QI/Program Evaluation Self-Certification Tool. After obtaining approval from the faculty lead, the tool was submitted online. Based on the response generated from the IRB QI/Program Evaluation Self-Certification Tool, the project was deemed quality improvement (QI), and no further IRB review was required.

Once the University QI/IRB preliminary process was completed, the final review document and project materials were submitted to the project site Nursing Research Council (NRC) and project site IRB for review. Before presenting the project to the NRC and IRB, two requirements were necessary, including obtaining departmental leadership approval of the project and university review. A 13-slide presentation with project details, including aspects such as the issue at hand, a synthesis of the literature reviewed, evidence supporting the proposed

project, and nursing implications that are likely to result after implementation was submitted to the NRC and project site IRB. After reviewing the materials submitted, the project site IRB deemed the nature of the project as quality improvement and exempted it from further review. Once this was complete, the NRC approved the project allowing implementation to begin.

Section III. Project Design

Project Site and Population

The project was completed within a medical center in central North Carolina that is part of a large health system. With more than 150 locations, the health system contains greater than 13,000 staff members, 1,800 physician partners, and 1,000 volunteers (Cone Health, 2020). There are five hospitals, three ambulatory care centers, three outpatient surgery centers, five urgent care centers, and more than 120 physician offices. The project was conducted in an emergency department (ED) within the health system. For many patients, the ED serves as a point of entry into the health system. Conducting the DNP project in this setting facilitated greater patient autonomy by improving documentation of patient wishes and heightening patient awareness of the importance of advance care planning (ACP).

Description of the Setting

The ED served as the project setting and is located within a 628-bed teaching medical center that is part of the health system. The medical center, a part of the above-mentioned health system, has more than 10,000 employees, of which 200 are employed in the ED ([redacted], personal communication, June 22, 2020). Serving as the health system's mothership, the site provides a comprehensive array of services, including cardiovascular, neurosciences, trauma, orthopedic, etc. Assessing and treating an average of 300 patients per day, the ED is divided into pediatric and adult divisions ([redacted], personal communication, June 22, 2020). The adult division is a 58-bed unit that provides emergency services to individuals within the county and various outlying counties.

Description of the Population

Nurses and secretaries comprised the staff population targeted for the project. Nurses in the department were responsible for completing patient screening documentation in the electronic health record (EHR), while secretaries performed essential tasks such as answering phones, faxing documents, etc. Out of 200 staff members in the ED, 114 were nurses, and 20 were secretaries; however, it is imperative to mention that staff numbers frequently vary in this department ([redacted], personal communication, June 22, 2020). A potential barrier to the project's success was related to staff fluctuation in the project setting. As new employees were frequently hired, there was difficulty maintaining all staff members' competency as it related to the needs of the project.

The patient population served by the ED includes all individuals who deem to have an emergency, including those of low-income, high-income, homeless, those with and without insurance, and individuals with and without primary care. Additionally, many patients seen are residents of surrounding skilled nursing facilities. The ages of patients served in the adult ED range from 18 years to above 100.

Project Team

The project team members included the university lead faculty member, the project champion, the nursing director for the ED, an application analyst, a quality performance evaluation specialist, and the project team lead. The lead faculty member was a doctorally prepared member from the College of Nursing and served as a mentor by offering recommendations, guidance, and advice throughout the length of the project. The project champion was the clinical nurse specialist for the ED and assisted with developing the project intervention, recommendations, and advice on the project. She also helped with navigation

throughout the formal approval process at the project site. The ED nursing director guided the project's development as it related to staff, assisted with executive leadership formal approval, and served as the contact person between the project lead and staff members. The application analyst was responsible for building the intervention into the EHR and created the report to be generated bi-weekly during the implementation phase. The quality performance evaluation specialist was responsible for providing expertise relating to ACP performance measures and ACP tools. The DNP student served as the project lead and was responsible for items, including communication amongst all team members, continuous project development and planning, educating staff, measuring outcomes, and interpreting data collected. All members were crucial to the project's success and assisted in each Plan-Do-Study-Act (PDSA) cycle during implementation.

Additional interdisciplinary team members consisting of the director and assistant director of social work, director of spiritual care services, and another quality performance evaluation specialist played an essential role in identifying the problem and project idea. Each of these individuals provided expertise revolving around the topic of ACP within the health system during the planning phase. Ongoing communication with the quality performance evaluation specialist during project development identified the educational materials used as part of the project.

Project Goals and Outcome Measures

The project's ultimate goal was to implement a standardized process that revolved around advance care planning (ACP) in the ED. The project had three objectives: to increase utilization of the advance directive screening tool, improve documentation of advance directives in the EHR, and enhance patient awareness of ACP. Data was collected using a data collection tool and

was tracked using a bar graph and data tables. Utilization of the PDSA cycle review process allowed for bi-weekly evaluation of the project by assessing the data collected and feedback from ED staff and the project team. By reviewing the data collected and feedback, revisions were implemented as needed to continuously strive for improvement.

Description of the Methods and Measurement

During project planning, the project site identified three areas of concern, including reduced utilization of the established advance directive (AD) screening tool, inconsistent documentation of advance directives in the EHR, and poor patient awareness of the importance of ACP. Prior to the project, there was no standardized process revolving around ACP in the ED. Additionally, the activity tab in the EHR was reviewed by the team and concluded to be non-user-friendly to ED users. Based on the project lead's literature review, the team developed a new process to be implemented in the ED within the EHR to improve the site's three areas of concern. First, the established activity tab with the AD screening tool in the EHR was revised to include options only pertaining to the ED. Previously, the tool contained options that concerned inpatient users in addition to ED users. New features were applied to the activity tab, including an option in the row information to trigger the chart to notify secretaries when a patient has an AD that needs to be scanned into the EHR. Secondly, the option to send ACP tools to the patient portal for those who do not have an AD was added to the row information within the activity tab. The application analyst applied these changes.

Following approval of the project and prior to implementation, education was provided to staff regarding project expectations. Additionally, secretaries were trained to scan documents into the EHR. The education gave an overview of the project and project objectives, details of

the interventions, and staff roles and responsibilities. After education was disseminated and reviewed by all staff members involved, implementation began.

Multiple tools were required to implement the project and track the collected data in an organized fashion. The selected project implementation tool to guide the project was the PDSA cycle, which allows for continuous evaluation of a process based on each cycle review results. The data collected was tracked and utilized throughout each bi-weekly PDSA cycle and guided revisions, as necessary. Data elements obtained for each outcome measure were documented bi-weekly on the Data Collection Tool (Appendix C). The project tracking tools included a bar graph and data tables, which allowed for tracking the outcome measures over the 12-weeks and were utilized to assess improvement over time.

Reports were obtained bi-weekly during implementation to measure the three outcomes. The first outcome measure, increasing utilization of the AD screening tool, was measured by obtaining two data elements: (1) the total number of adult patient encounters and (2) the total number of adult patient encounters with a completed screening tool. The percentage of screening tools utilized was calculated from these two values. The second outcome measure, improving documentation of advance directives, was measured by obtaining two data elements: (1) the total number of adult patient encounters who responded “Yes” to the screening tool and (2) the total number of adult patient encounters who had a document imported to the EHR. The percentage of documents scanned into the EHR was calculated from these two values. This was a newly established process as ADs were not previously scanned into the EHR by ED staff. Lastly, the outcome measure, enhancing patient awareness of the importance of ACP, was measured by obtaining three additional data elements: (1) the total number of adult patient encounters who responded “No” to the screening tool, (2) the total number of adult patient encounters who

answered “No” to the screening tool and requested information to be sent to the patient portal, and (3) the total number of patients who received information in the patient portal and successfully accessed the tools.

Discussion of the Data Collection Process

Data collected and tracked included the elements presented previously by obtaining bi-weekly reports from the organization. The reports received contained values that were used to calculate percentages to measure outcomes. By obtaining these values, percentages for each measure were calculated and placed on the bar graph and data tables to track changes throughout the intervention. In addition to the measurements collected, staff interviews were conducted with staff during rounding while at the project site at various times. The data elements calculated for each week, combined with staff feedback, were used to guide revisions as necessary.

