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ICU Diaries: A Pilot Program

A DNP Project Paper

by

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Table of Contents

Figures

Abstract

Background: Following intensive care unit (ICU) stays, patients with Post-Intensive Care Syndrome (PICS) can experience cognitive, physical, and mental health related symptoms that can impact their quality of life. ICU diaries have been shown to improve mental health outcomes for both patients and their families.

Purpose: To implement an effective ICU diary pilot program in a twenty-four bed adult medical surgical intensive care unit, while gathering feedback from patients, families, and nursing staff.

Methods: After meeting with all stakeholders, an ICU diary program was developed based on current evidence. Patients requiring mechanical ventilation with an expected ICU length of stay over 24 hours were included. Nursing staff and patient families entered daily descriptive narratives of the patient's progress in the diary during the ICU stay. After discharge, patients and families reviewed the diary to bridge their memory gap while improving patient acceptance of their ICU experience. Evaluation of the project included patient and family follow-up calls, a staff nurse feedback survey, and project champion debrief.

Results: A final sample of twenty completed ICU diaries were distributed at ICU discharge. Follow-up calls illustrated themes of support and gratitude for the diaries, regardless of patient outcomes. Patients reported the diaries helped to fill in the memory gap that existed between ICU admission and discharge. Nursing surveys confirmed that completion of ICU diary entries had minimal impact on workload and described an ease in communication with families and improvement in personal coping.

Conclusions & Implications: ICU diaries have the potential to benefit patients, families, and nursing staff during and after critical illness for little organizational cost.

Keywords: “Acute and Critical Illness”, “Mental Health”, “Intensive Care Unit”, “Diaries”, “Post Intensive Care Syndrome (PICS)”

Introduction

Problem Description

Post-Intensive Care Syndrome (PICS) is a debilitating disorder exhibited in patients after experiencing a critical illness combined with an intensive care unit (ICU) admission. Patients who have been mechanically ventilated and receiving sedatives are at highest risk (Lee et al., 2020). Other risk factors include female gender, development of delirium while in the ICU, increased ICU length of stay, and a sepsis diagnosis (Barreto et al., 2019). There are three main areas of impact distinctive to PICS that must be considered: cognitive, physical, and mental health. Patients may suffer from severe weakness, impaired ability to recall facts and processes that were once routine, and trouble with simple tasks and judgment (Davidson et al., 2015). Others may experience night terrors, trouble sleeping, complicated grief, anxiety, or depression (Rawal et al., 2017). The ability to provide self-care may be affected, and patients may not be able to return to work for varied reasons. Only 50 percent of patients are able to resume working within the first year of recovery (Davidson et al., 2015). More than five million people across the U.S. experience critical illness per year requiring intensive care services (Barrett et al., 2011). Due to an increase in ICU survival rates across the country, PICS needs to be a priority now more than ever (Davidson et al., 2015).

There is little that has been shown to prevent the mental health effects of PICS in at risk patients. ICU diaries are the most widely accepted intervention. In some studies, the use of ICU diaries for critically ill patients has been shown to decrease anxiety, depression, Post-Traumatic Stress Disorder (PTSD), and to improve quality of life and sleep (Jones et al., 2010; Knowles & Terrier, 2009; Kredenster et al., 2018; Nielsen et al., 2020; Wang et al., 2020). Despite the evidence of benefits, ICU diaries have not been widely implemented due to many factors. These

include lack of resources, time, funding, nurse buy-in, and project coordinators to ensure accountability and follow-up.

An ICU diary program focuses on improvement of the mental health aspect of PICS. Within a local hospital system where this quality improvement project was implemented, there was no current ICU diary program in place despite evidence supporting this intervention's value. A gap has been identified in the provision of quality care which may be bridged by using ICU diaries, leading to more favorable patient outcomes. These may include a decrease in the severity of mental health PICS symptoms, readmissions, and an improved overall mortality rate. This quality improvement project aims to close that gap through successful implementation of an ICU diary program.

Available Knowledge

The Purpose

The purpose of this review is to appraise materials which investigate the use of ICU diaries, the design of intervention studies with the best outcomes, and the relationship between ICU diary use and the prevention of mental health related PICS symptoms. The following section will discuss best evidence found via a detailed literature search. This includes the background of PICS, ICU diary program design, and implications of ICU diary interventions. The specific population includes adult patients (over 18 years of age) following an ICU admission. The intervention is the use of an ICU diary compared with no ICU diary use. The outcomes measured are mental health symptoms related to PICS (including but not limited to depression, anxiety, and PTSD). This evidence will then be used to support the development and implementation of an ICU diary pilot program.

Literature Search

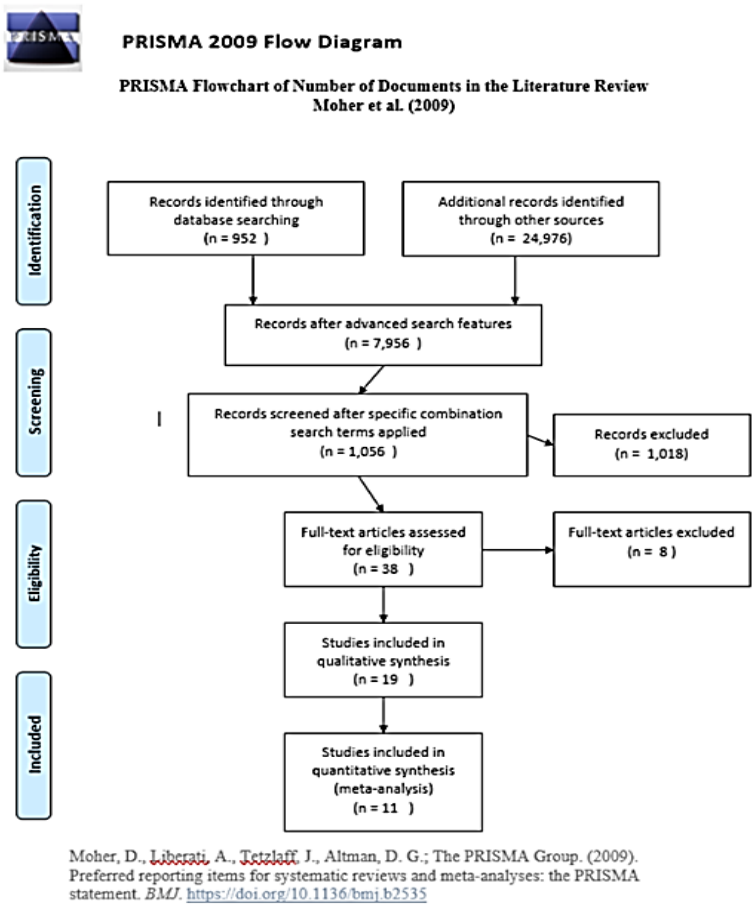
Databases used for this search included: PubMed and The Cumulative Index for Nursing and Allied Health Literature (CINAHL) primarily, as well as Google Scholar, and LionSearch. Website searches on The American Association of Critical-Care Nurses (AACN), and the Society of Critical Care Medicine (SCCM) professional resource sites were also utilized for location of journal articles and best practice recommendations. Key words with best results were "Intensive Care" and "Diaries". Other terms utilized to narrow search criteria were: "Post Intensive Care Syndrome (PICS)", "mental health", "mental illness", "PICS Symptoms", "ICU", "ICU Diaries", "Intensive Care Unit", "Psychological", "Psychiatric", "Anxiety", and "Depression".

Using a combination of the above search terms, initially 25,928 sources were found. After utilizing advanced search features including English language only, articles no more than five years old, and excluding book chapters, there were 7,956. Articles were then excluded for duplication and significance to the topic by addition of other phrase combinations listed above to conclude with 30 articles with direct relevance to the topic. See Figure 1 for the search process illustration. After the initial search, additional resources were reviewed and added to the reference list as new, updated evidence is continually released.

Literature to support the above-mentioned topics includes a mixture of quantitative and qualitative research, both current and foundational. While specific references are over five years old, they are primary sources related to ICU diaries and PICS, forming the basis for future investigations in this topic. Qualitative research also supports the topic of interest with additional insight into the patient perspective. Each is relevant, current, and supports the needs directly.

Figure 1

Literature Search Prisma Flow Diagram



Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G.; The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ*. https://doi.org/10.1136/bmj.b2535

Note: Adapted from The PRISMA Group (2009).

General ICU Diary Use

Some evidence suggests promising results from an ICU diary intervention program on mental health outcomes post ICU admission. ICU diaries are widely used in European countries (Blair, 2017). ICU diary use started in Denmark in 1985 when nurses began a program of open nursing notes to encourage patient and family involvement in care (Nydahl et al., 2020). This process evolved into a shared collection of documents recounted by family and nurses to construct a patient's illness narrative. The use of an ICU diary encourages families and clinicians to document via written entries about the patient's visit, progress, and details of their time in the ICU, supplemented with photographic evidence of the patient and the ICU in some cases. The time from ICU admission to ICU discharge is often "lost" to many patients, and the diary provides a document for survivors to review to aid in acceptance of that lost time. Entries should be made each day by family and at least one member of the care team, typically nurses (Rawal et al., 2017).

ICU diaries are included in practice recommendations from the Society of Critical Care Medicine (SCCM). They are found within the "F" component of the ABCDEF ICU Liberation Bundle. The "F" within this bundle of best practice recommendations for care and prevention of PICS in the critically ill stands for "family". ICU diaries, according to a study done by Jones et al., (2010) can decrease the incidence of Post-Traumatic Stress Disorder (PTSD) and associated factors by greater than 60 percent (Ely, 2017). SCCM actively endorses the use of ICU diaries as a care standard for the critically ill (Ely, 2017).

ICU Diary Intervention Design

The importance of integrating best practice for intervention design cannot be ignored, and upon reviewing the literature a few successful methods became apparent. The most commonly

used outcome measurement tools were: the Hospital Anxiety and Depression Scale (HADS), the Post Traumatic Stress Syndrome (PTSS) -14 assessment, and the Impact of Events Scale-Revised questionnaire (IESR) (Jones et al., 2010; Knowles & Terrier, 2009; Kredenster et al., 2018; Nielsen et al., 2020; Wang et al., 2020). Each are considered highly reliable and valid tools (Rosendahl et al., 2019). All randomized controlled trials evaluated patients at a minimum of before discharge (baseline) and three months post discharge for mental health symptoms following the diary intervention (Jones et al., 2010; Knowles & Terrier, 2009; Kredenster, et al., 2018; Nielsen et al., 2020; Wang et al., 2020). Delivery and education methods of diary interventions varied in all studies. Jones et al., (2010) completed assessments in person while Kredenster et al., (2018) and Nielsen et al., (2020) used paper questionnaires.

All qualitative studies utilized semi-structured interviews to collect their data, but methods all varied. Some used phone collection (Levine et al., 2018; O'Gara & Pattison, 2016; Strandberg et al., 2018), while others used a mixture of in person, phone, and mailings (Egerod et al., 2011; Pattison et al., 2019). Three studies utilized Grounded Theory methodology to analyze and organize qualitative data (Egerod et al., 2011; O'Gara & Pattison 2016; Pattison et al., 2019). Strandberg et al. (2018) recommends specific guidelines to accompany the diary intervention and its use by patients. Sayde and colleagues' research (2020) supports the idea that educational resources should be included in a diary for reference. In Levine et al. (2018), patients expressed a desire for more entries by caregivers. Frequent debrief sessions with continued diary review for months after hospital discharge are the recommended intervention design according to best practice recommendations published by AACN (Rogan et al., 2020). This method directly addresses the need for continued exposure to the details of an ICU stay to improve acceptance and coping.

The Patient's Perspective

In selected qualitative studies (Egerod et al., 2011; Levine et al., 2018; O'Gara & Pattison, 2016; Pattison et al., 2019; Strandberg et al., 2018) an overarching theme of support was extracted from patient perspective reviews. Throughout all five studies, patients reported that diaries helped them fill the gaps of time with memories they were missing due to their critical illness. In one study, patients reported a new ability to correlate memories with events and a better understanding of what their family members went through (Levine et al., 2018). Ninety-five percent of patients in another study reported finding ICU diaries helpful in their recovery process and recommended their use (Pattison et al., 2019). Findings were echoed in yet another study, stating that both patient and nurse satisfaction improved anecdotally with the use of ICU diaries, most likely due to increased communication, humanization, and explanation of the care plan (Blair, 2017).

The Nurse's Perspective

In one study completed in Norway after adoption of national guidelines for ICU diary use, a majority of ICU nurses reported that implementing national ICU diary clinical practice recommendations had increased their awareness and knowledge of patient and family needs, as well as the long-term effects of critical illness (Holme et al., 2020). In a study of 27 Swedish nurses, an overarching theme was identified. The nurses reported feelings of "doing good" due to positive feedback from patients and their families despite challenges that ICU diaries presented in their practice (Johansson et al., 2019). Overall, nurses support the use of ICU diaries even though there may be an increase in workload and responsibility with diary use.

Family Perspectives

While the primary focus of ICU diary use is on patient outcomes, many studies also suggest that diaries may have a positive impact on patients' families as well. In a study by Mickelson et al. (2021), diaries were shown to be useful for families in stress reduction, information processing and management, and as a communication tool. Another qualitative study shows positive effects on family members, with diaries serving as a holistic tool to humanize the experience of critical illness for them and improve access and understanding of medical information (Garrouste-Orgeas et al., 2014). Families also reported ICU diaries as a way to maintain a connection with their sick loved one as well as improve their understanding of medical professionals as human beings. In some families, this led to an increased confidence in the healthcare system and appreciation for the medical team (Tripathy et al., 2020). SCCM has also integrated recommendations for use of ICU diaries into the ICU Liberation bundle, suggesting that family involvement, visitation, and communication during an ICU admission should be the standard of care in all intensive care environments (Ely, 2017).

Organizational Perspectives

While there is a building body of evidence to suggest patients, families, and nurses may benefit from ICU diary program implementation, hospital administrators may also see an improvement in benchmarks important to the healthcare system. Unfortunately, there are limited studies which take into account patient experience scores, but in one example satisfaction scores increased significantly while family anxiety decreased in the study's intervention group utilizing ICU diaries (Yoo & Shim, 2021). Another source echoes the impacts ICU diaries may have on patient satisfaction scores (Eccleston et al., 2017). Patient safety may also be enhanced.

Increasing family engagement prevents harm in the ICU patient population (Thornton et al., 2017).This is an area that needs more research.

Additionally, readmissions and post ICU mortality rates may be positively impacted by an ICU diary program. With approximate rates of readmissions approaching 15-20 percent in some discharged ICU groups, and a portion of those at least partially attributable to PICS-related anxiety, depression or PTSD, ICU diary implementation may be a viable intervention. Depression is also associated with a higher risk of death within two years in this population (Hatch et al., 2018).

Effects on Mental Health Symptoms

While many studies do not suggest that ICU diary use prevents PTSD, most do show a reduction in anxiety, depression, and improvement of quality of life (Barreto et al., 2019). In two metanalyses, (Barreto et al., 2019; McIlroy et al., 2019) ICU diary use was correlated with decreased depression measures and improved quality of life scores after illness, while improvement of anxiety was limited to McIlroy's (2019) review. The quality-of-life measure is significant due to its link between reports of improved quality of life and patient's perceptions of mental health symptoms (Barreto et al., 2019).

Five randomized controlled trials were identified as directly pertinent to mental health outcomes related to ICU diary use (Jones et al., 2010; Knowles & Terrier, 2009; Kredenster et al., 2018; Nielsen et al., 2020; Wang et al., 2020). In both, Jones et al. (2010) and Nielsen et al. (2020), rates of PTSD decreased at three months post ICU discharge. Kredenster et al. (2018) found that after use of ICU diaries, Hospital Anxiety and Depression scores decreased significantly at the 90-day post ICU discharge interval. Knowles and Tarrier (2009) demonstrated a decrease in both anxiety and depression scores. Wang et al. (2020) showed

decreased hyperarousal measures, improved factual memory recall, and better sleep scores, all qualities of PTSD. All of these quantitative measurements reflect a direct improvement in groups of ICU patients using ICU diaries as a recovery tool.

Theoretical Underpinning for ICU Diaries

The Humanistic approach, developed by Carl Rodgers, regards the way human beings experience the world around them. Humanism in healthcare focuses on the human being as central, and within critical illness, the patient is particularly vulnerable to unintentional dehumanization. Humanizing ICU care is currently being researched in many forums, and ICU diaries may be one solution, according to a systematic review by Galvin et al., (2018). ICU diary review allows patients to become more grounded in reality by increasing awareness and understanding. The use of ICU diaries to prevent the mental health symptoms of PICS is aimed to address and resolve the cognitive dissonance that is experienced by patients after the fear and lack of control associated with an ICU stay. Cognitive dissonance by definition is the state of having inconsistent thoughts, beliefs, or attitudes, especially as related to behavioral decisions and attitude change. Patients may not be the best version of themselves while hospitalized, and many struggle as they reflect on this timeframe. These concepts are directly addressed through SCCM's ICU Liberation Bundle, which refers to freeing patients in the ICU from anything that threatens their sense of self-worth, identity, and human dignity (Ely, 2017).

Utilization of meaning making, the process of how people construe, understand, or make sense of life events and the self, combats the disorienting threat to each patient's sense of self that is experienced from an ICU stay. Revisiting and retelling the story of their ICU stay with an ICU diary may help patients accept the reality of their circumstances. Continuing to access memories that patients are able to recall while integrating new information from their diary will

bridge the gap of time that often results in negative mental health symptoms. Using all of these concepts, patients can incorporate their experiences and missed memories from the ICU with their own identities to process the trauma associated with critical illness (Galvin et al., 2018).

ICU Diary Refutation

In one of the few large randomized controlled trials completed on this topic, however, no positive effects related to the use of ICU diaries were demonstrated. This study focused primarily on the presence of PTSD instead of anxiety and depression (Garrouste-Orgeas et al., 2019). In an eight study metanalysis, ICU diaries were found to decrease anxiety and depression and improve health-related quality of life, but not PTSD among ICU survivors (McIlroy, 2019). Another randomized control trial of 60 patients found that there was no difference in patient anxiety and depression between ICU diary use versus psychological education alone (Sayde et al., 2020). In a systematic review by Ullman et al. (2015), one study found significant decreases in measures of PTSD, anxiety, and depression in family members of patients who had ICU diaries, with no difference found in patients themselves. In each of these examples, differences in measures and scales were noted.

Summary, Interpretation and Application

Within the evidence, there is overwhelming support for the use of ICU diaries in critically ill patients. This low-risk intervention has the potential for a high yield of benefits for patients, families, and ICU nurses. The use of ICU diaries has been integrated into SCCM's ICU Liberation bundle of best practice recommendations, and while implementation designs may vary, the use of ICU diaries shows positive impacts on patient outcomes. Patients report improved levels of understanding when they utilize the ICU diary tool to fill their memory gap. Patients' families state that the use of an ICU diary for their loved one gives them a purpose and

a focus they would not have had otherwise. Nursing staff state an overall feeling of "doing good" when participating in the use of ICU diaries for patient recovery. Anxiety and depression decrease when patients are given ICU diaries as tools to enhance coping after their critical illness. Finally, organizations have the possibility to reap financial and quality related benefits by supporting an ICU diary program.

Acknowledging the fact that not all studies agree that the use of ICU diaries is the answer to the mental health symptoms of PICS is also important. PTSD rates may not be affected by using ICU diaries, but may also be dependent upon how these measures were assessed and defined. Each study discussed the many variables and study design differences that could account for the refutation of ICU diary use which must be kept in mind when moving forward with further research. Differences in patient populations, baseline mental health issues, and many other demographic and socioeconomic considerations may also alter results of ICU diary studies.