Implementation Plan

Implementation was scheduled to start August 17, 2020, and end November 8, 2020; however, due to the delay in scanner materials arriving, implementation began August 24, 2020, and ended November 15, 2020. Education was provided to staff members two weeks prior to implementation through the web-based platform used by staff and by email to ensure all members were made aware of the project materials (Appendix D). A word document was presented to staff discussing the importance of advance care planning, instructions on utilizing the updated activity tab, instructions on uploading advance directives into the EHR, and a review of the educational materials that would be sent to patient portals. Reminders were provided at all staff huddles to review the education during the weeks prior to implementation. Once implementation began, there were bi-weekly site visits made by the project lead and weekly meetings with the project champion to discuss progress and opportunities for improvement.

Weekly email reminders and updates to staff were distributed throughout implementation to ensure consistency throughout the project. Bi-weekly reports were generated at the end of weeks 2, 4, 6, 8, 10, and 12, and the data was recorded on the Data Collection Tool used for analysis, evaluation, and tracking over time. The data collected and informal feedback from staff and the project team guided revisions with each PDSA cycle review that occurred bi-weekly.

Timeline

Project implementation began in August 2020 and took place over 12-weeks. Appendix E displays the timeline for the project's implementation phase, data analysis, and presentation of project findings. The timeline presented was revisited frequently and revised as needed to accommodate any variations over the project period.

Section IV: Results and Findings

Results

The project had three objectives: increased utilization of the advance directive screening tool, increasing documentation of advance directives in the electronic health record (EHR), and enhancing patient awareness of advance care planning (ACP) through educational tools via electronic patient portals. Screening tool utilization, advance directives successfully submitted to the EHR, and patient access to educational tools were tracked bi-weekly for 12-weeks to assess improvement. Metrics were expected to vary throughout the project period but with gradual improvement from baseline data. Precise measurement goals for each objective were not established as the patient population and nature of the emergency department (ED) vary daily. The team agreed that if one advance directive was submitted to the EHR and one patient requested electronic ACP information and viewed it, the project would be deemed successful.

Prior to implementation, screening tool utilization was expected to improve during the 12-week project period as the tool was revised to a more user-friendly version for staff. Staff utilization of the advance directive screening tool was 47% the month prior to implementation. During the implementation period, gradual improvement in screening for advance directives was seen, with 56% utilization by weeks 11 and 12. Immediate improvement from baseline utilization was noted with an 11% increase to 58% use during weeks 1 and 2; however, weeks 3 and 4 showed a decline in utilization from 58% to the lowest utilization rate of 52%. During weeks 3 and 4, the existing standard of work was altered, resulting in a significant change in the department where primary nurses became responsible for screening patients instead of those working in the triage area. This modification was made due to nursing feedback after the first two weeks of the project when concerns were expressed regarding screening in a fast-paced

environment like triage. Adjusting the standard of work likely contributed to the 6% decrease in screening tool use from weeks 1 and 2, but with education and email reminders, utilization recovered during weeks 5 and 6 with a rate of 56%. After that, a steady increase was noted, with a peak rate of 59% by weeks 9 and 10. During weeks 11 and 12, a slight decrease of 3% was noted in screening tool utilization. During these final two weeks of the implementation period, emergency department (ED) volume was not significantly higher than the weeks prior; however, there was an increase in patient acuity along with ED admission-holding. During rounds, per nursing feedback, this resulted in time constraints for primary nurses and limited screenings performed as attention was directed towards patient care tasks. Overall, screening tool utilization improved and was consistently maintained above the pre-implementation rate of 47%. Appendices F and G provide screening tool utilization data over the 12-weeks.

During the project period, improvement in advance directive documentation was expected to occur through successful submission to the EHR in the ED. Throughout the implementation phase, a total of 12 advance directive documents were successfully submitted to the EHR, which was accomplished primarily during the last eight weeks (see Appendix H). Many technical difficulties were encountered during the first four weeks of implementation, resulting in no documents being submitted to the EHR. Due to technical difficulties, the team decided to revert to an alternative plan designed during the planning phase for such circumstances. The alternative method required secretaries to copy advance directive documents and send them to medical records for scanning into the EHR. Once the alternative plan was implemented, documents were successfully submitted to the EHR when readily available. Of the patient encounters who reported having an advance directive, it was impossible to distinguish those with a preexisting copy on file or patients who may have presented without the physical

copy. These were two factors that likely contributed to the small number of documents successfully submitted to the EHR. As a result, the documents submitted to the EHR represented no more than 3.8% of charts reported having an advance directive. This portion of the project relied heavily on patients presenting with a physical copy of their advance directive and screening tool utilization by nursing staff. Better utilization of the screening tool may have yielded more documents being scanned into the EHR.

During the beginning of the implementation, technological difficulties resulted in no ACP tools being sent to patient portals when requested. This resulted from an error that occurred when the revised activity tab was embedded into the EHR, which was resolved quickly by the application analyst. After week one, all patients who requested information with an activated patient portal received the information. During the 12-weeks, a total of 45 patients requested information. Of those, 11(24.4%) successfully viewed the message. There were considerable amounts of variation in the number of patients who requested information each week, along with numbers in viewing the information, noted in each bi-weekly review. The highest number of patients to request information was recorded during weeks 3 and 4 with 14 patients, and the lowest number was three patients during weeks 9 and 10. Coincidently, the highest rate of viewing the requested ACP tools was recorded at weeks 9 and 10 at 67% (2 out of 3 patients). Appendix I provides the data tracked over the 12-weeks regarding patient requested ACP tools. Unfortunately, many factors likely contributed to patients' abilities to view the messages in the patient portal. One main factor discovered from chart reviews was that some patients did not have an activated patient portal. A variation in those requesting information was expected due to the fluctuating patient population in the emergency department and low patient awareness of ACP. Additionally, this project portion relied heavily on the nursing staff to utilize the screening

tool and inquire whether patients were interested in receiving ACP information. During the bi-weekly reviews, it was noted that the same nurses were responsible for using the screening tool to send ACP tools to those who requested information. This raises questions as to whether nursing staff were inquiring if patients wanted ACP tools.

Outcomes Data

During the implementation, data collected included the following: total adult patient encounters, total screening tools completed, total tools with "Yes" answered, total number of advance directives successfully imported to the EHR, total tools with "No" answered, total tools that chose to send information to the patient portal, and total charts that viewed the tools. Percentages for screening tool utilization, advance directives successfully submitted to the EHR, and patient access to educational tools were calculated from the values collected and used to track improvement throughout the implementation (see Appendix F, Appendix G, Appendix H, and Appendix I). All project objectives relied heavily on the process measure of the screening tool utilization by staff. Overall, during the implementation period, 9,810 patients were encountered in the ED, of which 5,550 (56.6%) were screened by staff. Of those screened, 5,166 (93.1%) patients reported not having an advance directive. Of the screened encounters, 317 (5.7%) had "yes" selected for having an advance directive, and 12 (3.8%) successfully had the document submitted to the EHR during the visit. Lastly, of the total screened encounters, less than 1% (45) requested to receive information via the patient portal, and 24.4% (11) viewed the ACP tools received.

Discussion of Major Findings

With the improved screening tool and continuous reminders during the implementation, staff utilization rates improved as high as 12% from the month prior to baseline value. The

screening tool proved effective in alerting appropriate personnel to retrieve advance directive documents when available, leading to successful documentation in the EHR. Additionally, after resolving technological challenges related to sending ACP information to the patient portal, the screening tool was useful in sending ACP information to patients just by selecting a menu option. Although utilization rates were not significantly high, there was still improvement during the implementation. Over the 12-weeks, a total of 12 documents were scanned into the EHR out of 317 (3.8%) patients who reported having an advance directive. While this is a small representation of patients, these documents may not have been submitted into the EHR during the patient visit prior to introducing this tool and associated process. Many patients do not bring advance directive documents to ED visits, which affected the number of documents submitted to the EHR. This also represents an educational opportunity for patients who have advance directives and the importance of having them present during ED visits. Another contributing factor to the number of documents submitted to the EHR relates to patients may already have an advance directive on file; however, there was no way to distinguish this in the bi-weekly reviews.

Additionally, a total of 45 patients requested ACP tools to be sent to their patient portal. Eleven patients successfully opened the messages and viewed the ACP tools. The literature supports this EHR intervention as portal-based ACP tools are highly accepted by patients and have shown to improve patient engagement with ACP and advance directive completion (Jordan et al., 2019; Lum et al., 2019; Tieu et al., 2017). Many patients who requested ACP information via the patient portal did not have an activated patient portal; therefore, they could not access the information. However, to provide equal opportunity, the same message that would be sent to the patient portal was also printed on discharge paperwork. With better screening tool utilization by

staff, the number of ACP tools sent to patient portals may have been higher, further enhancing patient awareness.