A few things stand out that need to be considered after reviewing the evidence. Lessons learned include the need for patient and family education that must be carefully integrated into an ICU diary program implementation, the importance of nurse buy-in and training, and the importance of family participation. Without these critical components, the ICU diary program within this project will not be effective. A consistent and meticulous training program is required not only for staff, but for families. A thorough understanding of the rationale for ICU diary use will help to ensure success.

In conclusion, a common theme reveals improvements in key aspects of the mental health facet of PICS following ICU diary use and support of diary utilization from the patient's perspective. This directly supports the implementation of ICU diaries in this project through demonstration of decreased incidence of either anxiety, depression, or PTSD symptoms and

patient reported improvements in the same symptoms. As best practice to bridge this quality gap, the conclusions indicate the use of an ICU diary is a feasible option to improve critically ill patient outcomes long after they leave the ICU.

Rationale

Framework Identification

In the literature review, many studies did not identify a theoretical framework. Of those that did, a small number used the Iowa Model of Evidence-Based Practice (EBP) in successful quality improvement projects (Locke et al., 2016). When researching frameworks, a concise and simple implementation plan was of the highest priority. Within the Iowa Model, a flowchart illustration is used to work through the process of eliciting change based on evidence after a trigger has been identified. Each step of the Iowa Model is clearly defined and able to be applied to the ICU diary project.

The Iowa Model guides clinical decision-making and EBP process from both the clinician and systems perspectives (Iowa Model Collaborative, 2017). The Iowa Model is a framework that streamlines the process for nurses to initiate change identified through new evidence. This model serves as a guide for nurses to use research findings to improve patient care. The Iowa Model was developed as a step-by-step pathway to identify issues, research solutions, and implement change. While the Iowa Model is not a nursing theory, it is a framework with a narrow scope utilized to guide a change in nursing practice (Nilsen, 2015).

Framework Discussion and Application for Intervention Development

Key factors of the Iowa Model framework were identified to integrate within the goals and objectives of the ICU diary intervention program. This model fits well with the project plan due to its practical use of common EBP implementation steps. The steps in the Iowa Model

include identifying a trigger, identifying an organizational priority, developing a team, reviewing, critiquing and synthesizing literature, piloting a practice change, and evaluating the change (Iowa Model Collaborative, 2017). Figure 2 contains the steps in the Iowa Model, which can be used to enhance and guide the implementation of this project. Making choices based on the flow diagram guided the Project Coordinator throughout the project.

Step 1: Identify a Trigger

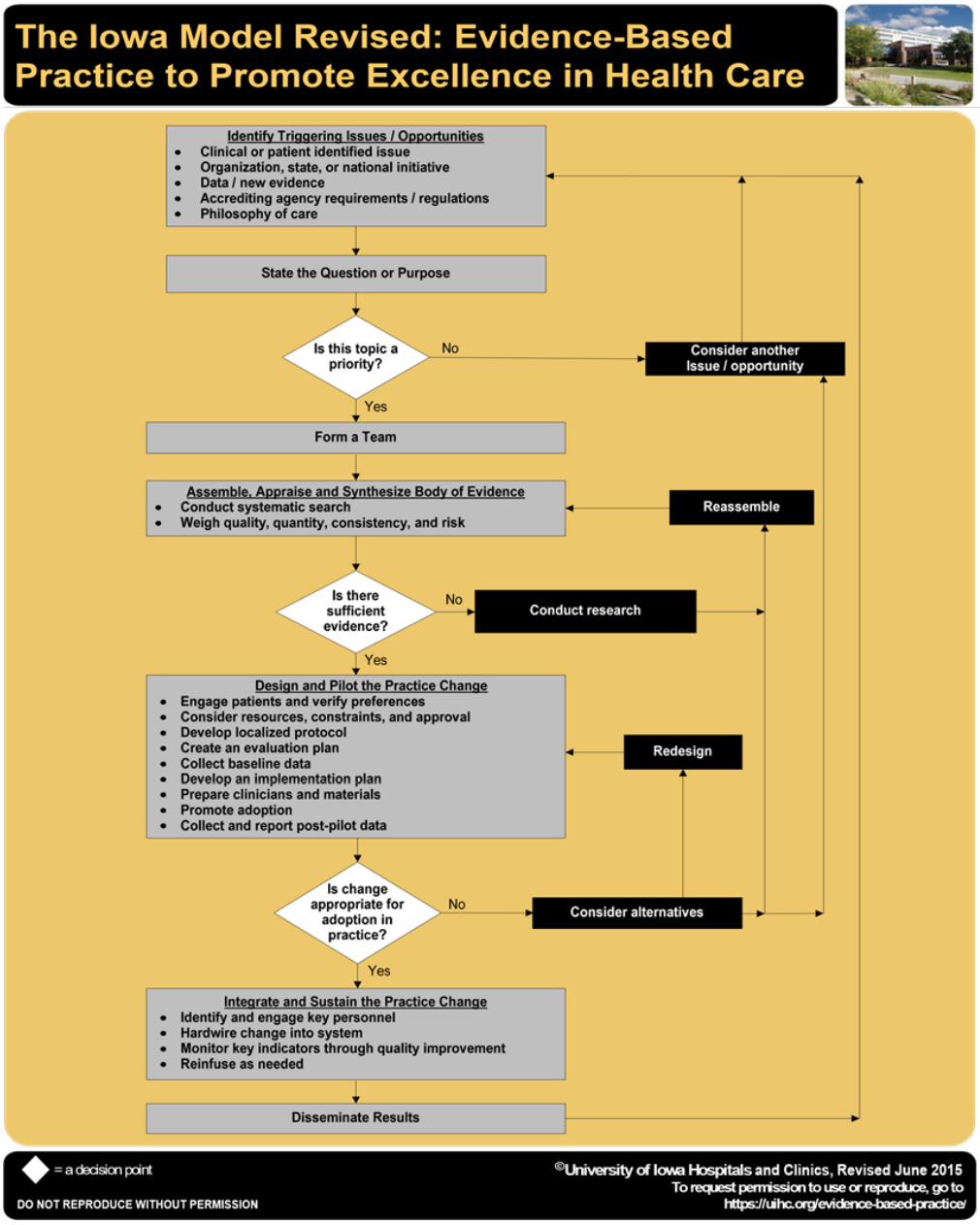
The identification of a new evidence-based trigger (problem or knowledge based) is the first step in the Iowa Model. The National Institute of Health's recommendations for interventions to support patients who are at high risk for PICS by utilizing ICU diaries along with an increase in research findings in this topic area strongly supports a practice change, terming PICS "the crisis after the crisis" (Holme et al., 2020).

Step 2: Identify Organizational Priority

Step two describes identifying the need as an organizational (or unit, practice or departmental) priority. Because many resources go into implementing practice changes, it is imperative that the Project Coordinator and stakeholders agree that the project is worthwhile and beneficial to the organization. The need for an ICU diary program is indicated due to the increasing complexity of critical illness and lengthening ICU stays in all areas of critical care medicine. This has been especially impacted by the ongoing COVID-19 pandemic. The large population of ICU patients in this project's health system is enough to explain the organizational interest. The potential for increased patient, family, and nurse satisfaction and improved patient outcomes indicates a high organizational worth. The topic of PICS prevention and treatment is one that requires intervention in all areas that offer critical care (Blair et al., 2017).

Figure 2

The Iowa Model of Evidence Based Practice Flowchart



(Iowa Model Collaborative, 2017).

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Step 3: Develop a Team

The development and use of a team is step three of the Iowa Model. The model suggests forming a leadership team to drive implementation forward. Use of a team of experienced ICU nurses, the ICU educator, the nurse manager, and the site nursing director navigated and supported the efforts of this project. The identification of appropriate stakeholders is integral to success. Many studies, including one on the nursing perspective of ICU diary use, state that a team approach is best when initiating this project that requires an integral level of nursing buy-in (Holme et al., 2020).

Step 4 and 5: Review, Critique, and Synthesize Literature

Steps four and five of the Iowa Model include gathering literature, analysis and synthesis of that literature, and formation of a plan using a well-constructed PICOT question. The evaluation of literature and evidence allow the team to move forward with the plan if sufficient evidence is identified. These steps have been described at length within the "Available Knowledge" section of this paper.

Through synthesis of evidence and findings, the support for an ICU diary program was secured. An improvement of many measures including patient, family, and nurse satisfaction as well as a decrease in patient anxiety and depression were of the greatest support. Organizational gains such as improved quality outcomes were also important to note from the literature review.

Step 6: Pilot the Practice Change

Step six suggests the use of a pilot program for trial implementation of a selected intervention. The ICU diary program was implemented within a pilot unit of University of Pittsburgh Medical Center's (UPMC) West Shore location to start with a smaller staff and patient population first. A pilot program was utilized in many examples of the ICU diary initiation

process for better control of variables and staff education (Jensen et al., 2016). Because nurse buy-in and participation was critical to the success and longevity of this project, using a smaller unit with less room for individual barriers was attractive.

Step 7: Evaluate

Step seven includes evaluation of the project. This is a necessary step to analyze data and review changes that need to be made, along with appraisal of the ability to apply this program to the rest of the seven-hospital system and ensure sustainability. Evaluation occurred following implementation within the pilot unit. Evaluation is a critical step which may lead to further fine tuning and research, and/or adoption of the intervention into practice. Integration and sustainability was feasible only after results have been appropriately appraised.

To ensure the ICU diary program is sustainable, sharing the results frequently with staff through the evaluation process was crucial (Lawson et al., 2018). To do this, there were updates posted throughout the unit, in huddle, and at the unit steering committee. Results were also shared within the organization's quality, practice, and research councils with efforts to move forward with this program as a system wide initiative. By working closely with essential stakeholders like the director of the ICU and frontline nursing leaders on the unit, the project had the representation it needed to move forward.

Specific Aims

The purpose of this quality improvement project was to implement an ICU diary program within a 24-bed mixed population ICU. The specific aims for this project were:

1. Implementation of an ICU diary pilot program in an intensive care unit.
2. Evaluation of patient and family perspectives of the ICU diary program.
3. Evaluation of the effectiveness of program implementation with staff feedback.

Methods

ICU diaries have been shown to be effective in increasing patient, family, and nurse satisfaction while decreasing patient and family anxiety and depression. Therefore, implementation of an ICU diary program took place in this project due to supporting evidence of this intervention's use. This section of the paper describes the specific methods that have been used to develop and carry out the project. The methods were developed based on best practices and recommendations made in the studies on the use of ICU diaries. Outcomes and their measurements are discussed. Ethical considerations are also be addressed.

Context

The ICU diary pilot program was implemented in a small Northeastern suburban hospital located in the United States. This hospital is one of seven regional sites that serves Central Pennsylvania. The seven regional hospitals are partnered with an even larger academic and teaching hospital network in Western Pennsylvania. The selected community hospital was approximately 150 beds located in Mechanicsburg, Pennsylvania. A 24-bed medical surgical intensive care unit implemented the use of an ICU diary on all patients who met the inclusion criteria as a routine component of care. The inclusion criteria were as follows:

- Greater than 24-hour ICU admission anticipated
- Mechanical ventilation
- Greater than 18 years of age
- English speaking patient and family

Exclusion criteria were as follows:

- Presence of suicidal ideation
- Current admitting diagnosis of mental health disorder

- Suspect of criminal activity
- Suspected abuse
- Other special circumstances evaluated on a case-by-case basis

Inclusion and exclusion criteria were based on best practice recommendations from AACN which directly correlate with high-risk populations (Rogan et al., 2020). The anticipated sample size was four to five patients per week over a two-month period based on typical ventilated patient presence and case mix index (E. Leber Burnham, personal communication, February 12, 2021), with a goal of between 30 to 40 patients at the completion of the project. See Appendix B for a letter of support from the ICU manager / director of the project site.

Intervention

The intervention in this project was the ICU diary tool used for nurse and family entries. The diary itself was a blank journal with sixty available pages for entries. The ICU diary was supplemented with educational materials for patients and families. These materials included a Project and Coordinator Fact Sheet and a link to an audio-visual education presentation from the Project Coordinator all based on educational recommendations from SCCM. These materials were reviewed by the nurse manager, clinical nurse specialist, and unit educator before project initiation. Copies of the patient and family education materials can be found in Appendix C.

The team for the ICU diary project was comprised of the Project Coordinator, the unit's nurse manager/director (currently serving a dual role), three clinicians, the unit educator, the critical care clinical nurse specialist, and three ICU nurse Project Champions. Project Champions can lead a project forward when the Project Coordinator is unable to be present and can troubleshoot in real time to guide staff to success (Johnson et al., 2019). With the need for 24 hour a day coverage due to unpredictable admission times and uncontrollable family and patient

variables, a Project Coordinator cannot possibly be available in every situation. Each of the three Project Champions worked different shifts, often as the nurse in charge of the unit, and served as a resource for staff during implementation and contact points for the Project Coordinator's nightly tracking calls. All three Project Champions volunteered for the role, ensuring maximal buy-in and engagement related to self-motivation and interest. The UPMC Magnet Coordinator also served as a team member to audit diary entries and be a resource for staff during her rounds. She was a volunteer team member after hearing about the project during a steering meeting and emailing the Project Coordinator with interest. The ICU team listed above met weekly during the education and implementation phases of this project to encourage clear and concise communication and troubleshooting. The Project Coordinator also attended unit steering committees in both July and August to get real-time feedback from staff nurse leaders on the project while it was still being implemented.

The budget for the pilot program was small due to the scale and implementation design. While initial costs for startup were around 300 dollars, if this project were to be scaled to encompass the entire region, which includes seven additional ICUs, startup costs would be greater. Costs for the pilot program included physical supplies and Project Coordinator time for training and material development.

The following plan delineates the step-by-step implementation design that was utilized for this project, keeping the Iowa Model as the process framework. To start, the project preparation and education steps are explained.

1. The team was identified by the nursing unit leadership.
2. A team meeting was held to introduce the project details to all team members including: the ICU nurse manager, educator, and two clinicians (the third was out on maternity leave

during the planning phase), ICU staff committee leaders for quality, scheduling, practice, and research, three nurse Project Champions identified by the nurse manager, the Magnet Coordinator, and the Project Coordinator. Other staff charge nurses were also in attendance as they were able.

3. After this meeting, a pre-assessment nursing staff survey was emailed to all ICU nursing staff within the unit via Qualtrics secure surveying software with a 90 percent response rate goal. See Appendix D for a copy of this survey. The survey results allowed the Project Coordinator to do four things:
    a. Gauge nursing familiarity and knowledge pertaining to ICU diaries.
    b. Get a better understanding of the unit culture and attitude towards ICU diary implementation and learning preferences.
    c. Predict and avoid any barriers to successful implementation.
    d. Match education to nursing staff's needs
4. Supplies for training and diary implementation were purchased. Supplies included:
    a. Diaries
    b. Kodak Print-O-Matic camera and printer paper
    c. Custom door magnets
    d. Educational materials and staff reference forms organized into folders or sleeves
    e. Markers and pens
    f. Snacks and prizes for training in-services
5. A 25 minute online audio-visual education for nursing staff was developed using VoiceThread software. This discussed PICS, its importance to the ICU nurse, and the ICU diary intervention plan. Staff roles and responsibilities were clearly outlined. This

education was reviewed by the nurse manager, clinical nurse specialist, and the nurse educator prior to being dispersed to staff. This voluntary education was utilized as a staff introduction to the project topic, and because review of these materials was unpaid on staff's personal time, it was not mandatory but highly encouraged. A "key phrase" was hidden in this education, and if ICU nurses could report this phrase during in-person training they were able to pick a prize from the prize basket as incentive. Prizes included gift cards, self-care items, coffee, chocolate, candy, electronic accessories, and a host of other items that effectively motivated staff to complete the training. Copies of all materials for staff education are found in Appendix E.

6. Voice Thread education was emailed to all nursing staff for initiation of training four weeks prior to project go-live.
7. The Project Coordinator attended a provider meeting entitled "Special Care Committee" to present the plan and outline to the ICU provider leadership with the expectation that this information is shared with their group. While it is not integral that providers are involved in the project at this point, ensuring they are aware of the initiation of ICU diaries for their patients provided support and an opportunity for their input.
8. Ten-minute roaming in-services were delivered to the nursing staff by the Project Coordinator three weeks prior to program initiation. Multiple in-services per shift (day, evening, and night) were given across the span of a two-week period. At this time the location of all materials within the unit were reviewed with staff as well as key points for the project, resource materials, and staff responsibilities. Staff also practiced initiation of an ICU diary for a simulated patient. The goal was for 80 percent of full-time staff to be trained in-person via roaming in-services.

9. A meeting with Project Champions occurred during the week before project go-live to clarify responsibilities and goals of the project champion roles and answer any questions. A follow-up email was also sent to the Project Champions to summarize the meeting points and ensure clear communication and expectations were set and understood. The goals for the champions are as follows:
    a. Encourage staff to initiate and participate in the ICU diary program for eligible patients
    b. Assist staff in this process as needed
    c. Review unit census to identify new patients that require initiation
    d. Communicate with the Project Coordinator frequently
    e. Be an ICU diary cheerleader
    f. Write down barriers and strengths of the program to share with the Project Coordinator at the end of the project
10. Project Champions, the Magnet Coordinator, and the unit educator served as support to reinforce and remind staff about the project through short one minute huddle updates to each shift in the week prior to the project go-live date. Pre-shift huddle is an ideal time to remind staff of this upcoming initiative. Pre-shift huddle is a five-minute meeting at the beginning of every shift in which the prior shift's charge nurse updates all oncoming staff to any unit initiatives, announcements, and special patient concerns. Reminder fliers were also placed throughout the unit the week before project go-live in over ten locations. These can be found within Appendix E.
11. Educational design and training was completed from May through June, taking a total of two months to prepare materials and nurses for the ICU diary program. All materials

were reviewed additionally by the UPMC Pinnacle marketing and patient experience team prior to distribution. They verified inclusivity for all patient and family considerations as well as literacy levels and image appropriateness. A final check for missing pieces was performed through a networking call with a lead intensivist at the UPMC Mercy site in Pittsburgh, PA who runs an ICU diary program in the trauma ICU there. He shared his most significant hardships, barriers, and basic program framework as the Project Coordinator compared designs. The provider stated that he hoped to "steal some of the innovative content" from this project's excellent design after its completion and "collaborate to move the program forward within the system".

12. All resources, supplies and necessary equipment were then brought to the unit and stored within designated clearly labeled locations. Diaries, door magnets, family education materials, instant camera and film were stored at the front nurse's station in a cabinet with a label that states "ICU diary supplies". All needed materials for each initiation were organized within folders to streamline the process for the bedside nurse. Folders were pre-assembled to increase nursing compliance and integration into workflow.
13. A final voice-over process tutorial video was emailed out to all staff on the day of go-live and all resources were also added into an "ICU Diary Project" folder on the unit's protected internal online shared storage drive. The tutorial was nine minutes in length and encompassed all key training points and processes for final nursing reference. The tutorial video can be found in Appendix E.
14. Nursing staff were encouraged to contact the Project Coordinator with any questions or concerns during project implementation. Contact information was readily available.

15. The start and end dates were set. This pilot program began enrolling patients July 1st, 2021 and ran through September 1st, 2021. After September 1st no new patients were enrolled into the project but those who had been initiated already were continued until complete.
16. On project go-live, the Project Coordinator spent time on the unit doing one-on-one coaching with staff to initiate diaries on three patients. These diaries were initiated together, allowing staff to begin to understand the process and practice initiation with support.
17. Upon initiation of the project, the Project Coordinator began keeping a personal project journal to document details of implementation. All meetings, calls, tracking, issues, and troubleshooting were noted here for further analysis and reflection in the future.

The process for in unit ICU diary program implementation was as follows:

1. The patient was identified as an ICU diary candidate using inclusion criteria by the primary admitting bedside nurse as soon as feasible for the particular patient situation.
2. The nurse then discussed this project with the patient's primary representative (likely a family member), either in person or on the phone. The nurse provided a brief project overview with the educational materials found in Appendix C. It is important to note that ICU diary initiation did require delay if this conversation could not happen immediately.
3. The primary nurse initiated the ICU diary by:
    A. Obtaining one prepackaged folder from the designated supply cabinet.
    B. Labeling the ICU diary with the patient's initials.
    C. Hanging the diary and a pen inside the patient's room on their window frame with a magnetic clip to ensure privacy and consistency. Using a standard storage

location mitigated unintended exposure of patient information in the ICU diary (Rogan et al., 2020).

i. If the patient was in isolation the diary was kept in a passcode protected isolation cart outside of the patient's room.

D. Placing a diary magnet on the patient's outer door frame beside their room number.

E. Adding "ICU diary entries" to the patient's in-room white board goals list.

F. Adding the patient room number to the huddle board under the heading "ICU diaries", indicating the patient has a diary that needs to be checked during rounding.

4. Next, delivery of family education with education materials and a separate audio-visual VoiceThread link from the Project Coordinator for family review was completed. Family could review this link's content on their smart phone or personal computer. If they did not have either, a computer in the unit was provided for use during their visiting time. This process ensured consistency in the education families received. The bedside nurse delivered succinct key points of the program highlighted on the Coordinator and Project Fact Sheet and referred families to the VoiceThread link for further explanation if desired. All patient and family education materials are located in Appendix C and were given to families within the prepackaged folder.

5. The instructions given to nurses for ICU diary use were to make the first diary entry within 24 hours of initiation. First entries included why the patient was admitted to ICU and the main plan of care in easy-to-understand language. Diary notes do not mimic contents of the electronic medical record (EMR) and sensitive medical information was

never included within them. Entries were made one per page on the front side only. Appendix E contains staff education documents with detailed entry guidelines. These materials were provided to all staff during in-person education and were also placed within nurse charting stations in plastic sleeves as quick reference guides.

If family was not physically present to make entries due to visitation restrictions or other variables, the bedside nurse was instructed to ask the family for messages to enter into the ICU diary during a routine status update via phone. There were no active visiting restrictions in relation to the COVID-19 pandemic that would affect project implementation. Even COVID-19 positive patients were allowed to have visitation by one designated visitor for one hour per day. Family may not always wish to participate at this frequency, which is acceptable. They were encouraged by staff and the Project Coordinator to make regular entries as often as they wished.

6. Next, nurses suggested to families that photos make a valuable addition to ICU diaries (the unit had a Kodak instant camera available if families wanted to take photos and add them to the diary). The photos were taken within the patient's room only and illustrated the patient at various stages of their stay. Staff did not participate in taking photos due to ethical concerns and implications addressed later in this paper but were present for oversight to ensure no other sensitive matter was captured in the photos.
7. All initiation steps can be found on the process map and diary initiation checklist. See Appendix F for a copy of both.
8. Diary entries were completed every 24 hours with a minimum of two entries (one family member, one nurse). Typically, this required only five minutes per day for meaningful diary entries from the bedside nurse (Nydahl et al., 2020). This was then tracked daily by

the Project Coordinator's nightly phone calls with census review and charge nurse check-in. Charge nurses already had a daily rounding process on the pilot unit to check on each patient and their family, ensure quality measures were being met, and discuss any issues at that time. This was an ideal time to integrate diary check-ins with both staff and families. The ICU management team also integrated an ICU diary check into their patient rounds as able. A weekly email was sent to the entire unit to update on progress, lessons learned, and what to focus on for the upcoming week. The project coordinator shared motivating reports from patients in this email to staff collected via follow-up calls as available.

9. The Project Coordinator remotely tracked patients included in the ICU diary project daily and verified information nightly with charge nurse phone calls. The census list of patients was reviewed to ensure all appropriate patients had been identified and ICU diaries were initiated. If this had not occurred, the charge nurse followed through with a reminder to the bedside nurse. The data tracking sheet was updated accordingly to ensure no patient follow-up calls were missed. The Project Coordinator also physically rounded on patients, families, and nurses in the unit once weekly and reviewed diary entries for quality and quantity to track compliance. See Appendix G for a copy of the project tracking sheets. The UPMC Magnet Coordinator also rounded on ICU Diary patients and corresponding nurses to audit diary entries on a separate weekday or two. She also served as a resource to staff during rounds to answer questions and ensure consistency.
10. Upon ICU discharge, the bedside nurse completed the ICU diary teaching with the patient and family member(s). This included:

A. A brief entry review by the discharging bedside nurse took place before presenting the ICU diary to the patient and family. If an inappropriate entry was found, the Project Coordinator would be contacted immediately.
B. A re-explanation of what the diary is and a reminder of why it is important
    i. Nurses stated to patients and families at ICU discharge “ICU diaries may help patients and families process and accept their critical illness experience, but you should review the contents of the ICU diary multiple times within the month after hospital discharge.”
C. An explanation that the diary is now the patient/ family responsibility and they must keep the information safe and private.
D. Patients and families were instructed to begin reviewing the diary within one week post hospital discharge. The nurse highlighted a goal to finish the first diary review within the two-week period after discharge from the hospital. Patients could review their diary together with family or alone. Subsequent reviews of the diary were encouraged, along with discussion about the ICU stay between families and patients.
E. The bedside nurse reminded patients and families of two anticipated follow-up calls and verified contact information at the time of ICU discharge. The bedside nurse reminded patients and families if they change their mind about participation in follow-up calls, they can decline at any time or ignore calls when they are made.

F. At this time the ICU diary was sent with the patient's family member or the patient's belongings to ensure it was not left behind at hospital discharge. Family could continue making entries during the patient's recovery phase if they chose.

G. If patients or families declined the follow-up calls during ICU discharge, the patient's information was deleted. This decision was communicated with the Project Coordinator after the bedside nurse had discharged the patient from the ICU.

H. Discharge education points are included in the patient discharge guide in Appendix F.

I. If the patient died, the ICU diary was given to the primary family member or point of contact. If they did not want the ICU diary, it was shredded.

J. The Project Coordinator visited the patient on the transferred unit before hospital discharge to reinforce teaching and verify contact information as able.

11. The Project Coordinator made a follow-up reminder call seven days after hospital discharge. This call was made as a reminder to review the ICU diary within the month following hospital discharge. If this call went unanswered, a message was left.
12. The Project Coordinator also called the patient and family at 30 days after hospital discharge to complete the ICU diary evaluation follow-up call. If the initial follow-up call was unanswered, a message was left and one subsequent attempt at contact was made.
13. See the "Ethical Considerations" section of this document for complete details regarding the ethical components of this project.

Finally, the evaluation of the project included the following:

1. The Project Coordinator made two phone calls to the patient and family. A seven-day post-hospital discharge reminder call and a final 30-day post-hospital discharge call for the patient and family follow-up. See Appendix H for the patient and family follow-up question guide and call log sheet.
2. When the project was completed, a staff survey was emailed to all staff nurses to collect feedback on the implementation and program effectiveness via Qualtrics secure surveying software. See Appendix D for a copy of the staff survey.
3. The Project Coordinator held a debrief session with Project Champions to discuss key take-aways from their perspective.
4. The Project Coordinator analyzed notes taken during the project implementation for further insight.
5. Data was analyzed and shared within the ICU, during the unit steering committee meeting, during shift huddle updates, and at systemwide quality, practice, and research council shared governance meetings. These forums enable the Project Coordinator to disseminate the information and ensure project sustainability.

Study of the Intervention

Data collection and analysis took place at the conclusion of the project period. To assess patient and family perspectives on ICU diary use, the Project Coordinator made 30-day follow-up calls post hospital discharge. Nursing staff were surveyed for feedback to evaluate the effectiveness of the ICU diary program implementation immediately after the project was complete. The Project Coordinator debriefed Project Champions to gather further information from their perspective.

Measures

As discussed in the "Literature Review" section of this paper, effectiveness of ICU diaries in decreasing mental health symptoms of PICS has been well documented. Therefore, evaluation of this project focused on the implementation process of an ICU diary pilot program. The four methods for studying process outcomes of the intervention in this program were:

1. Patient and family follow-up phone calls 30 days after hospital discharge to assess their perspectives of ICU diary use.
2. Nursing staff surveys to evaluate the effectiveness of the ICU diary program implementation.
3. Debrief session with Project Champions.
4. Project Coordinator project note analysis.

Each of these evaluation methods offered different types of data for the Project Coordinator to evaluate the goals of this project thoroughly. Through triangulation of data collected by multiple measures, the conclusions were strengthened. All methods are equally important to gain a better understanding of the effectiveness and sustainability of the ICU diary program intervention.

Patient and Family Follow-up Calls. Patient and family follow-up calls were completed during the 30-day follow-up phone call generated by the Project Coordinator. During this call, the Project Coordinator asked a set of 14 predetermined questions (found in Appendix H) and typed in a log document for later analysis and review. Within the follow-up calls, feedback from patients and families on their ICU diary use, experience, and perspectives was gathered, along with recommendations for the future. This data was stored on a password protected computer that only the project coordinator had access to. All information was de-identified at the time it

was collected. Patient and family specific identifiers were switched over to corresponding numbers and all personal information was deleted when the calls were complete.

Nursing Staff Surveys. While surveys have many benefits such as ease of use, cost effectiveness, generalizability, reliability, and versatility, they do have some weaknesses. Most important are the potential issues with validity. During the surveying process of nursing staff, ensuring the questions accurately reflect those that the project aimed to answer ensured higher levels of validity (Siedlecki, 2020). Priorities of assessing impacts on workflow, implementation, and ease of use were the focus. See Appendix D for a copy of the nursing staff feedback survey. All surveys were anonymous, and data was stored on a password protected computer that only the project coordinator had access to.

Debrief Session. By debriefing the Project Champions, the Project Coordinator got an inside look into the implementation successes and challenges of the ICU diary project. The Project Coordinator led the debrief session in an unstructured manner. It was an open forum for Project Champions to share their thoughts, feelings, and potential solutions to the challenges they faced during implementation of the ICU diary project. All data was deidentified and stored on a password protected computer that only the project coordinator had access to.

Project Coordinator Note Analysis. The Project Coordinator used a personal project journal to document the project implementation. Reflection through review of entries in this journal may clarify or enhance understanding when combined with other gathered data. This was utilized to reflect upon implementation challenges, strengths, and overall refinements for a future continuation of this intervention systemwide.

By using implementation science-based concepts within the project evaluation, the Project Coordinator addressed the following factors: feasibility, fidelity, acceptability,

sustainability, cost, and client outcomes (Proctor et al., 2009). Feasibility was assessed by the nurse survey and debriefing of Project Champions. Fidelity was assessed by tracking the number of ICU diary entries, roles of those entering, quality of entries. Acceptability was measured by the nurse survey results, Project Champion debrief, and patient and family follow-up calls. Sustainability was addressed by the nurse survey results, and the presentation and dissemination of the project results to the unit and system leadership. The cost of this project to the unit and the projected cost to the system if this program is continued was also be assessed and discussed with leadership. Finally, patient outcomes were measured through patient and family follow-up calls (Proctor et al., 2009).

Analysis

The specific aims of this project were as follows and were addressed by the analysis listed under each item.

1. Implementation of an ICU diary pilot program in an intensive care unit.

Analysis of nursing staff surveys and the Project Champion debrief session was done utilizing descriptive statistics and note review to identify common strengths and weaknesses of the program's implementation process. Compliance audits were completed and analyzed using descriptive statistics to track use of diaries in real-time. The Project Coordinator's personal project journal was also reviewed thoroughly to identify coexisting areas of challenge and potential solutions for future implementation improvement.

2. Evaluation of patient and family perspectives of the ICU diary program.

The Project Coordinator reviewed 30-day follow-up call notes to identify common themes in patient and family responses. Commonalities between all patients and families were examined and documented. Basic descriptive statistics were performed on tracking data via

Microsoft Excel. Patient demographic information including age, gender, admitting diagnosis, ICU length of stay, admission date and discharge dates were analyzed and grouped into categories using descriptive statistics (for example: there were ten patients in the 50-60 year old age range, there were five patients with the diagnosis of sepsis, etc.). These categories maintained patient privacy and ensured no specific information was recorded or shared that could be linked to a particular patient.

3. Evaluation of the effectiveness of program implementation with staff feedback.

The Project Coordinator utilized descriptive statistics through Qualtrics for nursing staff survey analysis to identify trends in data. Analysis for pattern identification within free text comments was also employed. Project champion debrief sessions also captured important feedback on implementation success.

Ethical Considerations

This project was funded by the Susquehanna Valley Chapter of the American Association of Critical-Care Nurses (SVAACN) and the American Association of Critical-Care Nurses (AACN). Patient and family tracking data during the ICU diary project period was stored on a password protected computer that only the project coordinator had access to. During the evaluation phase of the project, 30-day follow-up call notes were typed in a log that was stored on the same password protected computer. No identifiable data was collected or stored from the patient and family follow-up calls. Patient and family information on the tracking sheet was de-identified after the 30-day follow-up phone call process was completed and instead corresponding numbers were assigned to patients and families. Staff names were not utilized, all surveys were anonymous with no ability to be tracked due to delivery via Qualtrics, a secure survey software. All collected data was kept confidential and only accessed by the Project

Coordinator. Data was analyzed and pooled in a way that does not allow any correlation between patient identity and collected information to be drawn. There are no identified potential conflicts of interest.

Patient and family privacy was considered in development of the project methods. To address information security and privacy, the ICU diary was kept in the patient's room on their window frame with a magnetic clip to ensure privacy and consistency. It was labeled with patient initials. Because the ICU diary was not a part of the patient's medical record and instead was a personal document belonging to the patient and family, information within the diary was not subject to legal ramifications in the same way a medical document may be according to UPMC legal team review. Regardless, extra training and caution were taken to ensure nurse entries were appropriate. Staff training included specific examples of appropriate versus inappropriate entry format and content to avoid the above-mentioned issues (Rogan et al., 2020). Finally, the consideration of entering patient photos into the diary is something that required close regulation. If patients were not able to agree to a photo for their diary, their surrogate or primary decision maker had the opportunity to decide to take photos for them and do so with a program provided camera. Due to the related risks, staff did not take part in photographing the patient for diary entry and were not included in any photos for the diary as advised by the health system legal team. The option to add photos into the ICU diary is important and supported by strong evidence as being valuable (Garrouste-Orgeas et al., 2014). A nurse was present when family photographed the patient and ensured no sensitive material was found within the photos. No photos were stored on the camera itself, they printed instantly; there was no memory or recording of the photos within the device.

Because the diary was implemented as a part of routine practice within the usual ICU standards of care, special consent was not required. The ICU diary was not sharing new information with families and patients, but instead was a different delivery system to enhance communication, understanding, and acceptance of the ICU stay. Because of the need for two follow-up phone calls, special explanations to the patient and family were required. Explanation of the ICU diary as part of a Doctor of Nursing Practice (DNP) pilot project and the role of the Project Coordinator were specifically shared during the initiation process by the bedside nurse and in the provided educational materials. The purpose of the project and potential benefits of the follow-up calls along with their nature and what to expect were also discussed in detail with the patient's family during initiation and ICU discharge by the bedside nurse. The detailed process of two follow-up calls, the first at seven days post-hospital discharge and the other at 30 days post-hospital discharge, was discussed both at initiation and ICU discharge by the bedside nurse. These calls did not serve as a hospital issued follow-up call and the Project Coordinator referred all patients to their primary care provider with any health or illness related concerns. When the patients and primary family caregivers agreed to participate, they were assured that all healthcare information and medical conditions would be discussed only with the patient's health care team if necessary and confidentiality was protected at all times. Participants were informed that they had the right to decline follow-up calls at any time.

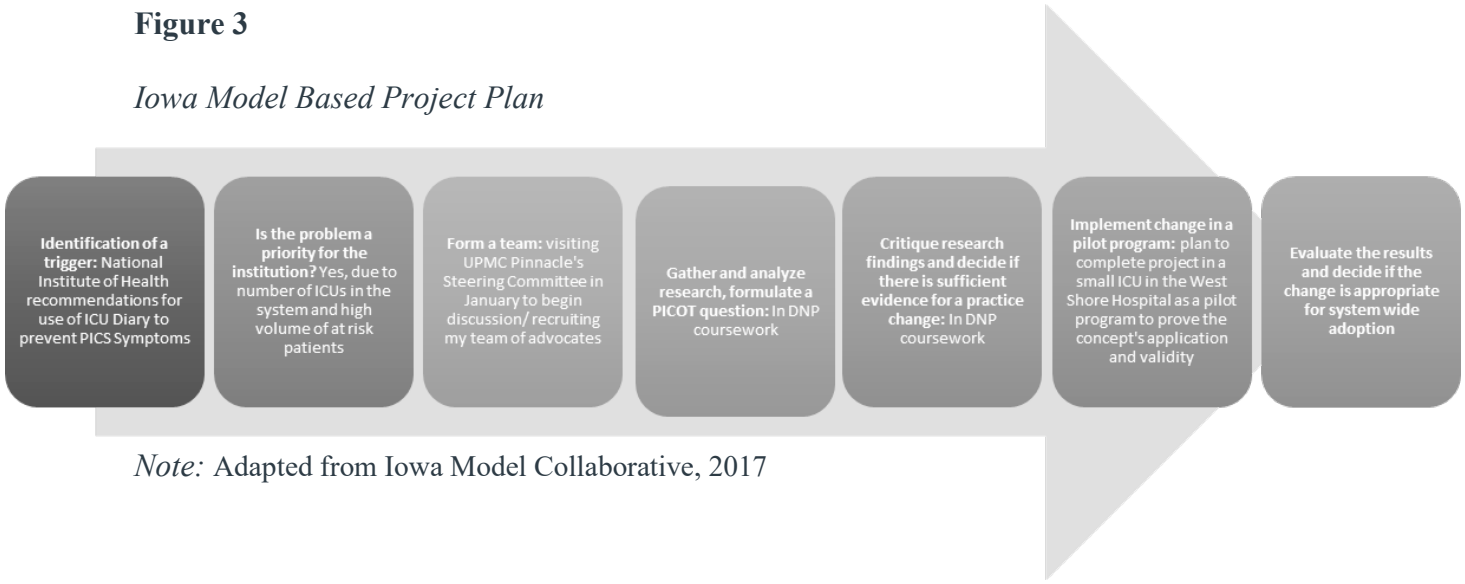
Ethics Approval. Local research ethics committee approval was obtained for this project from the UPMC Pinnacle research committee, Institutional Review Board (IRB) coordinator, and the Director of Nursing Education. This project was approved by both The Pennsylvania State University IRB and the UPMC Pinnacle IRB as not human subject research with minimal risk. See Appendix I for IRB letters of approval from both sites.

Summary

Figure 3 reflects the steps in the Iowa Model specific to this project.

Figure 3

Iowa Model Based Project Plan



Note: Adapted from Iowa Model Collaborative, 2017

ICU diaries were provided to all ICU patients meeting inclusion criteria for both families and nurses to write in daily. Upon initial identification and provision of diaries, families were educated on PICS, ICU diary use, and the program's purpose by the bedside nurse. At discharge, patients and families received their diary and were instructed to review it at home in an effort to fill in the memory gap. After discharge, patients and families took part in a follow-up call to gauge their perception of the ICU diary intervention. Nurses also received an assessment survey to gather their feedback, including workflow impact and ease of use after implementation of the program as a secondary measurement due to the importance of their buy-in for a successful and sustainable program.