The improved screening tool demonstrated potential for future use to continue to improve advance directive documentation and patient awareness of the importance of ACP. Throughout the implementation, the emergency department had 9,810 patient encounters. Of these encounters, 56.6% were screened, and 317 (5.7%) patients reported having an advance directive. Unfortunately, that leaves more than 90% of the patients without having an advance directive. This emphasizes the need to continue to improve patient awareness of the importance of ACP.

Section V: Interpretation and Implications

Cost-Benefit Analysis

Costs associated with the project were minimal compared to the potential long-term savings. Benefits of the project can save the hospital system money as patient wishes are more likely to be known when advance directives are located in the electronic health record (EHR). Having these documents readily accessible on a single platform helps improve communication amongst the treatment team related to the patients' wishes for treatment. As discussed previously, a study was conducted within the hospital system that found an average loss of $2,856 per patient that did not have an advance directive on file (Golding, 2018). This likely results from life-prolonging measures that the person may not desire. By improving documentation of advance directives, communication of patient wishes to the healthcare team, and enhancing patient awareness of the importance of advance care planning (ACP), long-term effects will likely include a significant decrease in cost for the hospital.

The project required a few tangible items, including a single new scanner and approximately 35 thermal pouches for lamination of project instructions and desktop reminders. The cost associated with the items was approximately $1,030 (see Appendix J). Besides these monetary items, additional requirements included 8.5 hours for the application analyst to build the improved tool and time for secretaries to perform the steps necessary to submit the advance directive (AD) documents to the EHR, which took approximately five minutes. The cost associated with staff and the application analyst time were no additional costs, as these duties were considered part of their job responsibilities. One barrier that occurred during the implementation phase was the scanner purchased ended up not being utilized due to technological difficulties. While the scanner will be of benefit in the future, it was not required

for the project as an alternative plan was implemented. The organization's investment will have a good return as there are minimal costs to continue this project that will likely yield a decrease in healthcare costs for the healthcare system.

Resource Management

Essential support from Information Technology (IT) was obtained in revising and improving the established advance directive screening tool. The IT application analyst spent time revising the tool and embedding the new features into the EHR activity tab. It was only accessible in the emergency department where the project was performed, not accessible by other emergency departments in the health system. Without the assistance and collaboration from IT, the project would have been challenging to achieve.

Emergency Department (ED) staff members were vital for the project to be carried out as nurses were responsible for screening patients, and secretaries were responsible for obtaining advance directive documents. While the ED was staffed well, the organization needed more inpatient staff and beds available to receive patients from the ED to avoid long admission holding times. This placed significant time constraints on staff in the ED, which resulted in low utilization of the screening tool as reported by many staff members and subsequently resulted in advance directives not being submitted to the EHR when available. If the organization could dedicate staff for inpatient admissions, this would potentially remove the time constraint from the ED staff and increase the screening tool utilization for advance directives.

Implications of the Findings

After implementing the DNP project, it is imperative to evaluate how the findings influence patients, the nursing population, and the health care system. The following implications have been drawn from conclusions gathered from the findings of the project.

Implications for Patients

As mentioned previously, more than 90% of all patients screened during the project implementation did not have an advance directive confirming the need for improvement in awareness and education on advance directives. The project provided an opportunity to begin the conversation regarding ACP in all individuals; though, those who would benefit most included those with complex medical conditions and the elderly. Documentation of advance directives in the EHR promotes patient autonomy as their wishes may be better known in situations where they cannot speak for themselves. Improved documentation will also lead to an increase in patient and family satisfaction as they are directly involved in their care decisions. Additionally, it will lead to a decrease in the patient's overall cost as unnecessary/undesired interventions would not be carried out. Further, it will help ensure patient-centered care is delivered when nearing the end of life by promoting care team continuity through interprofessional collaboration.

Implications for Nursing Practice

The project enables nurses to perform at their highest potential through leadership and advocacy. An advanced directive screening tool primarily utilized by nursing staff places nurses in the unique position to serve as leaders in their role as a care provider through promoting education on the topic of ACP. Leadership is also observed by developing, implementing, and evaluating a new process to promote quality improvement. Nursing communication is enhanced not only with patients but also with all interdisciplinary members of the health care team by establishing the new advance directive screening tool. Furthermore, improving screening and documentation of advance directives will enable nurses and all members of the care team to provide individualized care to patients based on their wishes and serve as advocates for patients.

Lastly, developing an intervention to improve ACP processes will decrease ineffective, life-prolonging measures that cause moral distress in nurses and other healthcare workers.

Impact for Healthcare Systems

The project assists the healthcare system in aligning with the goals of the Triple Aim. The Triple Aim strives to improve the population's health, enhance the patient experience, and reduce the per capita cost (Institute for Healthcare Improvement, 2020). A positive patient experience and improved quality of life are promoted through increasing documentation of patient wishes and enhancing patient autonomy. A decrease in overall healthcare costs will likely stem from increasing advance directive documentation by preventing costly life-prolonging measures undesired by patients.

Furthermore, the project promotes continued Joint Commission accreditation for the health system by aligning with the performance elements listed within the Patient Safety System Chapter of the Joint Commission's Accreditation Manual for Hospitals (Comprehensive Accreditation Manual for Hospitals, 2019). Accreditation is essential for the health system as it reflects whether or not an institution meets specific quality standards. Performance elements supported by the project include the following: hospitals follow policies providing patients with information regarding advance directives, hospitals document patient advance directive status, and the hospital refers the patient if requested, to the appropriate resources to formulate an advance directive (Comprehensive Accreditation Manual for Hospitals, 2019).

Sustainability

The organization plans to continue using the advance directive screening tool developed and the process designed to improve advance directive documentation and enhance patient awareness. There are no additional tangible items required for the organization to sustain the

project as all necessary components are already in place. Education materials on the ACP process are posted around the department, and card reminders are on desktop monitors for staff to complete the screening tool. While the scanner purchased was not utilized during the implementation, its future use would be beneficial. For the scanner to be useful in the future, appropriate technology would need to be embedded into the computer in the ED where scanning would occur for employees to have the ability to scan documents into the EHR directly. While this is not required for the current process's sustainability, it would eliminate having to send documents to medical records for scanning. Another recommendation to consider would be involving interprofessional team members in providing consults to patients who request further information on ACP. While this likely would not be feasible during the COVID-19 pandemic, it is recommended for the future to assist patients with ACP.

Dissemination Plan

The dissemination plan aims to raise awareness of the work completed and the importance of continued work around ACP. First, the project and findings were presented to the University College of Nursing through a virtual platform on April 6, 2021. Key members of the university were present for the presentation and upcoming students who may develop and implement projects in the future to continue improving ACP processes. Following the university presentation, the DNP paper was submitted to the University's Institutional Repository, The Scholarship. Submission to this repository provides others an opportunity to view the project and its findings in the future. The project was also presented virtually to the project site on April 13, 2021. Key members involved with ACP processes for the health system were present. Lastly, a manuscript will be submitted to the Journal of Emergency Nursing for consideration as it was

performed within an emergency department and pertains to this population of healthcare workers.

Section VI: Conclusion

Limitations

There were many limitations identified during the project period that affected advance directive screening tool utilization. A significant limitation to the overall success of the project was the COVID-19 pandemic which led to a delay in implementation. Educating the department staff was the most significant challenge due to the pandemic, as large gatherings were prohibited to limit the spread of the virus. The original education plan of in-person education was altered to a virtual format. In addition to the challenge of ensuring all staff were educated appropriately, high turnover rates of employees within the department limited the ability to maintain competence in utilization of the screening tool and patient education on advance directives. Through email and nursing huddles, weekly reminders were distributed to help support staff awareness of the project goals, objectives, and expectations. Additionally, several days were spent rounding in the department, reminding staff members of the process, and receiving informal feedback. Many staff members were unable to be reached through this method due to various shift times. Regardless of these reminders, the ever-changing nature of COVID-19 policies and procedures provided a distraction to staff from the project goals. As a result of COVID-19, the Emergency Department (ED) inpatient admission holding increased in the final weeks of the implementation and was a significant limitation to the project's success, as mentioned by multiple staff members through informal feedback. This challenge placed time constraints on nursing staff as their primary concern was patient-care tasks such as medication administration, turning patients, etc., and not screenings.