Implementing an ICU diary program and evaluation of patient and family perceptions and staff feedback were the main goals of this project. By using a structured ICU diary intervention program after thorough education of nursing staff, the expectation based on collective evidence was positive patient and family perceptions and nursing support for continued ICU diary use.

Capturing nursing workflow barriers to improve the process for potential systemwide roll out was also integral to the sustainability of this project.

Results

Pre-Project Survey

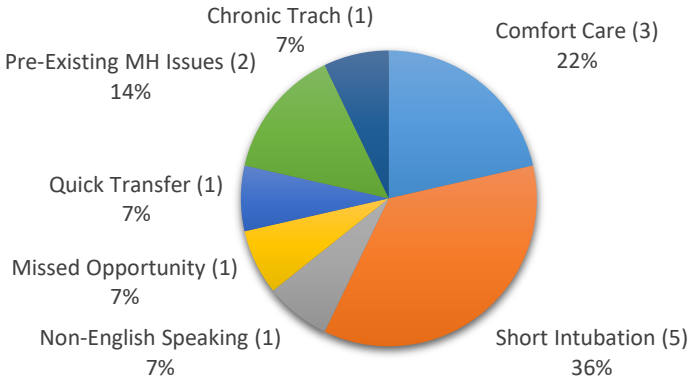
Prior to the education and training phase of this project, a survey was emailed to all nursing staff. The purpose of this survey was to gain a better understanding of the ICU nurse's baseline knowledge of the topic and preferred learning and feedback styles. There was a 100% response rate to this survey which was designed through Qualtrics. Survey results showed that approximately 50% (18 out of 37) of nursing staff had never heard of PICS or ICU diaries before the introduction of this project education. The remaining 19 nurses had heard of some combination of PICS, ICU diaries, or both. 70% of staff reported having "no idea" if the ICU diary intervention would work in their unit, while 27% of staff thought it would be successful. These results allowed the Project Coordinator a baseline understanding of the staff's knowledge gap and openness to the intervention before training ever began. 70% of staff reported a combination of listening, virtual and in-person training as their learning preference. Due to these results, the Project Coordinator was able to ensure training modalities met staff needs to increase engagement and capture all learning styles. A combination method was used for all education. Initially, the Project Coordinator had planned to administer the post-project survey via electronic and paper forms. Due to an almost 80% staff response indicating electronic survey preference and no staff preference for paper surveys, the feedback plan was adjusted accordingly to only include electronic survey delivery. Four staff entered free text in this survey noting their excitement for the project to begin.

The Intervention: ICU Diary

The ICU diary pilot program utilized a handwritten paperback narrative authored by both bedside nurses and patient's family to illustrate the patient's critical illness journey while they were in the ICU. See Appendix E for the nursing process flowsheet to delineate the steps within this intervention. Throughout the evolution of this project, staff began placing a reminder in a virtual sticky note on the patient's EMR summary page that said "ICU diary entries" to remind each other to make a daily entry. This change was staff driven, and the reminder stayed in place the entire time the patient was in the ICU. Thirty-four patients met initial inclusion criteria for the ICU diary program. After reviewing exclusion criteria closely, fourteen patients were excluded. Figure 4 summarizes the reasons for patient exclusion.

Figure 4

Patient Exclusion Reasons



The most frequently occurring issue requiring adjustment and subsequent removal of patients from the ICU diary program was an intubation timeframe that was short, between 24-48 hours from intubation to extubation. There were five patients who fell into this category, and they became the most difficult to address due to hesitancy in starting diaries by staff related to expected intubation times and unpredictability of their length of stay. Other reasons for exclusion

included three patients who were rapidly transitioned to comfort care and subsequently died, two patients who had significant underlying mental health issues present upon admission, one patient who was mechanically ventilated via a long term tracheostomy and awake, alert and oriented, and one patient who only spoke and understood Greek. There was one patient who was categorized as a missed opportunity. In this case, the patient had been hospitalized almost three months prior to ICU transfer. Staff seemed overwhelmed by the patient's stay and due to advanced age, family complexities, and poor prognosis, they were resistant to starting an ICU diary.

At the end of the nine-week program implementation, a total of 20 diaries were completed and distributed to patients and/or families. Initially the expected number of ICU diaries was between 30 and 40, but due to a period of low census over the summer months coupled with the above mentioned patient population required exclusions, that estimated total was not met. Having a small number of completed diaries may affect the generalizability of this project, and more diary completions are needed to continue fine-tuning the program. The initial estimate of 30 to 40 diary completions was based on expert opinion related to average daily census and patient acuity scores (E. Leber Burnham, personal communication, February 12, 2021), not on a power analysis due to the nature of this project.

Patient Demographics

At project completion after a nine-week pilot period, twenty completed diaries were sent home with patients and/or their families. Figures 5 through 9 summarize the basic demographics of the project sample.

Figure 5

Patient Age Range

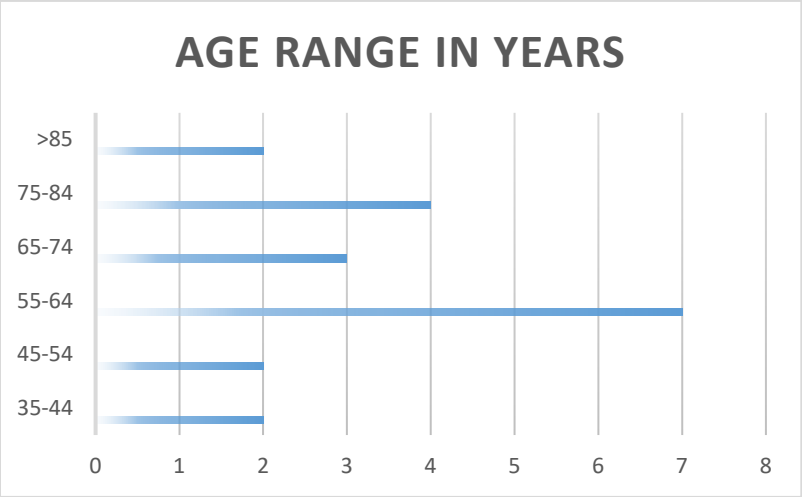


Figure 6

Patient Gender

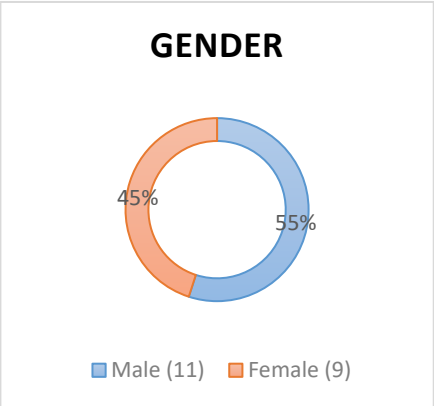


Figure 7

Reason for ICU Admission

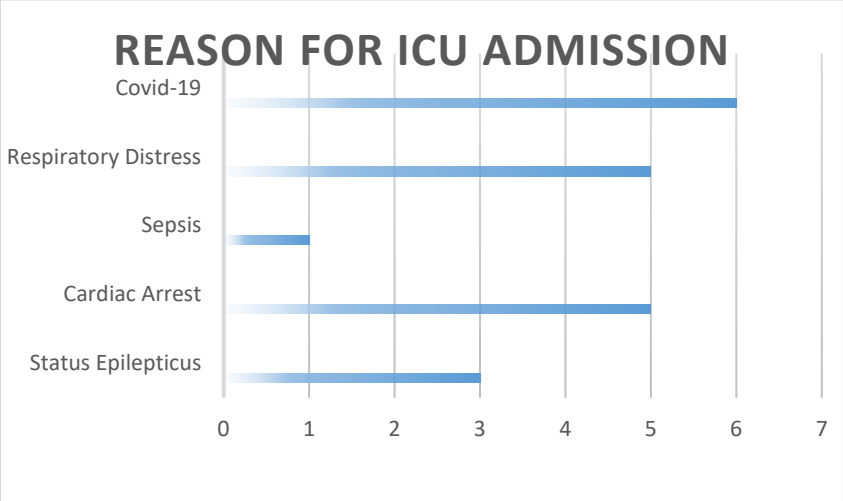


Figure 8

ICU Length Of Stay

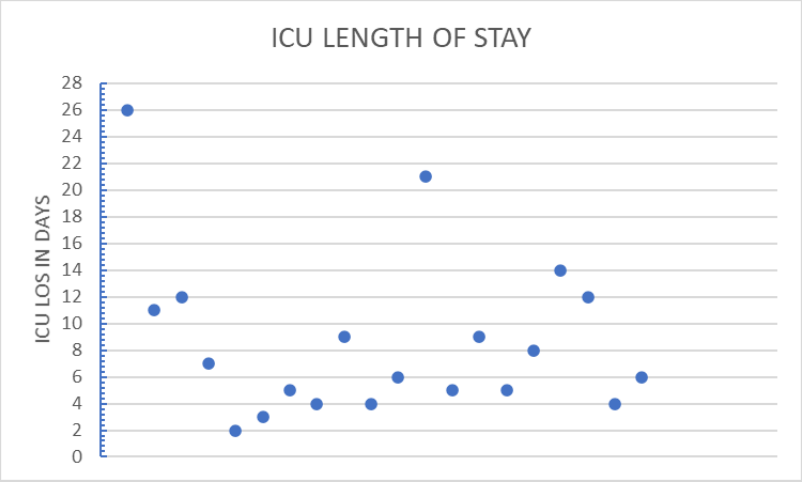
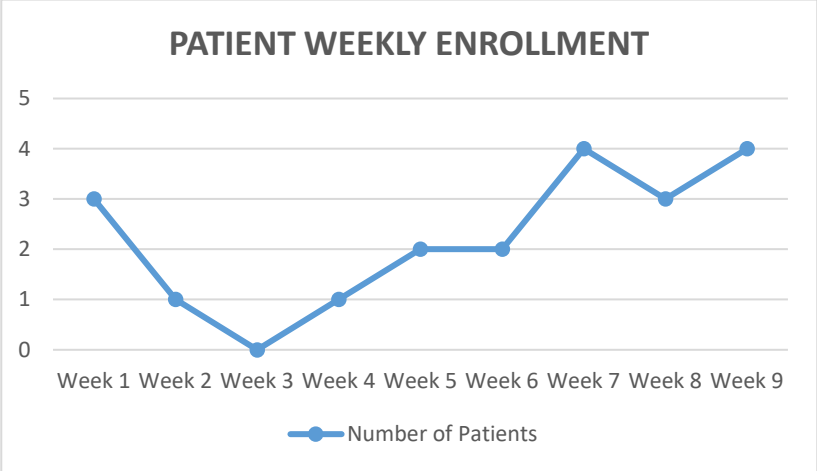


Figure 9

Weekly Patient Enrollment



Out of the 20 patients who were enrolled in the program, 11 were male and nine were female. Patient ages ranged from 35 to 88 years old with the average age of patients in the program being 64 years old. The most common reason for ICU admission was COVID-19, followed by cardiac arrest and respiratory distress. ICU patient length of stay ranged from two to 26 days. The average length of stay was 8.5 days within this group of 20 patients. As illustrated,

there was a lull in patient enrollment during weeks two through four. This was during the expected “slow” period for most ICUs at the height of summer. To follow however, was a second surge of extremely ill patients, mostly related to the COVID-19 pandemic. During this time most of the patients for the project were initiated. This was a time of high census for the pilot unit with an average patient census between 18 and 19 patients. This taxed staff and resources, especially during weeks seven through nine. Unfortunately, 50% of the patients who were included in the program died while hospitalized. Interestingly, the rate of death increased during the final three weeks of the project, most likely in correlation with a high number of COVID-19 diagnoses. Six of the patients who did survive were discharged to a rehab facility, while four were discharged directly home.

Diary Tracking and Compliance

Throughout the project’s implementation time frame, a variety of audits were utilized to track nursing staff compliance and adherence to the ICU diary program. 11 diaries were initiated within 24 hours of ICU admission, while five other diaries were initiated within 48 hours of ICU admission. Four diaries were initiated between four and ten days of ICU admission, which appears to be a significant delay in initiation. These delays were easily explained and validated. Two patients on the first day of project go-live had diaries initiated, but had already been in the ICU for seven days. Two additional diaries with delayed initiations were due to late intubations (one on day nine, the other on day five) during their ICU admission.

Twenty-nine separate compliance audits were completed during the implementation of this project. These audits found all but two diaries contained nurse entries within the first 24 hours of initiation. 15 of the audits found multiple family entries present, and one audit found that an occupational therapist had made a diary entry. No inappropriate nursing entries were

found while screening entries for content, language, tone and readability. Two instances of medical terminology were noted in entries, and real-time education was provided to bedside nurses accompanied by a staff email reminder. All entries were high quality and contained one or more aspects of recommended entry components according to the staff entry guide resource. Six audits found patient progression photos entered into patient diaries. Four audits found one daily entry missing, otherwise diaries were found to be complete with at least one nursing entry per day starting within 24 hours of initiation.

Diary content was exceptional and highlighted the genuine and caring practices of the ICU nurses to patients, families, and nurse peers. Some example diary quotes are included below. The first two quotes are from the first two ICU diary entries made independently by staff nurses.

"I checked on you every hour to see how you responded. It stormed all day, but every time I came into your room, it seemed like a beam of sunlight would be shining just on you." And, "We are here for you, you are never alone. You started moving your fingers today and that's a big step for you. Keep fighting through, we'll talk later."

Another quote from a diary was written by a young COVID-19 patient's child, unable to physically visit his mother in her room and goes as follows: "Hi Mom, I got to see you through the window. I got to talk to you through the door today. I miss you. I pray every day saying that I won't bother you anymore as long as you get better." Another entry written by a patient's spouse said "It is really hard seeing you like this for me and the kids, we all prayed for you to get better…I know you were all confused, but we'll figure it out. I love you with all my heart."

Nurses wrote diaries for patients who were alone and those who had many family members. They wrote a joint diary for a married couple in the ICU with concurrent COVID-19

infections, and they wrote diaries for patients that were not predicted to live. There were a variety of tragic patient scenarios that warranted the use of ICU diaries including sudden and unexpected patient deaths, cardiopulmonary resuscitation efforts, delirium, and many others.

Evaluation Methods

At the conclusion of the project, four methods of program evaluation were utilized which will be discussed to follow. These methods were: patient and family 30-day follow-up calls, nursing staff feedback survey, project champion debrief, and project coordinator notes. The focus of the four evaluation methods below was to gain a thorough understanding of the effectiveness of the ICU diary program implementation, along with barriers and areas for improvement from the patient, family, and nursing perspectives.

Patient and Family 30-day Follow-Up

At the 30-day post hospital discharge mark, follow-up calls were made to patients and/or their families. The contact numbers utilized for these calls were either those of the primary support person designated within the electronic medical record, or the patient's cell phone number if the Project Coordinator was able to meet with them prior to hospital discharge to obtain this information. Out of twenty attempted 30-day follow-up calls, 14 were answered and completed yielding a 70% completion rate. One patient's family reported a missing ICU diary, so there was less data collected from that call. Out of the completed calls, eight patients were the primary contact reached, while six family members were the primary in cases where the patient died in the ICU. Of the calls that went unanswered (six total), three were family members of deceased patients. Three of the six unanswered calls were patients and/or family members that did answer the seven-day reminder calls and discussed the ICU diaries at that time. Follow-up calls illustrated themes of support and gratitude for the diaries, regardless of patient outcomes

Appendix H shows the list of follow-up questions asked during every 30-day follow-up call as well as a template for the response log utilized to note discussion details. The response log was analyzed for trends after all calls were complete.

Patient Calls. From the eight patients reached, all reported reading their diaries multiple times since discharge both alone and with their families. All patients reported that the instructions at discharge were clear, but three patients stated that the 7-day reminder call was integral to their use of the diary due to the fact that they had forgotten about it. All eight patients stated they had trouble with remembering what happened to them from ICU admission until right before their ICU discharge. One patient explained that he is still drawing a complete blank from his entire hospital stay which causes him a lot of anxiety. He reads the diary and looks at the photos to help him work through it and accept what happened. Three stated they had severe confusion, three self-reported anxiety with persistent symptoms post hospital discharge, and five talked about severe hallucinations and night terrors that persisted through their hospital stay. The vivid reality of their hallucination and night terror reports were disturbing and often included frightening imagery and harmful acts from which they were trying to escape. One patient continued to show signs of forgetfulness, but that may have been her baseline.

All eight patients reported that they believed the ICU diaries helped with their recovery process and would recommend continuation of the program for future patients. Four patients reported that the diary entries helped to fill their memory gaps with pleasant thoughts and realities. No patients had recommendations to improve or change the program for the future. One Patients stated things like “I read this thing and thought wow, they are generous. It just leaves a warm spot in your heart. The diary was a great help for me to remember something positive”, and “this diary was such a thoughtful and caring thing to do. I read through it and it really filled

in the blanks. I couldn't believe my heart stopped. My daughter showed me a picture and it brought this sense of reality. She said dad you died twice, and I said no. Then she showed me that picture with the breathing tube in and I couldn't believe it was me. I have made a lot of changes to my life. I still eat peach pie, but only once in a while. I know I shouldn't be alive, and that diary you gave me- that was really special". Another patient said "I don't love looking at these pictures, but somehow they help me understand how far I have come. They have given me hope and motivation. The staff wrote some sweet things in their entries too." Another patient said "I haven't finished reading it yet, but it is perfect and I really appreciate every entry. I would have a hard time believing it if it wasn't written there." Two patients reported they wrote in their own diaries while still hospitalized to help with confusion, hallucinations, and fear. One wrote down every noise she heard during the day so that when it was nighttime she wouldn't be scared when she heard it. This patient reported "I love this diary, the girls wrote some really cute things in there and I love reading it, it makes me smile".

Family Calls. From the six family members who were willing to discuss the ICU diaries with the Project Coordinator, patterns of grief, acceptance and gratefulness were clear. All six family members also confirmed ease in the explanations of initiation and discharge diary instructions and no issues obtaining the diaries or camera to make entries. Four family members reported sharing the diary with other members of the family to help with their grief, two reported feelings of appreciation for the diary when working through their own grieving process. After a tragic situation, the spouse of one patient stated "the diary meant so much to us, the whole family has read it. This was such an amazing thing to do and to hear from everyone who was with him (the patient) when we were not able to be was very touching." Another family member relayed their use of the diary to reflect on what was such an overwhelming and confusing time and stated

it has been extremely helpful. After another tragic loss, a patient's father stated that the patient's three adolescent children have read through the diary many times. He said "they seem to get comfort from reading what the nurses were thinking and what was going on when they weren't allowed to be there. It's all very hard, but it seems like the fact that they know the nurses were there when they couldn't be helps them." All of the family members recommended continued use of ICU diaries from their perspective. One family did report "still working on reading the diary" because they weren't ready to relive everything yet. Also of note, the family member who reported a lost diary during their follow-up call created their own hardbound ICU diary and brought it back to the pilot unit in hopes that the nurse entries could be recreated.

Nursing Staff Feedback Survey

There was a 70% response rate in the post project feedback survey emailed to staff via Qualtrics (26 out of 37 staff nurses). The initial goal of a 90% response rate was not attained due to a variety of factors. Primarily, staff burnout due to the COVID-19 pandemic and residual census surges may be the most significant. The survey questions can be found in Appendix D. Figures 10 through 12 illustrate the demographics of the nursing staff who responded to the survey. The majority of respondents were between the ages of 20 and 30 years old with one to three years of ICU experience, most holding a bachelor's degree. There was, however, significant representation from all age and experience levels. The illustrated survey sample is an accurate representation of the demographic distribution within this intensive care unit. Of the 26 nurses who responded to the survey, 54% of them had both initiated a diary and wrote at least one entry (shown in Figure 13). Unfortunately, eight percent of the respondents did not participate in initiation or diary entries at all.

Figure 10

Nurse Respondent's Age

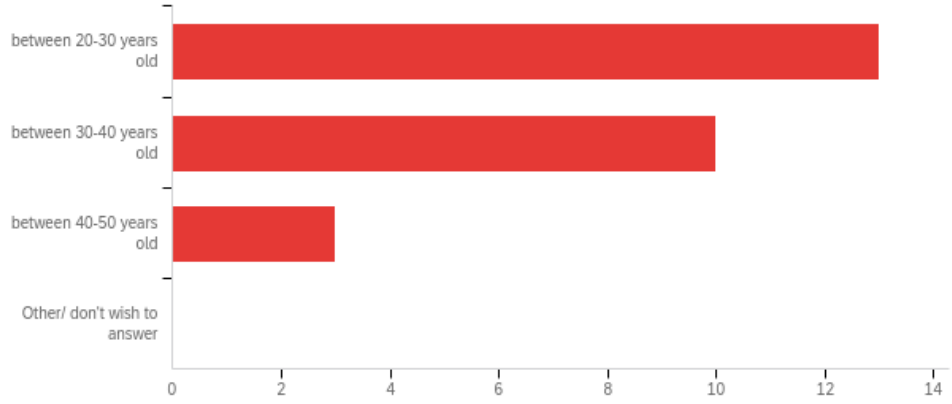


Figure 11

Nurse Respondent's Years of Nursing Experience

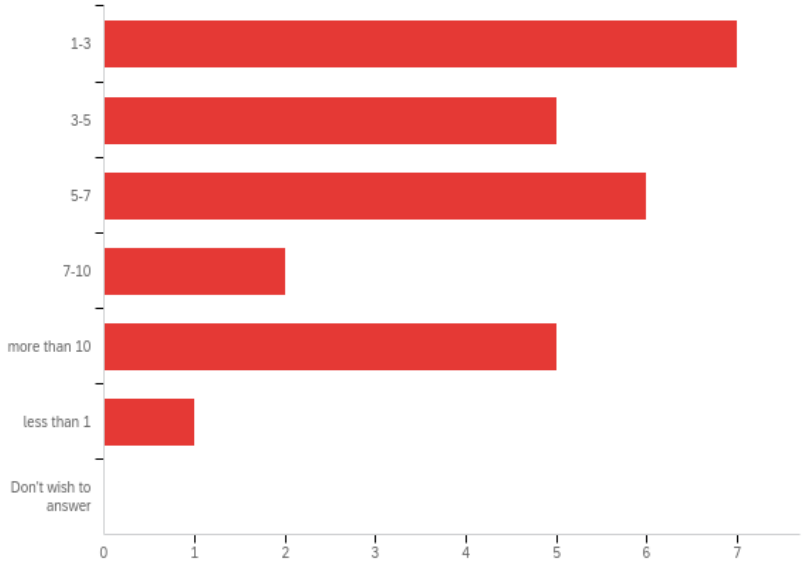


Figure 12

Nurse Respondent's Highest Degree

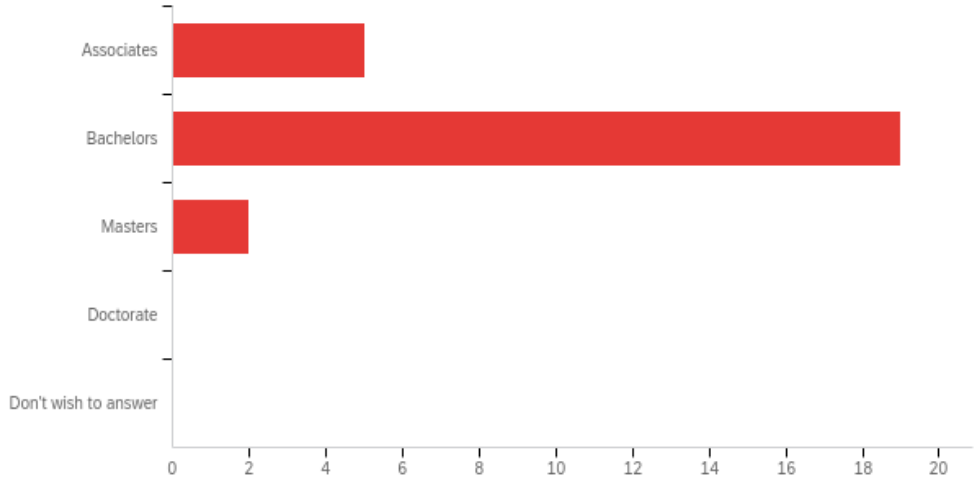
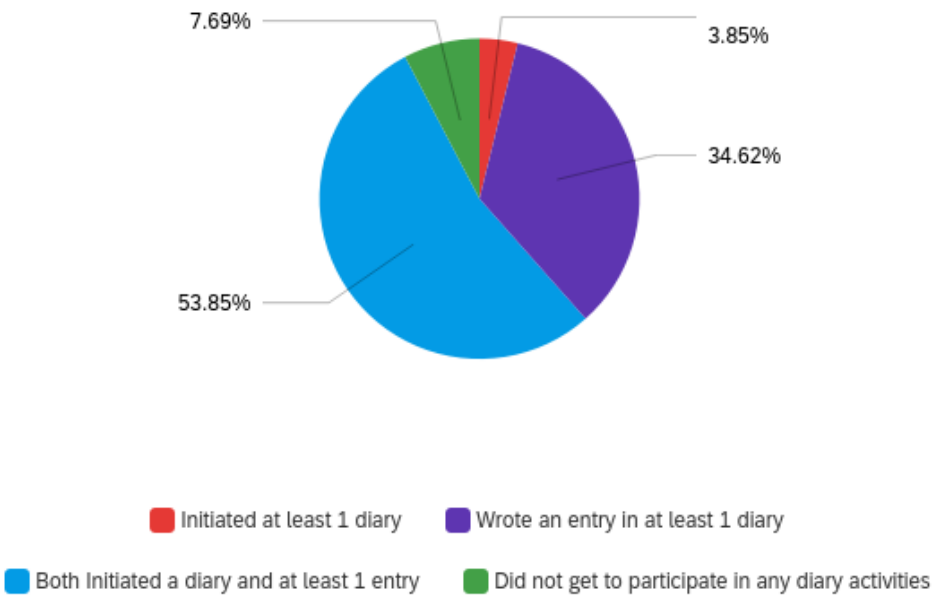


Figure 13

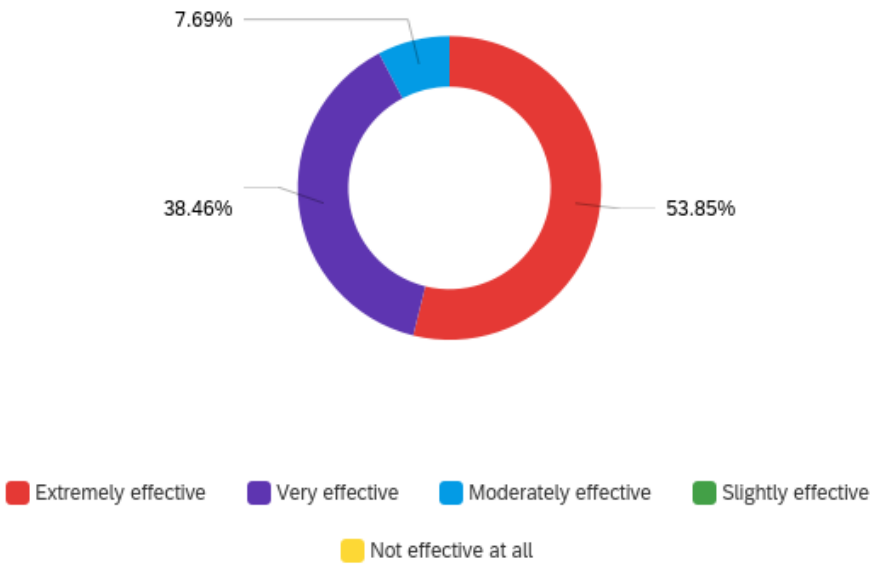
Nurse Respondent's Involvement in ICU Diary Program



When asked about the effectiveness of the ICU diary project implementation (including training, resources, tracking and rounding practices), 54% of nurses said these factors were extremely effective, 38% said they were very effective, and 8% said they were moderately effective (illustrated in Figure 14).

Figure 14

Project Implementation Effectiveness



When asked if ICU diaries negatively impacted their workflow, 77% of nurses said it did not impact their workflow at all, while 23% said it impacted their workflow only a little. When asked how difficult it was to deliver education to families upon diary initiation, 50% of nurses said it was extremely easy, while 21% said it was somewhat easy, and 29% said it was neither easy nor difficult. However, when asked how difficult it was to teach patients and families about their diaries at ICU discharge, only 39% said it was extremely easy, while 17% said it was somewhat easy. But the majority (43%) said it was neither easy nor difficult, indicating there

may be a need for further resource development in this area. When asked about the level of difficulty when writing diary entries, 65% of nurses stated that it was not difficult at all, while 27% found themselves neutral. 8% had never written an entry. 100% of respondents said that writing in a patient's ICU diary made them feel happy and calm (as opposed to other choices which included anxious and irritated, confused and mixed up, or angry and annoyed).

During review of the free text comment responses, the following patterns were identified within the staff nurse survey. When asked about the presence of barriers which complicated the use of ICU diaries, the overarching theme in responses targeted the lack of time to make meaningful entries. While these comments included details leading to lack of time which included high census, high acuity, poor staffing patterns, and nursing inexperience, some form of time constraint was mentioned by 11 out of 26 nurses who responded. Other barriers identified were: remembering to do an entry and pass the information on to the incoming shift (especially during a busy shift), lack of family presence, ability to focus and write something "worthwhile", and inability to locate the diary. Some solutions for these problems were also explored within nurse's comments. One nurse mentioned the need for a continued champion or designated person to run the program, while another discussed more educational resources for families. Three nurses mentioned designating a specific shift to complete entries (ie. nightshift, dayshift, etc.). Multiple nurses also mentioned that building a reminder into the electronic medical record that would trigger into their shift worklist with something like "ICU diary entry" would help them remember. Finally, a nurse recommended involving support staff and charge nurses to write entries too, offloading some of the time burden and increasing entries.

When asked about comfort levels when making ICU diary entries, 65% of nurses responded that they did not experience any discomfort when writing an entry. One additional

response highlighted that instead of experiencing discomfort, diary entries actually helped her with family interactions and increased her comfort in different situations she experienced. One nurse did say they had difficulties knowing what to write and how to phrase it while two others said it was hard to stay positive when the patient was declining or doing poorly.

The most common theme when nurses discussed what they liked most about the diaries was being able to give back to patients and their families while feeling a sense of closure. Five respondents mentioned that they enjoyed hearing comments and feedback from the Project Coordinator after speaking with patients and families. One comment highlighted and new and increased appreciation of peers after reading other's diary entries. Two nurses talked about being able to work through their own thoughts and feelings after a rough shift and said that writing in the diary helped them debrief, process, and empathize in a therapeutic manner. Finally, one nurse said they loved the photo progressions and sharing those with the patients when they began to get better.

Project Champion Debrief

The project champion debrief sessions were held virtually due to challenges with scheduling. The purpose of these sessions was to gain further insight into the nursing perspective of project implementation, especially from nurses who were driving this initiative at the ground level on all shifts. The primary goal was to ascertain which barriers encountered may require a process alteration to increase likelihood for systemwide success of the ICU diary program. After the debrief sessions were complete, comments and notes from all three project champions and the Magnet Coordinator were compared and contrasted to identify priorities.

Project coordinators all reported feelings of ownership and responsibility to the project's success. Champions found a few points, especially surrounding family involvement, that may

benefit from future clarification. Some staff waited until family were present to initiate the diary, causing unnecessary delays. Presentation to family members in a way that facilitated their involvement was also an area that could improve, including the entry of photos, according to this group. One project champion also mentioned a general confusion over inclusion criteria, especially the expectation of mechanical ventilation for greater than 24 hours. Another great point was brought forward, that a few nurses voiced concerns over their handwriting and ability to enter into the diary in a legible fashion. Champions reported rarely experiencing pushback from peers regarding initiation and entries and echoed the most common concerns voiced by staff including time, remembering to integrate entries into a daily routine, and the need for a champion or coordinator to facilitate the program and follow-through. One champion did mention a need for a reminder prompt in the EMR to facilitate compliance. Overall, project champions reflections were congruent with that of the staff nurse surveys with additional detail and insight.

Project Coordinator Notes

Finally, after gathering data from all sources, the findings were compared to the Project Coordinator's notes and perspectives to evaluate correlations and begin to formulate plans to move the initiative and needed changes forward. While reviewing project notes, information gathered from nurses and champions directly correlated with what was seen through the Coordinator's role. The Project Coordinator served many purposes, but the largest and most time consuming role was the daily tracking and reminders to ensure project compliance along with staff education and updates on a weekly basis. While becoming hardwired, this project required tight regulation and monitoring to ensure minimal missed opportunities. Details regarding

tracking, calls, individual patient and family issues and nursing communications made up the majority of these notes. Recommendations for future program revisions were also kept

Discussion

Summary

The key findings from all evaluative sources illustrate a successfully implemented ICU diary program within this 24-bed intensive care unit. The results show that the project was implemented in a way that allowed the bedside ICU nurses, patients, and families to use the diaries with limited barriers. Evaluation methods of all perspectives were effective despite the COVID-19 pandemic and an extremely busy ICU. All specific aims of this project were accomplished and specific process revisions were clearly identified and documented.

Observed outcomes were congruent with anticipated outcomes for this project. While planning and utilizing the Iowa Model for setup, a thorough and structured design was thought to have the highest likelihood for successful implementation. The context of this project included minimal barriers in leadership and organization makeup, as well as external environment. While the COVID-19 pandemic posed a potential threat to this project's success, in the end it was an integral factor for nursing buy-in. Due to high rates of patient death and nursing burnout, staff seemed to need a focus external to their daily challenges. During a unit steering meeting, one staff member spoke up to state that she "was sick of looking families in the eye after tragedy and only having a green belongings bag holding their loved one's clothes to give them". Through staff reports of therapeutic effects felt while making diary entries, nurse involvement and support for this project increased. The lack of time was the primary barrier that staff reported as an issue facing their acceptance and use of the ICU diaries.

Interpretation

Specific Aim One

Implementation of an ICU diary pilot program in an intensive care unit. The structured implementation of the ICU diary program within this 24 bed ICU was effective. This may be due to a thorough education process utilizing both virtual and in-person education, as well as a streamlined flowsheet and material set-up to ease integration into nursing workflow. A younger, more flexible staff may have increased buy-in and openness to the project. Patients, family members, ICU nurses, and project champions all reached the same conclusions; this project has important implications for practice and needs to be continued and expanded.

Specific Aim Two

Evaluation of patient and family perspectives of the ICU diary program. Valuable information was gathered throughout the follow-up call process with patients and family members. Speaking with patients who had survived critical illness was eye opening and clarified the potential impact ICU diaries can have on patients experiencing loss of memory, anxiety, fear, hallucinations, and trouble sleeping. Calling family members was much more difficult, and there were less answered and returned calls from family members of deceased patients which may have been related to their own grief. Responses from family were still supportive but clearly indicated continued grief. Many were impacted by the COVID-19 pandemic and self-imposed visiting limitations, so responses often included comfort through an increased understanding of nursing's care and involvement in their loved one's final days.

Specific Aim Three

Evaluation of the effectiveness of program implementation with staff feedback. Staff feedback were indicative of program success and support for further evolution and use of ICU

diaries despite resource shortage within this high stress environment. The surprising identification of therapeutic experiences through writing diary entries further solidified the need for active interventions like ICU diaries to increase nursing resilience and coping skills in this time of high burnout.

Literature Comparisons

When comparing this project's results to the initial literature reviewed, all areas are consistent with expected outcomes. Patient, family, and staff nurse perspectives aligned with summarized literature themes covered in detail within earlier sections of this paper (Pattison et al., 2019; Holme et al., 2020; Mickelson et al.,2021). Patients stated that ICU diary use lessened their memory gap, and family members felt that they were better able to process grief and stress by using ICU diaries. Staff nurses commented that writing in and reading ICU diary entries enabled them to process and humanize aspects of caregiving within the ICU, also improving communication with families.

Additional sources of evidence were reviewed due to recent release during the project timeframe. New research shows the following. In a 2021 study by Flahault et al., 332 ICU patients from a large randomized controlled trial who received ICU diaries were interviewed six months following their ICU stay. Results showed that for about half of these patients, ICU diaries represented good memories in a difficult time (Flahault et al., 2021). Another quarter of the patients were ambivalent about the diaries, while the final 25% saw the diary as a "painful representation of a time they wished to forget" (Flahault et al., 2021). In a 2021 meta-analyses, ten studies were reviewed. When results of eight randomized controlled trials and two case-controlled studies were pooled, results indicated that the ICU diary could reduce the incidence of post-traumatic stress disorder, anxiety, and

depression (Sun et al., 2021).

Another newly published systematic review and qualitative synthesis looked at the experiences of relatives using ICU diaries and found that family members use diaries for a few common purposes. Those were as a means of coping, a way to stay connected, and a tool to understand and develop a narrative about the experience (Schofield et al., 2021). Details of initiation of an ICU diary program within a veterans hospital also was published in 2021. When reviewing this article, implementation practices and outcomes were very similar to this DNP project's pilot program, further validating the model used (Drumright et al., 2021). A qualitative synthesis published in 2021 reaffirmed that most patients consider ICU diaries helpful in their recovery and recommend their continued use, which correlates with this project's findings (Barreto et al., 2021). In a recently located qualitative study which discussed nursing perspectives, critical care nurses acknowledged the importance of ICU diaries, but also reported difficulties deciding who was appropriate to receive one and how to prioritize it as barriers. This study also mentioned the importance of ICU diaries for the ICU nurse to reflect on their work and feelings (Ednell et al., 2017). These findings directly correlate with this DNP project's pilot program nursing feedback results.

Strengths

Particular strengths of this project include an accurately represented population within survey responses, a thorough and well-defined process to enhance compliance and workflow integration, adequate education and staff preparation, and consistent methods of tracking and continuous evaluation of processes throughout the project's implementation. Evaluation design allowed for separate data collection from four sources along with triangulation of findings to strengthen results. Patient, family, nurse, champion, and Project Coordinator data all correlated

and supplemented one another to increase internal validity. Data pieced together an inclusive picture of the implementation process, and results were also consistent with evidence and literature used to support this initiative.

Limitations

The limitations of this project's generalizability mostly stem from a small sample size and lack of diversity within this sample. The project only took place in one intensive care unit, and therefore reproducibility is also unknown. Fluctuation in census and the existence of the current COVID-19 pandemic also indicates special circumstances that may not be reproducible but had huge impacts one everyone involved. Exclusion of non-English speaking patients further limit patient diversity. A factor that may limit the internal validity of the feedback include the professional and personal relationships between the Project Coordinator and ICU nurses leading to a bias of supportive responses. There were also eight percent of nurse respondents who answered questions about ICU diaries without ever actually having the opportunity to initiate or make entries in a diary during the project. Imprecision in design, methods, measurement and analysis due to the nature of a student led quality improvement project and need for flexibility during a time of high census, high stress and low unit morale may have also affected the nurse's feedback responses and implementation tactics. However, any professional taking on the Project Coordinator role would be likely to face the same challenges due to competing commitments and responsibilities. Finally, written record keeping of all discussions with patients and their families outside of the seven and 30-day calls could have been maintained in a more detailed and organized fashion but fall within the nature of expected quality improvement project design challenges.