Another limitation encountered related to staff members being resistant to the project goals and objectives. Some secretaries expressed concern with the new process, with additional

tasks being required. These concerns were expressed to members of information technology who were essential in setting up the correct technology on the computer in the ED and ultimately resulted in delays in setting up the scanner utilized for the project. These delays impacted the decision for a change in the process of scanning advance directives to the EHR.

Recommendations for Others

Several recommendations are to be considered. One suggestion would be to implement this intervention in a smaller, more controlled setting. With the emergency department's size, educating and maintaining awareness among more than 100 staff members was challenging. Results may vary if done in an area with fewer staff, even during a pandemic.

A second recommendation would be to pilot the advance directive screening tool after its embedment into the electronic health record (EHR) for at least two to four weeks prior to implementation. When utilizing technology, challenges are often anticipated, and piloting the technology prior to formal implementation will allow any glitches to be fixed. This may facilitate a smoother implementation phase with results less likely to be affected by technological issues, as was experienced with this project.

Improving screening tool utilization by staff will likely improve advance directive documentation and education sent to patient portals. Incentivizing staff for completion of the screening tool should be considered in the future by using a point system, perhaps. For example, for each chart with a completed screening tool, staff members would earn a point towards a prize. It is also recommended to provide in-depth education regarding all aspects of advance care planning (ACP) to staff prior to implementation. Throughout the project, many staff members inquired about ACP, such as what it entails, the different documents, etc. Education would help

promote staff's confidence when screening patients for ACP, resulting in better utilization of the advance directive screening tool.

Lastly, it is recommended to gather additional information regarding patients who do have advance directives. Two contributing factors to the small number of documents submitted to the EHR relate to the fact that many patients do not bring their documents with them to visits, or the EHR may already have the copy on file. Gathering information related to these two factors would help provide insight as to why the individual did not have a document submitted to the EHR. Collecting this data during project implementation would allow better representation of documents submitted to the EHR and staff compliance with the alert system.

Recommendations Further Study

An area in need of further study involves the perceptions and attitudes of patients and healthcare workers regarding ACP. Personal biases may result in staff failing to complete advance directive screenings and refer patients to the right resources for ACP. Similarly, biases may result in patients being reluctant to hold a conversation regarding ACP. Further study in this area will likely provide insight into the quality of discussions revolving around ACP. Staff who support ACP would most likely be willing to screen patients for advance directives and refer to ACP resources than those who are unsupportive of the topic.

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Appendix A
Literature Search Log

DNP Project
Literature Search Log

Student: Holley Hall			**Date of Submission: 4/27/20**		
Project Title: An Electronic Health Record Intervention for Advance Care Planning in an Emergency Department					
Date of Search	**Database**	**Key Word Searches**	**Limits**	**# of Citations Found / Kept**	**Rationale for Inclusion / Exclusion (include rationale for excluding articles as well as for inclusion)**
4/22/20	PubMed	Advance directives AND electronic health records	5 years, English language	77 initials, 52 after limits, kept 5	Articles kept were relevant to the topic of discussion regarding advance directives and one specifically looked at the effect on ADs using electronic health records. Excluded articles included those that were not relevant, involved individuals with known terminal illness, or were low levels of evidence. Articles outside of the US were not included. Of the articles kept - one was specific to the emergency department and the other attempted to look at cost-benefit of advance care planning.
4/22/20	PubMed	Advance directives	5 years, English language, metanalysis, systematic reviews, and randomized controlled trial	1,213 initials, 79 after limits, kept 1	Many duplicate articles from the previous search were noted. Those that were not kept were duplicates from other database searches or involved specific minority/disease populations.
4/22/20	PubMed	Advance care planning	5 years, English language, metanalysis, systematic	2,894 initials, 206 after limits, kept 3	Again, many articles were duplicates from the previous two searches. Those that were not included were duplicates from the other searches,

			reviews, and randomized controlled trial		redundant, or were involving specific minority/disease populations.
4/23/20	CINAHL	Advance directives	5 years, English language, metanalysis, systematic reviews, and randomized controlled trial	3,265 initials, 25 after limits, 1 kept	Many duplicate articles were noted from the PubMed searches. After the limits were applied, the article looked at clinical reminders and alerts in the EHR to improve advance care planning documentation.

Appendix B
Literature Matrix

Authors	Year Pub	Article Title	Theory	Journal	Purpose and take home message	Design/Analysis/Level of Evidence	IV DV or Themes concepts and categories	Instr. Used	Sample Size	Sample method	Subject Charac.	Comments/critique of the article/methods GAPS
Tieu et al.	2017	Utilization of patient electronic messaging to promote advance care planning in the primary care setting	no theory reported	American Journal of Hospice & Palliative Medicine	Use of electronic messaging in the primary care setting may improve advance directive documentation	Randomized Controlled Intervention, Level II Evidence	IV: personalized messaging system explaining the ACP process or the control group which got usual care DV: advance directive completion	No instrument was utilized to measure outcomes, outcomes were measured by completion of AD within the 12 weeks after receiving the electronic message. The AMALGA Hospital Information System IT platform was used to obtain baseline patient data. The Johns Hopkins Adjusted Clinical Group model was used to measure patient risk of morbidity.	200	2526 patients with access to the PCIM were individually, electronically randomized	Age 65+, no AD, and had access to the online services system	The study concluded that use of electronic messaging may improve rates of AD completion. Synthesis: 200 patients in an office setting were randomly assigned to a group who received an electronic message in the EHR explaining the ACP process. The study was performed over 12 weeks. The intervention group showed a 5.5% AD completion rate during the time of the study. This, at the time, was determined to be the only RCT utilizing electronic messaging systems in facilitating ACP. Limitations: this was performed in the primary care setting. Another limitation is the use of electronics, computers, etc. as many are without access to this as well. Also, those not literate in English may be a problem. Usefulness: The method trialed poses an inexpensive option to add to measures already in place with EHRs. This allows patients to review ACP tools on their own time and complete the documents without needing office visits.
Johnson et al.	2018	How well do current measures assess the impact of advance care planning on concordance between patient preferences for end-of-life care and the care received: A methodological review	no theory reported	Journal of Pain and Symptom Management	Those who discuss end of life wishes with a provider are more likely to have their wishes met at the end of life	Level I - Methodological systematic review	Concept: "concordance"	"Quality Criteria and the Proportion of Studies Meeting Each Criteria"	9 studies - 4 cross-sectional, two prospective longitudinal studies and 3 RCTs	Literature search using CINAHL and Medline	Articles included assessed ACP interventions, aimed to assess patient preferences and the care received at the end of life, viewed more than one patient outcome, and reported actual results	It was found that those who discuss of end of life preferences with a provider are more likely to have those wishes met. Synthesis: Overall rate of concordance determined was between 14%-98% between end of life wishes and care provided. Limitations: 9 studies used were methodologically poor. Reliability and validity are lacking in this study. Usefulness: provided recommendations for further studies to pay attention to the reliability and validity of measurement tools.
Folarinde & Alexander	2017	An integrated review of research using clinical decision support to improve advance directive documentation	no theory reported	Journal of Hospice & Palliative Nursing	Use of CDS features in the electronic health record may lead to better patient care specifically relating to ACP.	Level I - systematic literature review	Themes: CDS interventions for AD documentation and factors influencing AD documentation	No instrument was utilized	34 articles	Literature search from 4 databases: CINAHL, Google Scholar, PubMed, Scopus	Articles only peer-reviewed, quantitative, qualitative, and mixed-methods research were included, in the english language, and published between 1998-2015, international studies were included as well.	Use of CDS features in EHR's may result in better patient care. Synthesis: studies have been completed looking at the effect of CDS in EHR's however there are not studies that look at advance directive documentation influenced by CDS in EHR's. Limitations: only studies with English language were included, limited databases were searched, combination of different study designs and different sample sizes leads to limitations when comparing the studies. Usefulness: this review shows that CDS in EHR improves clinical documentation.
Klingler et al.	2016	Does facilitated advance care planning reduce the costs of care near the end of life? Systematic review and ethical considerations	no theory reported	Palliative Medicine	Found a wide range of cost savings in those who had advance directives	Level I-systematic review	Themes: ACP programmes and the effect on healthcare costs	Informal review protocol was created to identify appropriate articles based on the Preferred Reporting Items For Systematic Reviews and Meta-Analyses (PRISMA)	7 articles	Literature search from 5 databases: PubMed, NHS EED, EURONHEED, The Cochrane Library, and EconLit	Articles were chosen in english or german language, specifically addressed ACP programme interventions and their effect on healthcare costs	Limited data available looking at the effect of ACP programmes on healthcare costs. The studies reviewed had very differing interventions, populations, etc. and largely different results. Further research is needed. Limitations: It was difficult for ACP programmes to be identified due no common understanding of the term "advance care planning."Secondly, restricting to certain languages may have caused other studies to be missed. Most studies were conducted in the US, therefore other relevant studies may have been missed. Usefulness: Shows there are possible opportunities for ACP programmes to reduce healthcare costs and recognizes the need for further study on this topic. Synthesis: None of the studies were robust in the cost-effectiveness analysis. The studies differed so greatly so their findings aren't generalizable.