In an effort to minimize limitations, the project coordinator made efforts to ensure adequate resources were available to all staff and training was thorough and comprehensive. Daily tracking efforts and broad inclusion criteria were utilized to ensure every patient that could benefit from an ICU diary would get one, therefore building the sample size. Prior to the final nursing staff survey delivery, the Project Coordinator encouraged honest, open responses and reminded staff of anonymity.

Costs

During the last three weeks of the project, the pilot ICU experienced a resurgence of critically ill COVID-19 patients. The unit was at full capacity (based on staffing abilities) for this entire timeframe. Due to these circumstances, some staff may have been left feeling that ICU diaries came with high associated opportunity costs, especially during a shift with a very busy patient assignment. One nurse did state in her survey response that ‘writing a meaningful diary entry was next to impossible with a double vented, high acuity assignment and no assistive personnel on staff’. While monetary costs remained very low, the cost of any extra time to a staff who is already stretched past their limits is a cause for concern. Future efforts must be made to mitigate the cost of staff time as much as possible.

After initial training, systemwide monetary costs to continue the ICU diary program will continue to be low. With supply needs only including instant cameras, door magnets, and diaries, the highest cost within the program will be training time for educators and staff. A hybrid virtual and in-person training model may be utilized to decrease time requirements. Continued supply costs will include printer paper along with diaries, and family education materials which can be printed internally through the UPMC print shop at a reduced price to the organization. Education of new staff will be integrated into orientation time and therefore will not require additional

funds. The value of this program to the organization far outweighs any costs that may be incurred due to potential impacts on patient outcomes, organizational benchmarks, and nurse satisfaction. Project evaluation will require additional resources, and metric tracking and/or follow-up calls are time consuming. They do have the potential to be integrated into follow-up calls that are already being completed. Tracking for compliance will also need to continue until practices are hardwired.

Conclusions

Impact

The important and considerable impact of this project on people and the system was somewhat unexpected and noteworthy. While the overall sample size was small, the consistent outcomes and parallels between data sources highlight the importance of continued use and expanded exploration of the ICU diary project into a systemwide program. The potential impact on the system as a whole is another measure that needs to be taken into consideration in the future. There are potential impacts on patient and family satisfaction, nurse satisfaction and retention, and patient safety and quality indicators including readmissions and mortality. Systemwide nursing leadership is especially interested in the impact on nursing burnout.

System Engagement and Sustainability. The ICU diary program was welcomed by staff nurses in the ICU. Education about PICS and ICU diaries brought with it a culture change seen within the ICU nursing staff to focus not only on acute care efforts, but steps to improve recovery of patients and their families. Nurses not only participated consistently every shift, but they made changes to the process throughout its evolution to increase compliance and workflow integration. One such change was the integration of sticky note ICU diary reminders within the patient's electronic medical record to increase awareness of ICU diary existence. Evidence of

staff engagement was also illustrated by minimal missed diary entries and high quality audit findings. High numbers of staff participated in pre- and post-project surveys. At the conclusion of the project, the unit steering committee voted to continue ICU diary program efforts, even without Project Coordinator support. Project champions continue to be ICU diary leaders within the unit. Following dissemination of results to staff, the Project Coordinator received numerous emails from nurses with thank you messages and additional positive feedback. One email from a pre-project skeptic said this: “that is an awesome update. As with all new unit changes or trials, I think it's safe to say most of us, myself included, were initially skeptical of initiating another "let's try this idea because we need more stuff to do" but it was really a fantastic idea and I'm glad our unit is continuing its use. I just want to express that I felt your project was genuinely brilliant and beneficial not only to patients but especially to the family of the ones that pass". His message was followed with a request to use a diary for a personal family member that was currently in another system’s ICU.

This project is sustainable due to a variety of plans already in place. A system wide, internally designed and printed ICU diary specific to the UPMC health system has been created for use across all hospitals within the network from Western to Central Pennsylvania. UPMC Marketing, the Project Coordinator, and an ICU diary program lead (Dr. Brad Butcher) located at another UPMC site collaborated on design and production of this diary version. This UPMC-specific diary is currently in use. Networking with Dr. Butcher has led to joint efforts to roll the program out to the entire UPMC health network.

Locally, continued use of the ICU diary program has been endorsed and supported by all stakeholders at the West Shore pilot site. After the official project end date, the Project Coordinator visited the pilot unit and found three diaries initiated by nursing alone. After

meeting with the site leadership (director and CNO) a plan has been put into place to continue the program and support it with paid staff hours for follow-through efforts in the form of tracking and compliance audits. Currently, the Project Coordinator is being paid by the organization to complete this tracking and follow-up. Since re-implementation at the West Shore site after project results were disseminated, 63 patients qualified for ICU diary initiation (from November 1st, 2021 through February 1st, 2022). Of those, 38 patients were there with a diagnosis of COVID-19, and 35 of those 63 patients died in the ICU. These numbers illustrate a significant need for support of patients, families, and nursing staff at this time. A full-time nursing position has been approved with a tentative hire date of early 2022 to complete ICU diary related tasks in conjunction with other patient and family planning efforts. After discussions with systemwide leadership, a plan has been made to solidify the program at the West Shore Hospital, and then roll it out to the local seven hospital system in conjunction with the Post-ICU Clinic Program going live in the Summer of 2022. The chief intensivist has invited the Project Coordinator to lead the project integration into this upcoming effort to better support our ICU patients and their families.

Outside of UPMC, the project was funded by both the American Association of Critical Care Nurses (AACN) and the Susquehanna Valley Chapter of AACN (SVAACN). Funding from SVAACN led to the development of a local research grant through the organization to continue offering funds to support area critical care nurses for quality improvement and research efforts. Both of the mentioned organizations have also expressed interest in facilitating project result dissemination at both local and national levels.

Dissemination. This program and implementation process can be translated to any intensive care unit with critically ill patients present. The steps are universal enough to easily be

applied to any patient population and ICU type. An important piece of this process translation is sharing project findings. After analysis, results were shared with staff throughout the unit, at unit huddle, and within the unit's steering committee meeting, as well as systemwide shared governance council meetings and critical care specialty councils. To continue the dissemination of this work, abstracts have been accepted to present project results at a local conference (Pennsylvania State Nurses Association Virtual Summit), a regional conference (The Eastern Nursing Research Society), and a local ICU nursing event as a key note speaker (SVAACN Certification Celebration Dinner). Additional abstracts are currently under consideration for other conferences. A publication manuscript is also being prepared for submission to the American Association of Critical Care Nurses journal "Critical Care Nurse". This project also has spurred leaders in the local UPMC organization to offer continued opportunities of presentation, study and research to the Project Coordinator in partnership with experienced nurse researchers within the organization. The future efforts of this research will be applied to the spread of the ICU diary program throughout the seven hospital system and will include both quantitative and qualitative aspects of patient, family, and nursing outcomes. Systemwide satisfaction scores and post ICU readmissions will also be examined in coordination with the startup of post-ICU clinics.

Future Recommendations and Revisions

Project Coordinator Recommendations. After review of Project Coordinator notes, potential process revisions and recommendations were noted. In the future, expanded collaboration between all specialties (physical, occupational, speech therapy), providers, and assistive staff may improve staff's willingness and ability to make meaningful daily entries. This may also increase the number of useful entries within a single diary to paint a more complete

picture for patients and family. Staff did discuss many concerns with lack of time to complete a meaningful, non-rushed daily entry. The need for a consistent level of support is imperative until staff demonstrate mastery of the program and adequate resources can be put into place to facilitate compliance. While patient follow-up calls may not be necessary to track patients, a reminder process (such as a post card or call) may be helpful, as stated by multiple patients. During project implementation, a need for inclusion criteria adjustment was identified by the Project Coordinator due to staff difficulty identifying patients with "anticipated" mechanical ventilation greater than 24 hours. This concern was echoed in the project champion debrief. A question regarding the cutoff timeframe for mechanical ventilation and an increase from the initial 24 hours to potentially 48 or 72 hours may need to be considered. Level of consciousness and sedation may also need to be taken into account. Another unexpected issue was the question of "who is family" and patients who did not have any support person or family identified made staff question the benefits of a diary for that patient. The lack of support people for many patients was surprising.

Times of high census clearly highlighted the time and resources needed to prioritize the ICU diary program. This was then reflected in both nursing staff and project champion feedback. The Project Coordinator noted higher levels of staff pushback and reluctancy to initiate diaries during times of high census. Extreme fluctuations in unit census were noted during the project period with a low of four patients, and a high of 19. Another point of confusion noted by the Project Coordinator was that some staff thought that after extubation, diary entries stopped. This required clarification, as diary entries were to continue until ICU discharge. Patient death without family presence is a Project Coordinator identified process barrier that needs to be addressed in future project revisions. A protocol for diary disbursement needs to be identified.

Adding a summary discharge entry (whether the discharge is true ICU discharge, transfer, or patient death) is another point to address.

The most frequently occurring issue requiring adjustment and subsequent removal of patients from the ICU diary program was an intubation timeframe that was short, between 24-48 hours from intubation to extubation. There were five patients who fell into this category, and they became the most difficult to address. Staff seemed to have difficulty deciding whether to initiate a diary or not because these patients often were planned for quick extubations and were less sedated, so therefore were at lower risk for PICS. The problem within this group arose when extubation failed, and patients remained intubated for longer than planned. Diaries were then initiated, but occurred later and required more work to capture missed days. Inclusion criteria may need to be readjusted based on this issue. Diagnoses associated with short intubations were: post-operative surgical intervention patients, COPD exacerbations, and angioedema.

While much of the education and resources focused on diary entries and writing methods, nurses may require continued support with this skill due to survey responses that indicated some difficulties and discomfort when writing challenging entries. Discharge education may be another area of potential focus and resource development. education. There are 37 full time staff nurses employed in the pilot unit, and 30 of those were trained in-person during the initial pilot program training, reaching an 81% training rate. Due to scheduling issues and mandatory floating, seven staff members were unable to be captured in the face-to-face training modality. A training refresher would enhance staff understanding and capture new or missed staff that were excluded from the first training round.

Next Steps. The next steps for this project are to continue the efforts at the West Shore site until the Summer of 2022, when the ICU diary program will be integrated into the post ICU

clinic program. Before this time, the internally printed ICU diary specific to UPMC will be finalized by the Project Coordinator and marketing, and an electronic medical record reminder will be built into the ICU nurse worklist within the Epic charting system. The project flowsheet will be modified and fine-tuned as needed, and systemwide education will be developed. In the summer of 2022, the ICU diaries will be rolled out system wide to seven hospitals within their intensive care units as part of the ICU follow-up program. More work must be done before this time to formalize the process for integration and address follow-up needs. Finally, more research will need to be completed on the potential organizational, patient, family, and nursing impacts ICU diaries may have. Barriers to address are consistently high numbers of ventilated patients within the current ICU census, high rates of staff loss with subsequent use of travel nurses, and challenges brought forth by continued staff burnout related to the COVID-19 pandemic.

Summary. In summary, due to the findings which support the use of ICU diaries from patients, families, and ICU nurses, this project should lead to continued research regarding the effectiveness on patient, family, and nursing outcomes. The potential to affect patient and family outcomes regarding PICS and PICS-F including anxiety, depression, PTSD and night terrors need to be studied further. While multiple patients stated the diary entries filled memory gaps for them, there needs to be much stronger evidence supporting the role ICU diaries could play in those areas. Families seemed to benefit greatly from the ICU diary entries, especially in the cases where their loved one did not make it out of the ICU. Both patient and family satisfaction scores and interviews could indicate more about the role ICU diaries may play. The unexpected and especially valuable aspect of this project was the potential therapeutic effects that ICU diaries may have on staff nurses in the ICU. In a time of nurse suffering and challenge brought by the

COVID-19 pandemic, more interventions need to be present to support the mental health and wellbeing of ICU nurses.

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Appendix A

Permission to Use an Reproduce The Iowa Model of Evidence Based Practice Figure, 2015

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

KC

Kimberly Jordan - University of Iowa Hospitals and Clinics <survey-bounce

3/13/2021 9:49 PM

To: Hackenberger, Abbygale

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care.* Click the link below to open.

The Iowa Model Revised (2015)

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Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Appendix B
UPMC Pinnacle Nurse Manager Letter of Support

UPMC LIFE CHANGING MEDICINE

March 4, 2021

Erica Leber-Burnham RN, MSN, CCRN, Nurse Manager
1995 Technology Parkway
Mechanicsburg Pa, 17050

To Whom It May Concern:

I currently hold the position of Critical Care Director for the West Shore Campus. I am very excited and willing to support Abbygale Hackenberger's project in the Intensive Care Unit. I am looking forward to working with her on this endeavor.

Sincerely,
Erica Leber-Burnham

Erica Leber-Burnham RN, MSN, CCRN
Critical Care Director for UPMC Pinnacle West Shore Campus
Phone: 717-988-1088

Appendix C
Patient and Family Education Materials

https://psu.voicethread.com/share/17802862/

PROJECT FACT SHEET

ICU Diaries: A Pilot Program

ABBY HACKENBERGER
RN, MSN, CCRN & PROJECT COORDINATOR

717.994.7883
Amh6719@psu.edu

Please do not hesitate to contact me at any time if you have questions, concerns, or issues regarding your ICU Diary or this project.

ABOUT THE COORDINATOR

Hello and thank you! I am so excited to share in my doctoral project with you! My name is Abby Hackenberger, and I have been an ICU nurse at UPMC for the last 11 years. I am also an instructor at the Penn State College of Nursing. I am interested in improving you and your loved one's recovery after the ICU.

PennState College of Nursing

FOLLOW-UP

You can expect 2 follow-up phone calls after your loved one is discharged from the hospital.

- A reminder call at 7 days after hospital discharge to review the plan for your ICU Diary use
- A follow-up call at 30 days after hospital discharge to get feedback about the ICU Diary program
- **Please know that you can decline these calls or participation in the ICU Diary program AT ANY TIME!**

THE ICU DIARY PROGRAM

WHY DO WE DO IT?

ICU Diaries have been shown to decrease anxiety, depression, and trauma after a stay in the ICU for both patients and families.

- Improves understanding during after a very confusing time
- Allows patients and families to connect, even when they can't talk
- Gives family a role in the patient's illness and recovery

WHAT IS IT?

An ICU Diary is a journal kept at the patient's bedside for nurses and family members to write in daily.

After hospital discharge, patients and family review the diary to fill the memory gap many patients experience after critical illness.

WHAT IS YOUR ROLE?

Make an entry in the ICU Diary daily.

- Write about how you are feeling, note what happened today
- Talk about what is happening in the world or with other family
- Ask your nurse about taking a photo of the patient to place in the diary

Then after hospital discharge, start reading it with the patient and wait for a phone call from the project coordinator to discuss what you thought!

WANT MORE INFORMATION? Type this link in your smartphone or computer:

Insert VoiceThread Link for families here

FAMILY ICU DIARY ENTRY GUIDE

This sheet is designed as a guide to get you started and give you ideas. You don't have to stick to it but it is a good place to come if you aren't sure what to write or how to make an entry. Also consider a drawing or other artistic entry if that is something you enjoy. This really is what you make it! This diary belongs to you and your loved one and can keep you connected now and down the road.

WHAT HAPPENED TODAY	WHAT YOU COULD WRITE
☐ **WRITE ABOUT YOUR FEELINGS, WORRIES, FEARS AND THOUGHTS** Be honest during this difficult time, it can help you too.	☐ **"YOU HAD A TOUGH DAY TODAY"** **"WHEN I LOOK AT YOU I THINK _____"** **"YOU REQUIRED A LOT OF SUPPORT TODAY"** **"YOU'RE A FIGHTER"** **"I AM WORRIED ABOUT _____"** **"THIS IS SCARY BECAUSE"**
☐ **A FIRST IN RECOVERY TOOK PLACE** Celebrate when they meet big milestones	☐ **"TODAY YOU DID _____ FOR THE FIRST TIME IN _____ DAYS/WEEKS"** -Breathed on your own -Got out of bed -Squeezed our hands/ opened your eyes -Talked -Walked
☐ **NOTE WHAT HAPPENED TODAY, PROGRESS AND CONDITION, AND THE PLANS FOR TOMORROW**	☐ **"TODAY THEY/YOU _____"** **"THEY SAID TODAY/LAST NIGHT WAS GOOD/BAD FOR YOU BECAUSE _____"** **"TOMORROW THEY/YOU_____"**
☐ **SUMMARIZE VISITORS, UPDATE ON OTHER FAMILY MEMBERS AND THEIR LIVES**	☐ **"I OR YOUR CHILD/GRANDCHILD HAS BEEN BY YOUR SIDE EVERY DAY, CAME TO VISIT TODAY, OR CALLED TODAY"** **"JENNY GRADUATED TODAY, SHE MISSED YOU BEING THERE"** **"YOU ARE VERY LOVED"**
☐ **TALK ABOUT ANYTHING ELSE THAT IS HAPPENING IN THE WORLD THAT WOULD INTEREST THE PATIENT**	☐ **"IT IS SUNNY TODAY, IT WOULD BE THE PERFECT DAY TO FISH"**
☐ **HOW TO ADDRESS EMBARASSING OR OUT-OF-CHARACTER BEHAVIORS**	☐ **"YOU WERE CONFUSED TODAY"** **"YOU WEREN'T YOURSELF TODAY"** **"YOU HAD A MIXED UP DAY TODAY"**

Finally, ask your nurse about adding photos of the patient with our instant camera. This helps to track the progress of the patient's recovery and gives a visual of how far they have come.

Family Resources

The following web addresses are some wonderful resources to help you through this journey. Type these into any search bar in a computer or smartphone.

Glossary of common ICU terminology

https://www.sccm.org/MyICUCare/Glossary

More information about ICU Diaries

http://www.icu-diary.org/diary/start.html

ICU patient and family support

https://icusteps.org/

The Society of Critical Care Medicine family resources

https://www.sccm.org/MyICUCare/Home

Appendix D

Nursing Staff Pre and Post Project Surveys

Pre-Project Survey

1. Have you heard of ICU diaries before?
2. If so, do you think they are a viable intervention for implementation in your unit?
3. How do you prefer to learn?
    a. Via listening
    b. Via visual materials
    c. Via written materials
    d. Via a combination of all types of materials
    e. Other:
4. How do you prefer to give feedback?
    a. Via electronic survey
    b. Via paper survey
    c. Via comments and free text
    d. Via verbal debrief session

Comments:

Post-Project Survey

1. After implementation of the ICU diary program, how effective do you think it was?
2. What barriers did you encounter?
3. What would you have changed?
4. What worked well?
5. Did it impact your workflow?
6. If so, how?
7. How difficult was it to deliver education to family about the ICU diary?
8. How difficult was it to teach family at discharge?
9. How old are you?
10. How many years have you been a nurse?
11. What is the highest level of nursing degree you hold?

Comments:

Appendix E
Nursing Staff Education Materials

Initial Education via email:
https://psu.voicethread.com/share/17803012/

Followed by in-person education:

ROAMING INSERVICE AGENDA

ICU Diary Program Inservice Agenda
6/9 & 6/16
All Day, All Shifts

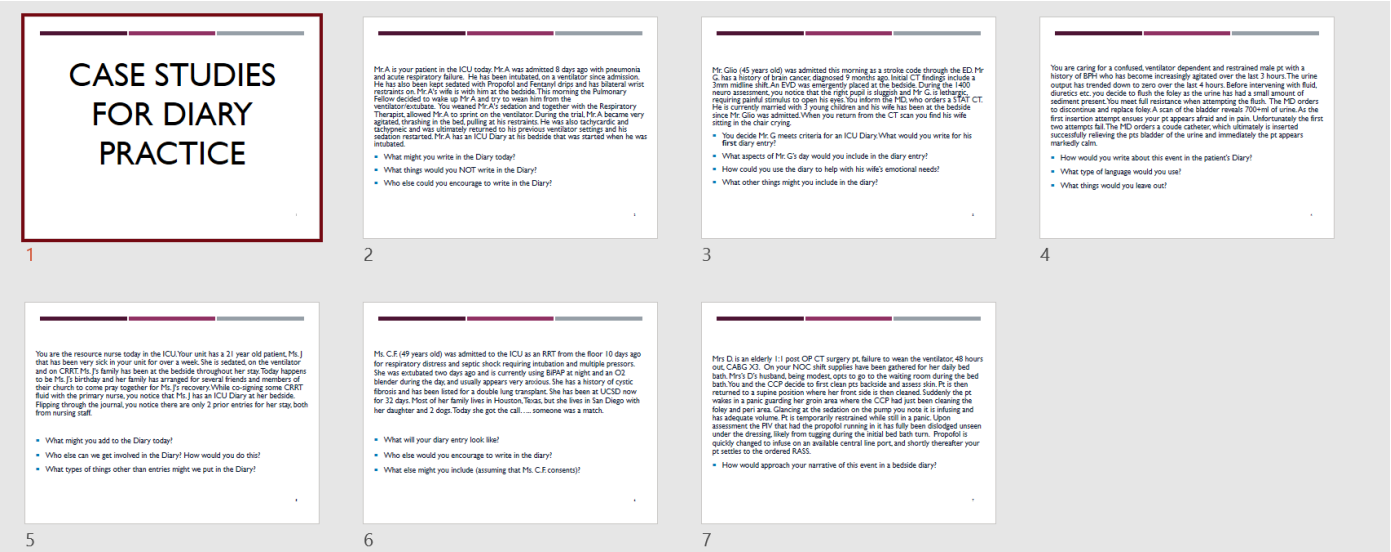
Abby Hackenberger

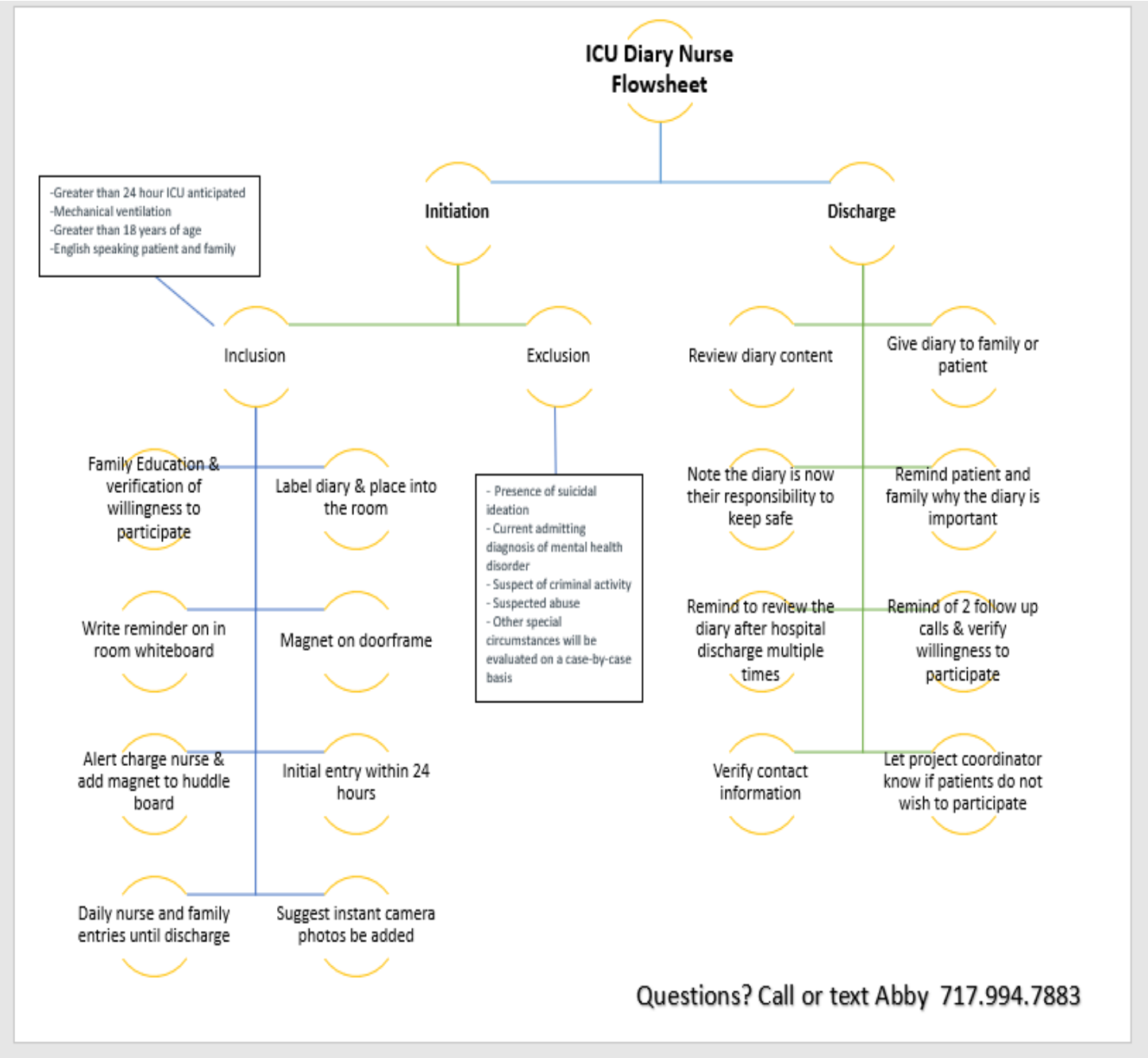
Attendees: All Full time WSICU RNs

Please Review: Voice Thread Link

- Review PICS
- Review ICU Diaries and why we use them
- Review ICU Diary Nurse Flowchart and give copies
- Review supplies and location
- Review folder contents
- Practice/ look at example diary
- Give copy of FAQs and practice examples
- Give out prizes for key word

Practice Case Study PowerPoint:





ICU Diary Virtual Tutorial.mp4

ICU Diary staff tutorial video sent out on go-live

RN ICU DIARY ENTRY GUIDE

This sheet is designed as a guide to get you started and give you ideas. You don't have to stick to it but it is a good place to come if you aren't sure what to write or how to make an entry. Also consider a drawing or other artistic entry if that is something you enjoy. This really is what you make it!

WHAT HAPPENED TODAY	WHAT YOU COULD WRITE
☐ **CARDIAC ARREST/ INTUBATION/ STATUS DECLINE** Be honest but sensitive to this difficult time	☐ **"YOU HAD A TOUGH DAY TODAY"** **"YOU REQUIRED A LOT OF SUPPORT TODAY"** **"WE DIDN'T KNOW IF YOU WERE GOING TO PULL THROUGH TODAY"** **"YOU'RE A FIGHTER"** **"WE DIDN'T GIVE UP ON YOU, WE ARE ALL PULLING FOR YOU"** **"SO MANY DOCTORS AND NURSES WERE IN YOUR ROOM"**
☐ **A FIRST IN RECOVERY TOOK PLACE** Celebrate with patients and families when they meet big milestones	☐ **"TODAY YOU DID _____ FOR THE FIRST TIME IN _____ DAYS/WEEKS"** -Breathed on your own -Got out of bed -Squeezed our hands/ opened your eyes -Talked -Walked
☐ **NORMAL CARE WAS PERFORMED**	☐ **"TODAY WE _____"** - Turned you every two hours - Cleaned your mouth every two hours - Brushed your hair/ shaved your face - Monitored your labs and vital signs - Continued to watch you closely
☐ **SUMMARIZE VISITORS**	☐ **"YOUR SPOUSE/CHILD/GRANDCHILD HAS BEEN BY YOUR SIDE EVERY DAY. CAME TO VISIT TODAY, OR CALLED TODAY"** **"IT IS OBVIOUS YOU ARE VERY LOVED"**
☐ **HOW TO ADDRESS OTHER OCCURRENCES LIKE TESTING/ DIAGNOSTICS**	☐ **"TODAY YOU HAD TO HAVE SOME TESTS PERFORMED FOR YOUR _____"** Heart, brain, belly, etc. Keep is general
☐ **HOW TO ADDRESS EMBARASSING OR OUT-OF-CHARACTER BEHAVIORS**	☐ "YOU WERE CONFUSED TODAY" "YOU WEREN'T YOURSELF TODAY" "YOU HAD A MIXED UP DAY TODAY" Maybe even offer an explanation... because of the medications, intubation, etc.

Finally, you can always update the patient on what is happening outside of their ICU bubble. Anything that might interest them is great. The weather, the news, the environment, etc.
Example: "It is so sunny today. Your wife said you love to fish, it would be a perfect day for that".

1 July

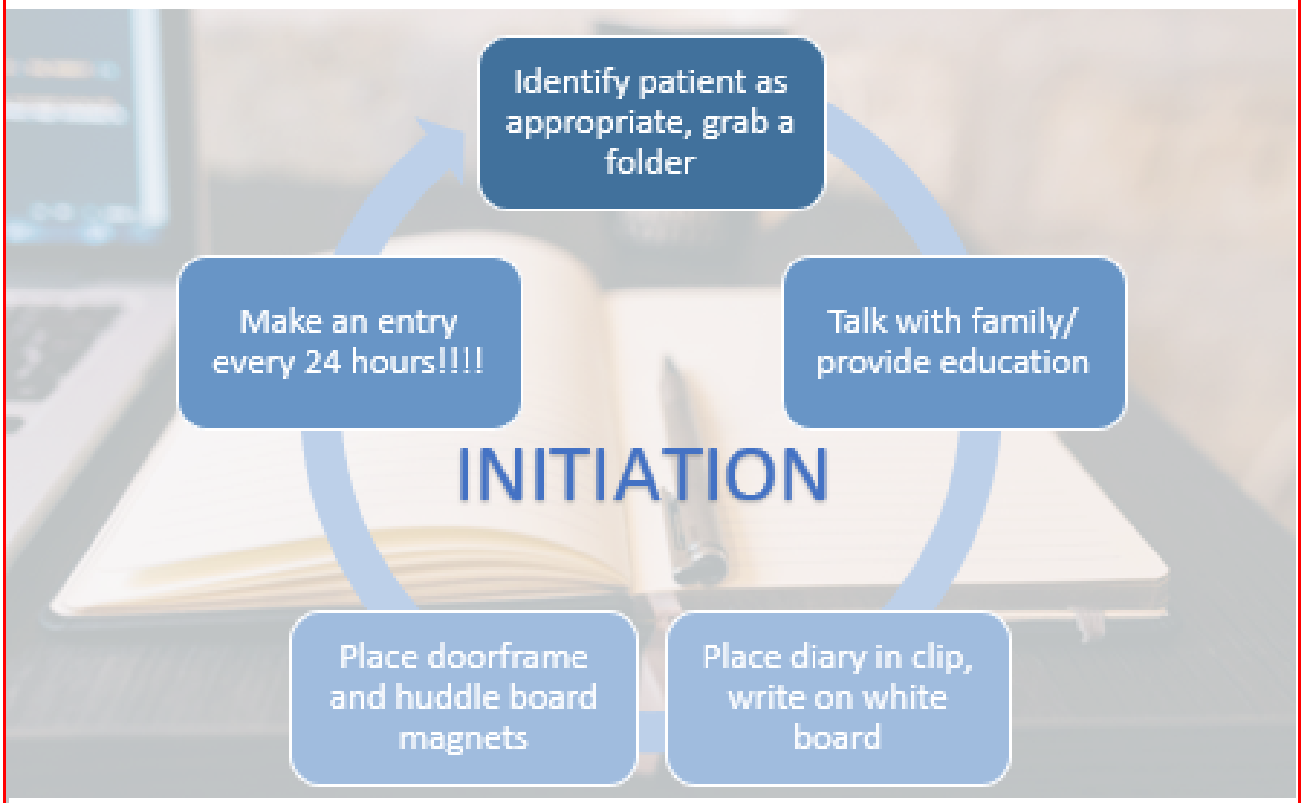
GO-LIVE

ICU DIARY

PILOT PROGRAM

1 Sept

Get ready to make a difference in our patient's and families' lives by implementing the ICU Diary Program!!!



Need help? Call or text Abby: 717-994-7883

WSICU

Appendix F
Nursing Staff Initiation and Discharge Checklists

ICU Diary Initiation Checklist

- ☐ The patient is identified as a ICU diary candidate using inclusion criteria by the primary admitting bedside nurse.

The inclusion criteria will be as follows:

- Greater than 24 hour ICU admission is anticipated
- Mechanical ventilation
- Greater than 18 years of age
- English speaking patient and family

Exclusion criteria will be as follows:

- Presence of suicidal ideation
- Current admitting diagnosis of mental health disorder
- Suspect of criminal activity
- Suspected abuse

- ☐ The primary nurse initiates the ICU Diary implementation by:

  A. Discussing the project with the patient's decision maker to ensure willingness to participate.
  B. Obtaining one prepackaged folder from the designated supply cabinet
  C. Labeling the ICU Diary with patient name and room number
  D. Placing the diary and a pen within the top drawer of the patient's in-room cabinet
  E. If the patient is in isolation the diary will be kept in the passcode protected isolation cart outside of the patient's room.
  F. Placing a diary magnet on the patient's door frame and beside their room number on the unit huddle board
  G. Adding "ICU Diary entries" to the patient's in-room white board goals list

- ☐ Add the patient to the charge nurse rounding tool
- ☐ Complete family education with provided materials. All materials will be contained within the ICU Diary folder.
- ☐ Make the first diary entry within 24 hours of initiation. This should include why the patient is admitted to ICU and the main plan of care, in easy to understand language.
- ☐ Nurse should suggest/ offer to families that photos make a valuable addition to diaries and make camera available to them
- ☐ Diary entries should be completed every 24 hours with a two entry minimum (one family member (as able), one nurse).

Contact Abby with any questions: (717) 994-7883

ICU Diary Discharge Checklist

At the time of discharge from the ICU, the primary nurse will:

- ☐ Briefly review the ICU Diary entries before presenting the ICU Diary to the patient and family. If an inappropriate entry is found, the Project Coordinator should be contacted immediately.
- ☐ Give the patient/ family the ICU diary
- ☐ Re-explain what the diary is and a reminder of why it is important
    - It will help patients and families process and accept their critical illness experience, but they have to review the contents for this to work
- ☐ Instructions to begin reviewing the diary within one week post hospital discharge. The nurse should highlight a goal to finish the first diary review within the two week period after discharge from the hospital. Patients can review their diary together with family or alone. Subsequent reviews of the diary should be encouraged, along with discussion about the ICU stay between families and patients.
- ☐ The bedside nurse will remind patients and families of two anticipated follow-up calls, and verify contact information at the time of ICU discharge. The bedside nurse will remind patients and families if they change their mind about participation in follow-up calls, they can decline at any time or ignore calls when they are made.
- ☐ If patients or families decline the follow-up calls, the patient's information will be deleted. This decision will be communicated with the Project Coordinator after the bedside nurse has discharged the patient from ICU.
- ☐ If the patient dies, the ICU Diary will be given to the primary family member or point of contact. If they do not want the ICU Diary, it will be shredded.

Contact Abby with any questions: (717) 994-7883

Appendix G
Project Coordinator Patient and Diary Tracking Sheets
(Will be placed into Microsoft Excel for statistical analysis)

Patient Identifier & Room number	Admitting diagnosis, age, gender	Admit date	Diary start date	Date left ICU	ICU LOS	Transfer unit/ date	D/C date	D/C location	OK to contact later	Initiation RN initials	Contact info/ family	7 day call date Y/N	30-day call date Y/N

Weekly Diary Audit Tool

Patient Identifier and room number	Diary initiated within 24 hrs from admission	First nurse entry within 24 hours	First family entry within 24 hours	Daily subsequent entries	Quality of entries	Photo presence Y/N

Appendix H

Patient/ Family Follow-Up Call Guide

Patient and Family Follow-Up Call Guide

Hi, this is Abby Hackenberger, the Project Coordinator for the ICU Diary project, are you still willing to talk with me about your experiences?

1. Did you use the ICU diary after your hospital discharge?
    a. If yes- explain how (frequency, method of review)
    b. If no- explain why not
2. Family member- did you get clear instructions at the beginning of your loved ones' ICU stay?
3. How easy was it to understand the instructions regarding ICU diary use?
4. Did you run into challenges when obtaining and using the ICU diary for entries?
5. How clear were the discharge instructions for using your diary?
6. Did the ICU diary help when working through the critical illness experience after you left the hospital? (Y/N)
7. Did you sit down alone or together to review the diary?
8. Did you have trouble remembering your ICU stay after hospital discharge? (Y/N)
9. Did the nurses make daily entries in the ICU diary?
10. Did you take any photos to add to your diary?
11. Family member- Did you make daily entries?
12. Would you recommend continuing the use of ICU diaries for patients in the future?
13. If so, what could we do to make the process easier/ better?
14. If not, why?

Thank you so much for participating in this project.

ICU Diary Project Follow-up call Log

Patient number:

Date and Time:

Follow up call type:	☐ 7 day follow-up	☐ 30 day follow-up
Attempt number:	☐ 1	☐ 2
Call answered:	☐ Yes	☐ No
Message left:	☐ Yes	☐ No

Call details:

Q1

Q2

Q3

Q4

Q5

Q6

Q7

Q8

Q9

Q10

Q11

Q12

Q13

Q14

Appendix I

IRB Letters of Approval

UPMC LIFE CHANGING MEDICINE

May 20, 2021

UPMC Pinnacle Harrisburg
Institutional Review Board

Thomas Pineo, D.O.
IRB Chairman

307 South Front Street
Press Hall First Floor
Harrisburg, PA 17104
717-231-8394

Abbygale Hackenberger, RN
Principal Investigator

Re: Expedited Review of a New Study – Minimal Risk

21E032 -- ICU Diaries: A Pilot Program

We received your request for an Expedited Review of a New Study – Minimal Risk.

Reviewed was an education program for patients, family and staff with retrospective chart review and follow-up phone survey of ICU patients asked to complete an ICU diary. Data will be collected as outlined in the proposal, in accordance with the minimum necessary standard, and no personally identifiable information will be published.

This qualifies for expedited review as per 45 CFR 46.110, 21 CFR 56.110 and Policy IRB# 07. A one-time approval has been granted as per 45 CFR 46.109(f)(i), 46.101(b)(2) and Policy IRB# 08. This action will be reported to the Institutional Review Board at the next scheduled meeting.

Thank you for your continued cooperation. If we can be of any assistance to you, please call our Board at (717) 231-8394. Any requested follow-up should be addressed to our Board and forwarded to Nancy Fisher, IRB Coordinator, UPMC Pinnacle IRB, 307 South Front Street, Press Hall First Floor, Harrisburg, PA 17104.