Authors	Year Pub	Article Title	Theory	Journal	Purpose and take home message	Design/Analysis/Level of Evidence	IV DV or Themes concepts and categories	Instr. Used	Sample Size	Sample method	Subject Charac.	Comments/critique of the article/methods GAPS
Lum et al.	2019	Design and implementation of patient portal-based advance care planning tools	no theory reported	Journal of Pain Symptom Management	This use of ACP tools through patient portals promotes patient engagement	Level V - quality improvement	Independent Variable: Use of ACP tool Dependent Variable: creation of a medical durable power of attorney	System Usability was measured with a System Usability Scale based on a 5 point Likert Scale	2814 patients	No specific method was utilized to select patients.	Patients were mean age 45 years, 68% were female, patients were from three healthcare regions in Colorado (31% north, 42% metro, and 23% south) and from 16 other states (4%)	The use of portal-based ACP tools improves patient engagement in advance care planning. Synthesis: The use of ACP tools based in a patient portal increases patient engagement and improves completion of advance directives. This study specifically looked at MDPOA. Over 92% of those who completed the MDPOA form didn't have a prior written advance directive naming a medical decision maker in the EHR. Limitations: This was conducted in one healthcare system, findings are limited to those who use EHR based patient portals, and there was no specific method to the selection of participants. Usefulness: This study supported the use of patient portal access to ACP.
Lemon et al.	2019	Do electronic medical records improve advance directive documentation? A systematic review	no theory reported	American Journal of Hospice & Palliative Medicine	EHRs can improve AD documentation	Level I-systematic review	Effects of EMRs on outcomes relevant to the process of ACP	Cochrane Collaboration risk assessment tool to assess for bias and was reported using the PRISMA checklist for review	15 articles	Database search from PubMed, PsychINFO, EMBASE, and CINAHL - randomized and nonrandomized quantitative studies were chosen	Randomized and nonrandomized quantitative studies in English included with focus on relevant processes of AD documentation including creation, storage, and use of AD's in clinical context.	Systematic review of 15 studies that addressed AD documentation with EMR. Synthesis: This study systematically reviewed 15 studies that demonstrated how EMRs can both enhance and create challenges in documenting AD's. Limitations: only focused on quantitative studies and neglected qualitative studies that may also have uncovered other aspects of EMR use. Specific health systems reviewed in these articles may have different EMR's posing different challenges. Usefulness: EMRs can help to address challenges with AD documentation, supported by high level of evidence studies in this review.
Huber et al.	2018	Utilizing the electronic health record to improve advance care planning: A systematic review	no theory reported	The American Journal of Hospice & Palliative Medicine	ACP processes improve with EHR interventions such as electronic reminders.	Level III-systematic review of observational and experimental studies	Use of EHR to improve processes regarding advance care planning	REDCap electronic data capture was used to record the abstracted data from each article to assess criteria to be included in the review	16 articles	7 databases were searched: CINAHL, MEDLINE/PubMed, Cochrane Central Register of Controlled Trials, EMBASE, Scopus, Cochrane Central, PsychINFO, and Sociological Abstracts	Included all studies that involved interventions using the EHR in relation to advance care planning. Studies that didn't include an intervention using the EHR were excluded. Only articles from journals were included. Descriptive, cross-sectional, case-controlled, cohort studies, and clinical trials were included.	Use of electronic prompts to alert providers early to patients who may benefit from ACP may be the EHR intervention with the greatest potential to improve the ACP process. Synthesis: ACP documentation improves with EHR interventions. Limitations: examined multiple large databases, may have missed relevant articles due to search strategy, and was unable to synthesize the study effects due to the wide range of heterogeneity in the studies. Usefulness: identified interventions centering around ACP specifically in EHRs.
Oulton et al.	2015	Advance directives for older adults in the emergency department: A systematic review	no theory reported	Journal of Palliative Medicine	Confirmed low rates of AD documentation in ED patients, which can impact care and quality of life significantly	Level I - systematic review	AD's in older adults in EDs and factors associated with completion of AD's in the older adult population in EDs	PRISMA guidelines utilized for inclusion criteria	27 articles	Database search from PubMed/MEDLINE, Elsevier/Embase, Wiley/Cochrane Library, Thomson Reuters/Web of Science, EBSCO/CINAHL, EBSCO/PsychINFO, and Ovid/MEDLINE	Population: ED patients, Location: United States ED's, Outcome Measures: quantitative prevalence data pertaining to ADs and factors associated with AD completion	The need to have ADs documented and available to ED personnel is imperative for quality end of life. Limitations: strict inclusion/exclusion criteria may have prevented other articles or studies from being reviewed. Usefulness: confirmed low rates of documentation of ADs accessible for ER staff. Synthesis: rates of AD documentation are low and ED staff accessibility is difficult.

Authors	Year Pub	Article Title	Theory	Journal	Purpose and take home message	Design/Analysis/Level of Evidence	IV DV or Themes concepts and categories	Instr. Used	Sample Size	Sample method	Subject Charac.	Comments/critique of the article/methods GAPS
Turley et al.	2016	Impact of a care directives activity tab in the electronic health record on documentation of advance care planning	no theory reported	The Permanente Journal	Care directive tabs are helpful in improving documentation and retrieval of ADs	Level III - retrospective observational study	Independent Variable: Use of CDA Dependent Variable: Documentation of advance directive	No specific instrument utilized	preimplementation: 56,251 postimplementation: 57058, total: 113,309	All patients over the age of 65 at Kaiser Permanente Southern California with at least one inpatient encounter	Patients over the age of 65 years with one ambulatory care or inpatient encounter during the study period	Rates of AD documentation were higher with use of CDA compared to those who didn't use it. Limitations: potential impact of unmeasured factors on findings including health literacy and race. Only included the older adult population and not the younger. Did not measure staff training attendance for the CDA training. Synthesis: CDA in the EHR is associated with increases in documentation rates of advance directives. Usefulness: supports a single platform for storage and retrieval of advance directives.
Platts-Mills et al.	2017	Availability of advance care planning documentation for older emergency department patients: A cross-sectional study	no theory reported	Journal of Palliative Medicine	The purpose of this study was to look at the patient reported advance directive status and compare to the EHR documentation	Level IV - prospective cross-sectional study	Categories: Patient reported completion of ACP document and availability of ACP documents in the EHR	Six Item Screener was used to assess cognitive status	104	Study participants provided verbal consent. Patients included were cognitively intact, spoke english, over the age of 80 and if 65-79, had a high chance of mortality	Caucasian (74%), aged 65-79 (59%), and 44% were female and 70% were accompanied by someone in the ED	59% reported they had completed some form of ACP document, but only 13% were located within the EHR. Synthesis: There is disconnect between patient reporting having ACP documents and documentation in the chart. Limitations: specific age ranges, cognitive status, and only those who speak english. Patient reporting is also a limitation as it may be inaccurate; i.e. health literacy, do they understand what an ACP is? Usefulness: confirms the disconnect between having an ACP document and being able to locate it within the EHR in the emergency department.
Jordan et al.	2019	Patient perspectives on advance care planning via a patient portal	no theory reported	The American Journal of Hospice & Palliative Medicine	The purpose was to describe patient perspectives of advance care planning via a patient portal, found that patients view this as appropriate and feasible	Level III - Qualitative Study	Themes: individual use of ACP tools, personal initiation of ACP tools on own time, ACP tools as they relate to clinical care, and how practical these tools are	Atlas ti software 7.5.18 was used for data organization and storage for analysis from the telephone interviews	254	Candidates were sampled to include different ages, sex, Colorado regions, and types of interaction with the ACP tools. Telephone interviews were conducted and lasted up to 40 minutes or until there was no new information being obtained.	70% between ages 30 and 69. 61% are women.	From this study, it was found that patients find this convenient and are willing to do it. This may be a way to increase education of ACP and completion of ACP documents. Synthesis: Patients find ACP access through patient portals convenient and feasible. This may provide a solution to linking ACP documents with the EHR. Limitations: not generalizable due to being conducted in one health system in Colorado, other states require witnesses for electronic MDPOA forms. Usefulness: confirmed patient accessibility and feasibility of ACP documents through patient portal.

Appendix C

DNP Data Collection Tool

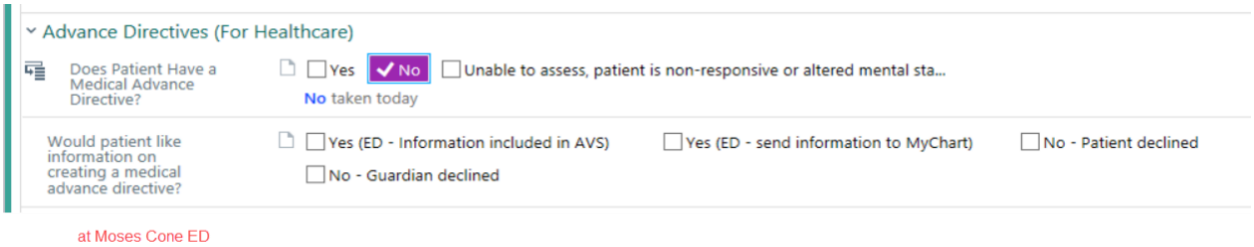
	Patient # Visits - Adult ED	Total # Advance Directive Screening Tool Utilized	Total # Patients who answered YES to having a medical advance directive	Total # Advance Directives Scanned to Vynca	Total # Patients who answered NO to having a medical advance directive	Total # Advance Care Planning Education sent to Patient Portal	Total # Patient Access Education in Patient Portal
Week 1 AND Week 2	1,723	1,001	58	0	926	11	1
Week 3 AND Week 4	1,576	820	48	0	762	14	4
Week 5 AND Week 6	1,692	946	43	3	891	7	1
Week 7 AND Week 8	1,628	941	52	3	880	6	2
Week 9 AND Week 10	1,604	950	61	3	878	3	2
Week 11 and Week 12	1,587	892	55	3	829	4	1

Appendix D
DNP Project Staff Education

New & Improved AD Screening Tab in the Triage Narrator

Screening for and documenting advance directives is necessary for accreditation purposes here at Cone. The bigger picture to be recognized is that these documents provide patients the opportunity to voice their wishes, when they are unable to. Advance directives decrease the common disconnect in care desired versus care provided, and as a result decrease the ethical/moral distress experienced by providers/medical staff, and also increase patient satisfaction and quality of life. The new and improved AD screening tab in the triage narrator will aim to improve screening, documentation, and enhance patient awareness of the importance of these documents. **Our current utilization rates of the screening tab are currently 50%,** let's improve that number and improve our patient's care. The small changes that have been made have the potential to lead to improvement in many areas!

1. There have been options added for the patient who says "No" to having an advance directive, including having information sent to MyChart.



2. For the patient who does not have an advance directive and requests information, kindly ask if they would like the information on paper (AVS) or through MyChart. The information is the same regardless of the route chosen. These are the tools that will be provided below and this is what it will look like.

Important Information about Advanced Directives

Advanced Directive Information

During your stay with us you indicated you do not have an Advanced Directive or would like more information regarding Advanced Directives. Cone Health offers free advance directive forms, as well as assistance in completing the forms themselves. For assistance, contact the Spiritual Care Department at (336) 832-7950, or the Clinical Social Work Department at (336) 832-7447.

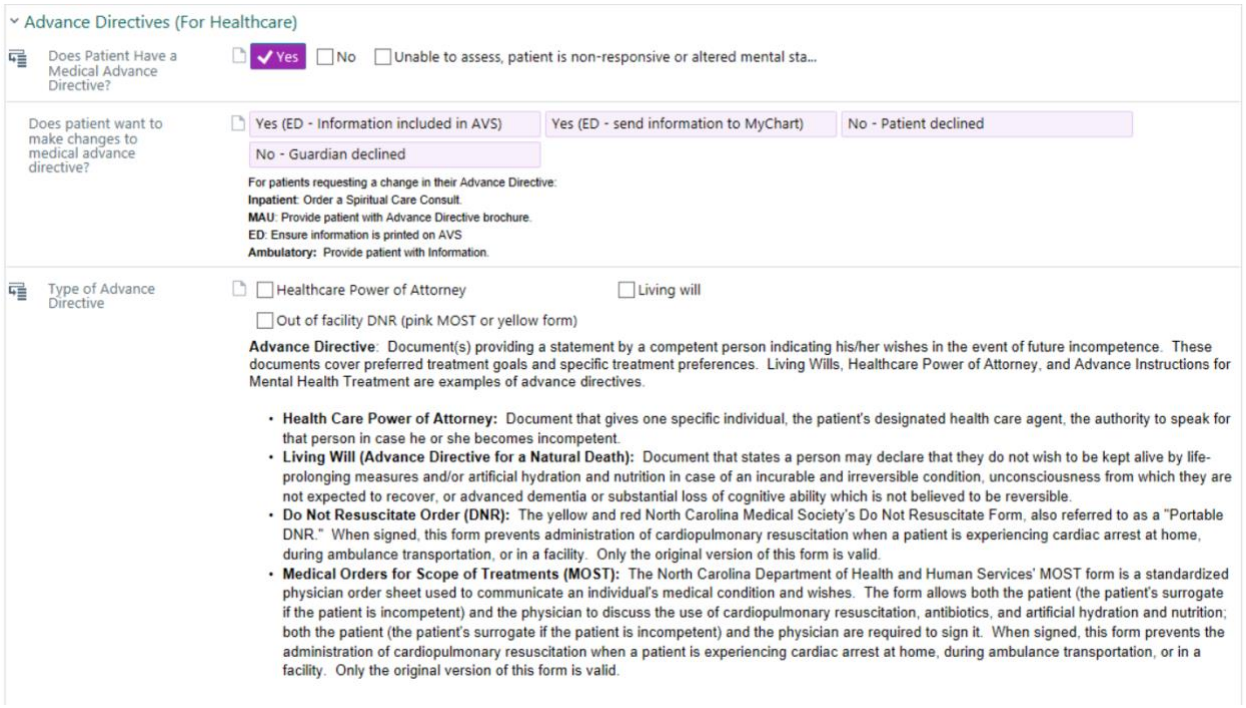
For additional information please visit these websites:

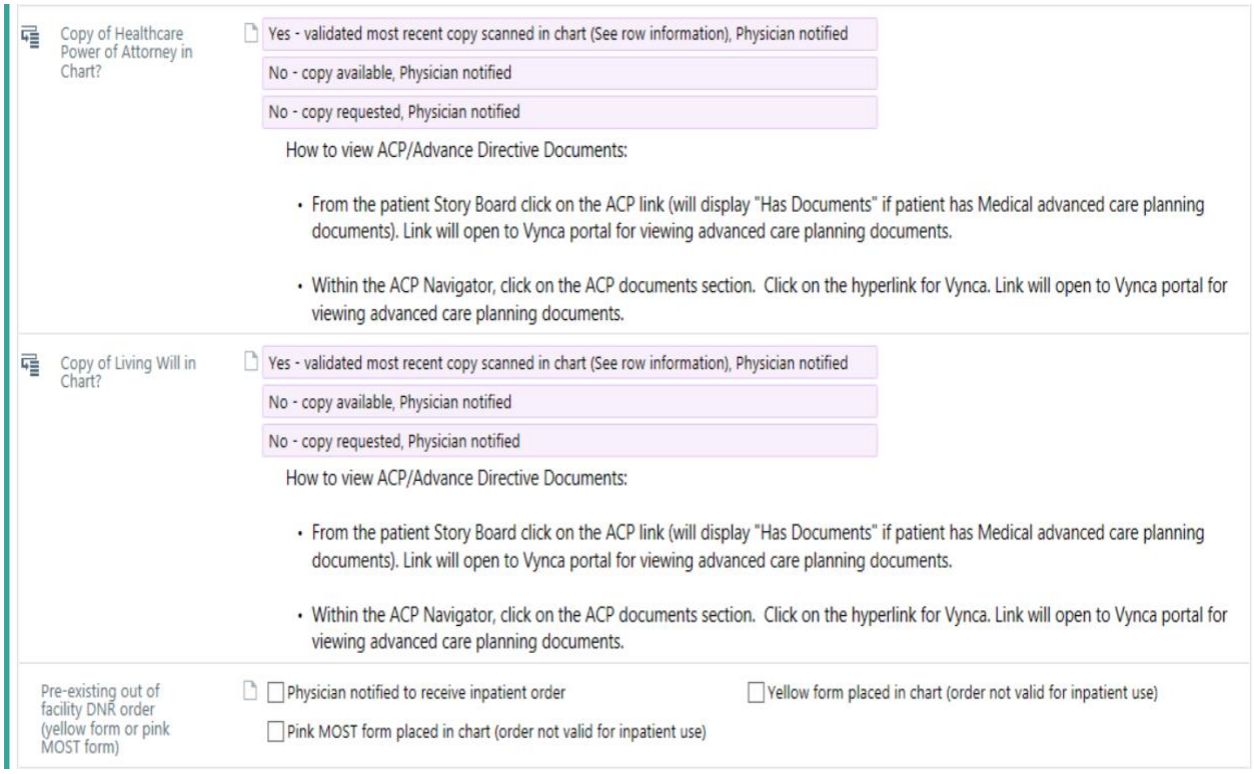
www.tryemmi.com Use Code: Cone and Search: Advance Directives then Click view to watch an informative video about Advanced Directives.

https://prepareforyourcare.org/welcome Uses interactive videos to assist you in preparing your Advanced Directive.

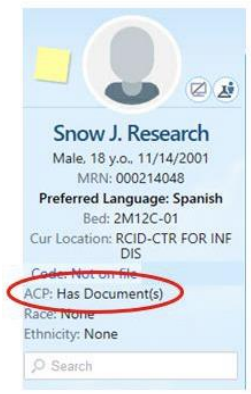
To access a blank form to fill out please visit: https://www.conehealth.com/app/files/public/bd8f7fd8-e9c8-4efe-9f71-3f6ef1727320/Living-Will-Form.pdf

3. This has been made more ED-user friendly! All the inpatient options have been removed when the person says “Yes” to having an advance directive, and only those pertinent to the ED remain.





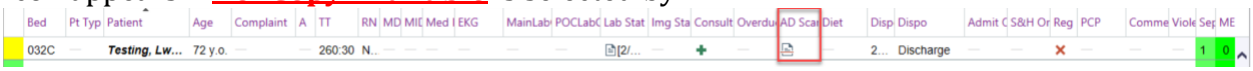
4. Verify the person has an advance directive in Vynca, review document provided with instructions on how to do this.



5. If the person does not have an advance directive listed in Vynca <u>BUT DOES</u> have the document present during their visit, **click No- copy available**. This option will trigger an icon on the Secretary Track board view and this row indicating a document needs to be scanned into the chart. See below. This can be done once the patient is roomed, if triaged and placed in waiting.

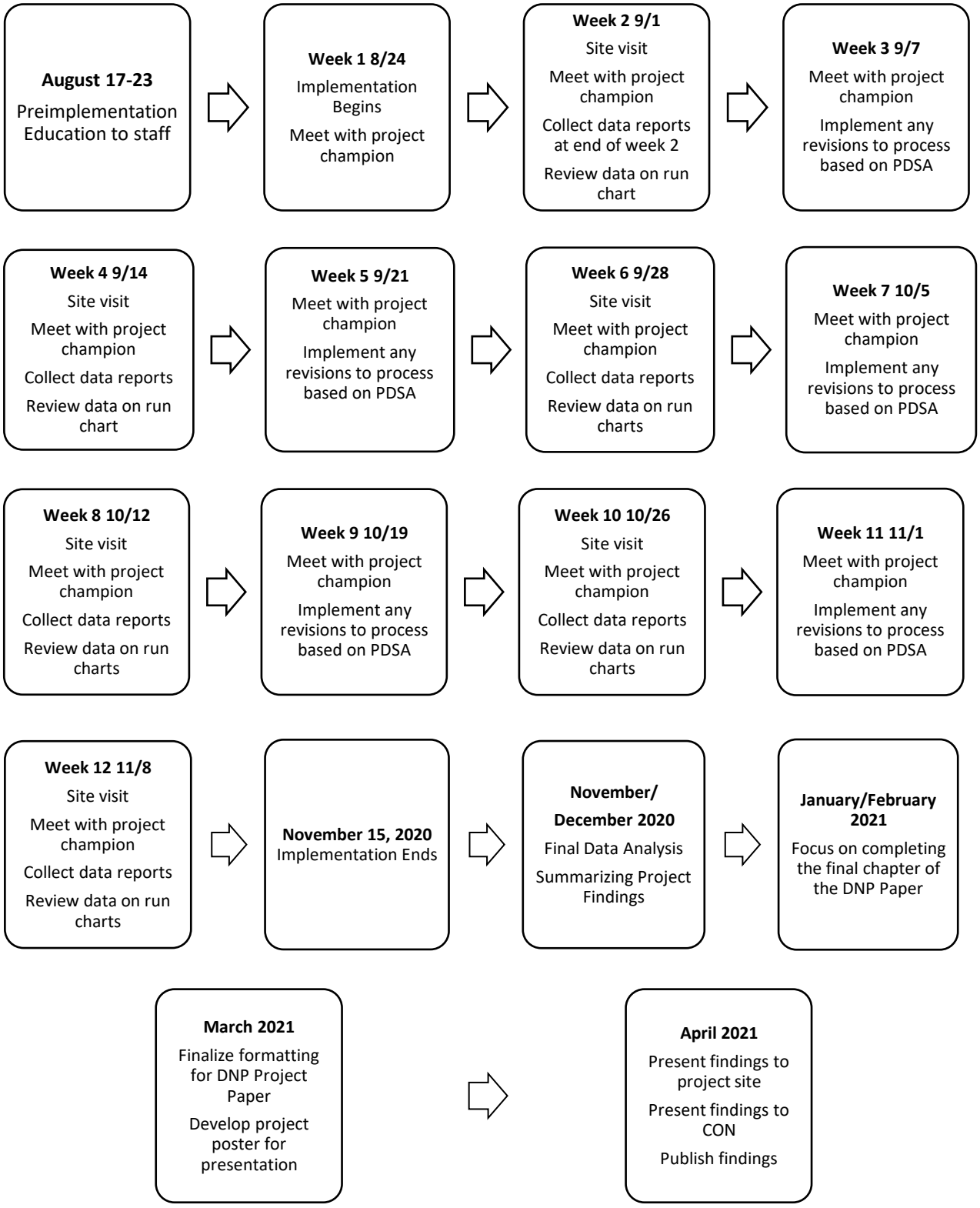
Unit Secretary View:

Icon appears if **No- Copy Available** is selected by RN:

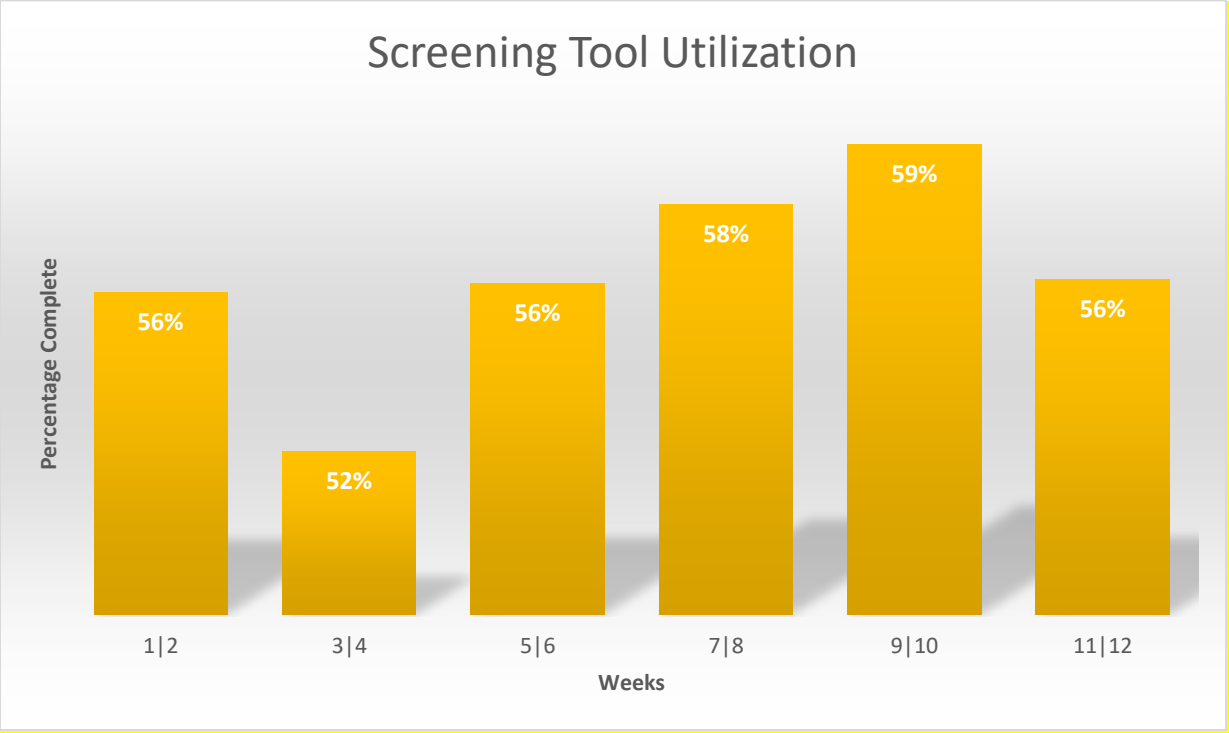


Appendix E

DNP Project Timeline



Appendix F
Screening Tool Utilization



Appendix G
Screening Tool Utilization Data Table

Weeks	Total Patient Encounters	Total Screened	%
1-2	1,723	1,001	58
3-4	1,576	820	52
5-6	1,692	946	56
7-8	1,628	941	58
9-10	1,604	950	59
11-12	1,587	892	56

Appendix H

Advance Directive Documentation Data Table

Weeks	Charts with "Yes" Advance Directive	# of Advance Directives Submitted to the EHR	%
Week 1 and 2	58	0	0
Week 3 and 4	48	0	0
Week 5 and 6	43	3	7
Week 7 and 8	52	3	6
Week 9 and 10	61	3	5
Week 11 and 12	55	3	5

Appendix I

Patient Awareness Data Table

Weeks	# of Patient Charts Requested ACP Tools via Patient Portal	# of Charts that Successfully Viewed the ACP Tools	%
1 and 2	11	1	9
3 and 4	14	4	29
5 and 6	7	1	14
7 and 8	6	2	33
9 and 10	3	2	67
11 and 12	4	1	25

Appendix J
Project Cost

Item	Cost
(1) Fujitsu fi-7160 Color Duplex Document Scanner	$1,000
(35) Thermal Lamination Pouches	$20
Printer Paper	$5
Tape	$5
8.5 Hours - for Application Analyst to Build/Embed Screening Tool into EHR	$0
5 Minutes – Secretaries Performing Steps per Patient Encounter with Readily Available Advance Directive	$0
	Total: $1,030

Appendix K
Doctor of Nursing Practice Essentials

	Description	Demonstration of Knowledge
Essential I ***Scientific Underpinning for Practice***	**Competency** – Analyzes and uses information to develop practice **Competency** -Integrates knowledge from humanities and science into context of nursing **Competency** -Translates research to improve practice **Competency** -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes	• Conducted a thorough literature review to design, plan, and implement a quality improvement project to improve patient experiences and outcomes as they relate to advance care planning.
Essential II ***Organizational & Systems Leadership for Quality Improvement & Systems Thinking***	**Competency** –Develops and evaluates practice based on science and integrates policy and humanities **Competency** –Assumes and ensures accountability for quality care and patient safety **Competency** -Demonstrates critical and reflective thinking **Competency** -Advocates for improved quality, access, and cost of health care; monitors costs and budgets **Competency** -Develops and implements innovations incorporating principles of change **Competency** - Effectively communicates practice knowledge in writing and orally to improve quality **Competency** - Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems	• Identified areas of opportunity in the advance directive screening tool previously established. • Changes were made to the EHR advance directive screening tool to improve screening and documentation of advance directive documents. • A cost-benefit analysis was performed to determine the project's costs that would result in a great return.
Essential III ***Clinical Scholarship & Analytical Methods for Evidence-Based Practice***	**Competency** - Critically analyzes literature to determine best practices **Competency** - Implements evaluation processes to measure process and patient outcomes **Competency** - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients **Competency** - Applies knowledge to develop practice guidelines **Competency** - Uses informatics to identify, analyze, and predict best practice and patient outcomes **Competency** - Collaborate in research and disseminate findings	• The literature review and synthesis of the literature facilitated the development of the project. • The Plan Do Study Act was utilized as the operational tool to guide improvement by evaluating the process every two weeks. • The quality improvement project findings were disseminated through virtual presentations and submission to the University repository and a professional journal.
Essential IV ***Information Systems – Technology & Patient Care Technology for the Improvement & Transformati***	**Competency** - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery & quality of care **Competency** - Analyze and operationalize patient care technologies **Competency** - Evaluate technology regarding ethics, efficiency and accuracy **Competency** - Evaluates systems of care using health information technologies	• Collaborated with Information Technology to design and implement a screening tool within the electronic health record to improve patient outcomes related to advance care planning/end-of-life care.

on of Health Care		• The project was evaluated bi-weekly using reports generated within the EHR.
	Description	**Demonstration of Knowledge**
Essential V ***Health Care Policy of Advocacy in Health Care***	**Competency**- Analyzes health policy from the perspective of patients, nursing and other stakeholders **Competency** – Provides leadership in developing and implementing health policy **Competency** –Influences policymakers, formally and informally, in local and global settings **Competency** – Educates stakeholders regarding policy **Competency** – Advocates for nursing within the policy arena **Competency**- Participates in policy agendas that assist with finance, regulation and health care delivery **Competency** – Advocates for equitable and ethical health care	• The project aligns with the Triple Aim by promoting improved patient outcomes, patient experience, and decreasing healthcare costs. • The project also aligns with the performance measures revolving around ACP and advance directives by the Joint Commission for the health system's accreditation purposes.
Essential VI ***Interprofessional Collaboration for Improving Patient & Population Health Outcomes***	**Competency**- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship **Competency** – Provide leadership to interprofessional care teams **Competency** – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings	• The project lead was the primary contact for the team and displayed leadership through this role. • Collaboration and communication amongst ED staff were performed through education, frequent email reminders, and department rounding. • In the future, it is recommended to have the ability to work inter-professionally and provide consults to patients in the ED that wish to speak to someone about creating an advance directive.
Essential VII ***Clinical Prevention & Population Health for Improving the Nation's Health***	**Competency**- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery **Competency** – Synthesizes information & cultural competency to develop & use health promotion/disease prevention strategies to address gaps in care **Competency** – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity	• The project was developed to help fill the gap in care related to patients with advance directives. With one in three individuals having an advance directive, this project promotes initiating the conversation with patients who do not have one. • It was noticed during the project that the same nurses were sending ACP tools to patient portals, raising the concern that many nurses were not screening patients. It

		is recommended to study patient and healthcare worker perceptions revolving around the topic of ACP.
Essential VIII ***Advanced Nursing Practice***	**Competency**- Melds diversity & cultural sensitivity to conduct systematic assessment of health parameters in varied settings **Competency** – Design, implement & evaluate nursing interventions to promote quality **Competency** – Develop & maintain patient relationships **Competency** –Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes **Competency** – Mentor and support fellow nurses **Competency**- Provide support for individuals and systems experiencing change and transitions **Competency** –Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures	• The project lead provided leadership by mentoring ED staff regarding the advance directive screening tool and submitting documents to the EHR. • The PDSA cycle was utilized to analyze and evaluate the project bi-weekly to ensure improvement was occurring. • Advanced clinical judgment was demonstrated during each bi-weekly review as changes were continuously made as necessary to result in improvement. Changes were made based on the data review and analysis.