Sincerely yours,

Thomas Pineo, DO
Chairman
UPMC Pinnacle Institutional Review Board

DHHS OHRP Registration:
IORG0001079
IRB00001476
FWA00001055

Office for Research Protections
Vice President for Research
The Pennsylvania State University
205 The 330 Building
University Park, PA 16802

814-865-1775
Fax: 814-865-8699
orp@psu.edu
research.psu.edu/orp

NOT HUMAN RESEARCH

Date: May 27, 2021

From: Joanie Tan,

To: Abbygale Hackenberger

Type of Submission:	Initial Study
Title of Study:	ICU Diaries: A Pilot Program
Principal Investigator:	Abbygale Hackenberger
Study ID:	STUDY00017839
Submission ID:	STUDY00017839
Funding:	American Association of Critical Care Nurses

The Office for Research Protections determined that the proposed activity, as described in the above-referenced submission, does not meet the definition of human subject research as defined in 45 CFR 46.102(d) and/or (f). Institutional Review Board (IRB) review and approval is not required.

The IRB requires notification and review if there are any proposed changes to the activities described in the IRB submission that may affect this determination. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office for Research Protections.

This correspondence should be maintained with your records.

Appendix J
Evidence Table

Citation/ Author Names	Research Question/ Hypothesis	Design/ Methods & Intervention	Sample (Characteristics/ Size/ Setting)	Variables & measures	Findings & Data Analysis	Critique & Author Conclusions	Level of Evidence
Aitken, L. M., Rattray, J., Hull, A., Kenardy, J. A., Le Brocque, R., & Ullman, A. J. (2013). The use of diaries in psychological recovery from intensive care. *Critical Care (London, England)*, 17(6), 253-253. https://doi.org/10.1186/cc13164	analyze literature regarding ICU diary use to determine impact of diaries on recovery.	Critical Appraisal of both qualitative and quantitative studies Evaluated by 2 authors themes developed through email and teleconference	n=11 Ovid MEDLINE (1950 to February 2013), Ovid EMBASE (1980 to February 2013), EBSCOhost CINAHL (1982 to February 2013), Cochrane Central Register of Controlled Trials (April 2013 issue), and PsycINFO (1950 to February 2013)	ID- Use of ICU diaries DV- Patient recovery Measurements were variable as different types of studies were reviewed, most used unstructured or semi-structured interviews and questionnaires in qualitative studies with no identified validity measures, RCTs used PTSS-14, ICUMT and HADS	No statistical analysis reported, just summary of results in narrative format Study findings tend to be positive for ICU diary use, limitations suggest that implementation as routine clinical practice should not occur until more information is gathered	S= inclusion of different types of evidence, use of 2 author review L= studies have a degree of overlap but also significant variation making comparison difficult, many studies have methodological limitations including small numbers, selected samples, lack of clarity regarding the intervention delivered and in the method of assessment, the outcome measures chosen, and the length of follow-up, no statistical analysis performed or reported only narrative format used	Level 5

Aitken, Leanne M, RN, PhD, FACN, Rattray, J., Kenardy, J., Hull, A. M., Ullman, A. J., Le Brocque, R., Macfarlane, B. (2016;2017;). Perspectives of patients and family members regarding psychological support using intensive care diaries: An exploratory mixed methods study. *Journal of Critical Care*, 38, 263-268. http://dx.doi.org/10.1016/j.jcrc.2016.12.003	If PICS influences patients' and relatives' choice as to whether they would like to receive a diary and what information delivery method is preferred.	Exploratory mixed methods study- both qualitative and quantitative data collection Inclusion: ICU length of stay at least 3 days and expected to survive to hospital discharge, >18yo 2 groups: patients and families Psychological distress measured, then interviews were conducted 3 to 5 months after D/C in person or by phone Differences were examined using Fisher exact test ($P < .05$)	n=79 57 patients and 22 relatives consented, with 22 patients and 22 relatives interviewed large tertiary, metropolitan hospital in Brisbane, Australia	IV- Psychological Distress: assessed using K-10 PTSD Checklist – 5 and the PCL5 DV- Diary perception of benefit: assessed using a 4-point Likert scale and exploratory interview	Psychological distress was evident in 25 (47%) patients and 5 (23%) relatives. Participants' psychological health was similar for those who perceived diaries as beneficial, and those who did not ($P = .08$) A significant relationship between level of psychological compromise and patient desire for an ICU diary was determined using Fisher's exact test ($P b .05$).	S- took into account both patients and families, finding that they may need separate interventions, valid reliable tools used L- attrition rates between recruitment at the end of ICU admission and follow-up were high (ICU patients, 43%; family members, 48%), completed at a single site, and small sample size, exclusion of non-English speaking patients, interviews in person or by phone (differences in measures/ bias)	Level 6

Backman, C. G., Orwelius, L., Sjoberg, F., Fredrickson, M., & Walther, S. M. (2010). Long-term effect of the ICU-diary concept on quality of life after critical illness. *Acta Anaesthesiologica Scandinavica*, 54(6), 736-743. https://doi-org.ezaccess.libraries.psu.edu/10.1111/j.1399-6576.2010.02230.x	the ICU-diary concept could improve patient's QoL by filling in their memory gaps	A non-randomized, prospective study Received the ICU-diary (keeping a diary with photos while in the ICU plus a follow-up meeting) when a long and complicated course was expected, then follow up on QoL performed at 6, 12, 24, and 36 months and compared with group that did not receive the diary All adults (>17 years) admitted between March 2002 and June 2004 who stayed in the ICU >24 h and who were alive 6 months after discharge	n=38 had diary n=224 no diary non-academic mixed medical–surgical 8 bed general ICU	ID: ICU Diary use (yes or no) DV: Health related quality of life measured by the SF-36 Multiple regression models adjusted for age, sex, illness severity, pre-existing disease and diagnostic category was used to analyze the effects of the ICU-diary concept at 6 months, and changes over time were analyzed using repeated measures MANOVA.	Crude and adjusted scores for two dimensions of SF-36 (general health and vitality) and the physical component summary score were significantly higher at 6 months in the ICU-diary group ($P< 0.05$) and some of the effects remained during the 3-year follow-up period ($P< 0.05$)	S= Adjusted for quality of life determinants (sex, age, disease), used a tool that had prior testing done to prove validity L= nonrandomized, major differences between groups (no diary group in the ICU much less time, less critical illness), no health related quality of life ratings at baseline upon admission, lower response rate from non-diary group may cause bias, small n and from a single center	Level 6

Barreto, B. B., Luz, M., Rios, Marcos Nogueira de Oliveira, Lopes, A. A., & Gusmao-Flores, D. (2019). The impact of intensive care unit diaries on patients' and relatives' outcomes: A systematic review and meta-analysis. *Critical Care (London, England)*, 23(1), 411-10. https://doi.org/10.1186/s13054-019-2678-0	evaluate literature on the effect of ICU diaries for patients & relatives admitted in ICU	Systematic review and metanalysis of both qualitative and quantitative studies 2 authors independently searched PubMed, OVID, Embase, EBSCO host, and PsycINFO Studies were included if the intervention group (ICU diary) was compared with a group with no diaries and patients ≥ 18 years old admitted in the ICU for > 24 h Structured tools were used to assess the methodological quality.	n=12 Included RCTs, observational studies, letter with original data, and abstracts were included	ID: Use of ICU diaries DV: Effects on patients admitted to the ICU Different methods of evaluation were utilized in each study that was analyzed.	ICU diary was associated with lower risk of depression (RR 0.41, 95% CI 0.23–0.75) and better quality of life (10.3 points higher in SF-36 general health score, 95% CI 0.79–19.8), without a decrease in anxiety or PTSD This supports the use of ICU diaries to reduce the risk of depression and preserve the QOL of patients after ICU admission.	S- studies reviewed have not been included in a previously published meta-analysis, expanding the knowledge of the association between ICU diary and psychiatric outcomes in patients and their relatives. Described the structure of diaries used in the studies, workload associated with writing the diary, and the perception of the participants about receiving the diary L- Different types of studies used in the review, Variation among the studies in sample size, in the time of intervention, in tools used to diagnose PTSD, in the threshold used for the psychiatric diagnosis, and in follow-up duration was observed	Level 5

Beg, M., Scruth, E., & Liu, V. (2016). Developing a framework for implementing intensive care unit diaries: A focused review of the literature. *Australian Critical Care*, 29(4), 224-234. https://doi.org/10.1016/j.aucc.2016.05.001	Construction of a common framework for designing and implementing Intensive Care Unit diaries based on prior studies.	Focused systematic review of both qualitative and quantitative studies Several databases (MEDLINE, PubMed-NCBI, Cochrane CENTRAL and Google), identified key information regarding the development, design, and implementation of the journals	n = 25, most from European countries 16 assessed outcomes with surveys or interviews, 9 evaluated quantitative outcomes	narrative explanation of best practice in designing and implementing diaries, not a cause and effect question Grouped information from studies into 3 groups (target populations, format and content of diaries, and manner of return and follow-up)	not statistically analyzed, show trends in research of ICU diaries to help develop a framework for future projects	S- Excellent compilation of and comparison between a large number of studies of different types looking at design and implementation strategies L- Studies conducted in only a few countries, article quality was reviewed for bias by only 1 author, none of the studies explored fully the timing of the diary, training provided to the clinicians writing in the diary, and methods for returning the diary to the patient.	Level 5

Egerod, I., Christensen, D., Schwartz-Nielsen, K. H., & Ågård, A. S. (2011). Constructing the illness narrative: A grounded theory exploring patients' and relatives' use of intensive care diaries. *Critical Care Medicine*, 39(8), 1922-1928. doi:10.1097/CCM.0b013e31821e89c8	To explore how patients and relatives use diaries in the context of the illness trajectory	Qualitative multicentered design using in-depth semi-structured interview technique. ICU diaries and handover 1 or 3 months post-ICU discharge Then paired interviews completed.	n=32 A nine-bed general intensive care unit and a 13-bed thoracic surgical intensive care unit in Denmark. A sample of 19 patients at 6 –12 months post-intensive care unit discharge and 13 relatives	ID: Use of ICU diaries DV: opinions on best use Grounded Theory Method used to explore the use of diaries as a psychosocial process of recovery Severity of illness was recorded by APACHE	Patients stated that diaries helped them fill in memory gaps. The central phenomenon used was "constructing the illness narrative" Recommendation of intensive care diaries as a low-technology, low-cost rehabilitative intervention for patients and relatives to help bridge the span from intensive care to recovery Severity of illness was recorded by APACHE: mean score for Site I was 26 and for Site II was 18	S= Combining data from two sites provided dual advantages, increasing the volume of participants and promoting transferability. The constant comparative method improved internal validity, and credibility was established by triangulating data and involving multiple researchers to discuss each other's interpretations L= Small sample size, no actual statistical analysis reported, semi-structured interview allows for bias	Level 6

Ewens, B. A., Hendricks, J. M., & Sundin, D. (2015). The use, prevalence and potential benefits of a diary as a therapeutic intervention/tool to aid recovery following critical illness in intensive care: A literature review. *Journal of Clinical Nursing*, 24(9-10), 1406-1425. https://doi-org.ezaccess.libraries.psu.edu/10.1111/jocn.12736	summarize use, prevalence, purpose and potential therapeutic benefits of ICU diaries following survivors' discharge from hospital and identify areas for future exploration	Literature Review of both qualitative and quantitative studies The review used key terms and Boolean operators across a 34-year time frame in: CINAHL, Medline, Scopus, Proquest, Informit and Google Scholar three recognized approaches appropriate for the types of studies included in the review.	n= 22 October 2013- July 2014 Inclusion: In English. Original research articles and/or discussion articles about adult ICU diaries. An evaluation of the articles limited to the patient experience. Published between January 1980–July 2014.	ID: Use of ICU Diaries DV: Therapeutic benefits Different evaluation methods throughout studies	Proposition of national guidelines, reduction of the psychological complications following intensive care has recently emerged. No statistical methods reported	S= search was guided by an answerable questions, Articles were reviewed both for their methodological rigor and their contribution to practice L= some studies may contain bias via translation, exclusion of three articles which were not in English. The quantity of articles generated from the Google Scholar search prohibited further exploration and this may have limited the collection of pertinent studies as yet unpublished in scientific journals.	Level 5

Ewens, B. A., Hendricks, J. M., & Sundin, D. (2017). Never ending stories: Visual diarizing to recreate autobiographical memory of intensive care unit survivors. *Nursing in Critical Care*, 22(1), 8-18. https://doi-org.ezaccess.libraries.psu.edu/10.1111/nicc.12093	potential use of visual diarizing to enable intensive care unit (ICU) survivors to create their story of recovery	Qualitative interpretive biographical exploration This paper is part of a larger study but looks in depth at 1 patient's visual diary and ICU recovery journey. The participant was supplied with visual diary materials at 2 months post-hospital discharge and depicted his story in words and pictures for a 3-month period, after which he was interviewed	n= 1 (part of a larger study) recruited using purposive sampling from a general ICU in Perth, Western Australia. Inclusion criteria for the larger study were that participants were aged over 18 years, had been ventilated for a minimum period of 24 h, spoke and understood English and had no new or existing cognitive impairment.	ID: Visual diary use DV: creation of a patient's story of recovery Two interviews were undertaken at 2 and 5 months following discharge from hospital	This study was included because of the firsthand insight into the ICU survivors recovery and use of a diary tool to depict that recovery. The participant felt that the visual diary enhanced his recovery. Used Etherington's framework and Kucera et al.'s processes of interpretation to guide analysis No statistics reported	S- a very different perspective from an ICU survivor which will give insight into the goals for this project L- very small N, 1 study location, not generalizable	Level 6

Fukuda, T., Inoue, T., Kinoshita, Y., & Yukawa, T. (2015). Effectiveness of ICU diaries: improving "distorted memories" encountered during ICU admission. *Open Journal of Nursing*, 5(04), 313. http://dx.doi.org/10.4236/ojn.2015.54034	assess improving distorted memories by providing information during ICU admission to patients to relieve the acute stress symptoms after ICU discharge.	Nonrandomized controlled trial Using ICUMT, HADS and the ASDS 1 week after ICU discharge, then HADS and ASDS prior to hospital discharge, the change in mean values were compared between two groups (control and intervention) using a Wilcoxon signed-rank test The intervention group was surveyed prior to hospital discharge using semi-structured interviews, and descriptions were analyzed by the content analysis method of Krippendorff	n=30 included patients aged ≥20 years who had received treatment for ≥3 days in the ICU Japan July 2014 to December 2014 patients aged ≥20 years who had been treated in ICU for ≥3 days	ID: Use of ICU diaries DV: presence of acute stress symptoms- assessed by HADS, ASDS and ICUMT	When comparing subjects with distorted memories between the groups, we found reduced values for HADS anxiety (7.1 ± 3.8 to 5.7 ± 2.7, p = 0.011), HADS depression (8.6 ± 5.0 to 7.2 ± 4.3, p = 0.003), and ASDS (46.9 ± 13.8 to 43.8 ± 11.4, p = 0.012) in the intervention group. Improving distorted memories during ICU admissions may relieve acute stress symptoms	S= Use of valid and reliable tools, face to face interviews, no prior use of ICU diaries in Japan- all new concept L= small sample, , no system has been established for the long-term, continuous care of patients after being admitted to the ICU, nonrandomized, use of semi-structured interviews allows for bias	Level 3

Garrouste-Orgeas, M., Flahault, C., Fasse, L., Ruckly, S., Amdjar-Badidi, N., Argaud, L., Timsit, J. (2017). The ICU-diary study: Prospective, multicenter comparative study of the impact of an ICU diary on the wellbeing of patients and families in french ICUs. *Trials*, 18(1), 542-11. https://jama.jamanetwork.com/article.aspx?doi=10.1001/jama.2019.9058&utm_campaign=articlePDF%26utm_medium=articlePDFlink%26utm_source=articlePDF%26utm_content=jama.2019.9058	To evaluate the PTSS in patients who receive ICU diaries. Secondary objectives are to evaluate the PTSS in families, anxiety and depression symptoms in patients and families, and the recollected memories of patients.	A prospective, multicenter, randomized, assessor-blind comparative study – 2 groups (1 with diary and 1 without) Diary given at ICU discharge Three months after ICU discharge or death of the patient, a psychologist calls the patient and family. PTSD will be evaluated using the Impact of Events Scale-Revised questionnaire, anxiety and depression symptoms using the Hospital Anxiety and Depression Scale questionnaire, both in patients and families, and memory recollection using the ICU Memory Tool Questionnaire in patients. An interview of the patients in the intervention arm will be conducted 6 months after ICU discharge to analyze in depth how they use the diary	n=657 35 participating centers, 20 patients each – must have 1 family member that will visit, ventilated w/in 48hrs post admit, no chronic or acute neuro/ cognitive impairments France	ID: Use of ICU diaries DV: post traumatic stress syndrome, anxiety, depression, and recollected memories of patients- measured by IESR, the HADS, and ICUMT	At 3 months, significant PTSD symptoms were reported by 49 of 164 patients (29.9%) in the intervention group vs 60 of 175 (34.3%) in the control group (risk difference, -4% [95% CI, -15% to 6%]; P = .39). The median (interquartile range) IES-R score was 12 (5-25) in the intervention group vs 13 (6-27) in the control group (difference, -1.47 [95% CI, -1.93 to 4.87]; P = .38). There were no significant differences in any of the 6 prespecified comparative secondary outcomes. A 50% rate of loss to follow-up may bias the association between the intervention and the outcome, and compromise the generalizability	S= Randomized, strong design, multicenter, larger sample L= Healthcare workers are not blinded, won't allow understanding of what is important within the diary, patients or families may reveal randomization arm during interview	Level 2

Glimelius Petersson, C., Ringdal, M., Apelqvist, G., & Bergbom, I. (2018). Diaries and memories following an ICU stay: A 2-month follow-up study: Diaries and memories up to 2 months post ICU. *Nursing in Critical Care*, 23(6), 299-307. doi:10.1111/nicc.12162	To describe and compare patients' memories and PTSD in relation to having received and read or not received a diary and patients' experiences of having received and read their diary	Descriptive and comparative study both quantitative and qualitative data Patients received their diaries at ICU discharge. After 2 months patients answered the ICUMT, PTSS-14 and a questionnaire including space for own comments about the diaries.	n=96 >18yo, >3 day length of stay 52(54%) received a diary, 44 did not. Of these, 40 patients responded to PTSS-14 and had evaluated and read the diary and 34 patients served as controls	ID: ICU Diary use DV: patients memories, PTSD presence, and personal experience-evaluated by ICUMT, PTSS-14, and a questionnaire with space for comments	No significant differences were found in presence/absence of memories between these groups. In the diary-group patients with emotional memories had lower APACHE. Feelings of being anxious or frightened were more common in the diary-group. At 2 months, 12% scored above cut-off on the PTSS14 with no difference between groups. The diaries were helpful for understanding the ICU-stay Mean PTSS-14 scores did not differ between patients in the diary and non-diary groups (28 vs 23, p=0.12).	S= minimal differences in both group's average APACHE scores, tools used were valid and reliable, both quantitative and qualitative data used L= small sample size and two groups which are not completely comparable, not randomized,	Level 6

Halm M. A. (2019). Intensive Care Unit Diaries, Part 1: Constructing Illness Narratives to Promote Recovery After Critical Illness. *American journal of critical care : an official publication*, American Association of Critical-Care Nurses, 28(4), 319–323. https://doi-org.ezaccess.libraries.psu.edu/10.4037/ajcc2019731	Focuses on the problem: What is the experience of critical care nurses and relatives who author diaries, and of patients and relatives who receive diaries after discharge?	Clinical Evidence Review of Level C qualitative studies The Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed were searched All qualitative studies	n=9 level C qualitative studies Original research in the past 5 years that investigated experiences of patients, relatives, and nurses with ICU diaries.	ID: ICU diary use as author/ patient relative DV: experiences of diary use Synthesis of themes throughout the literature was used, no specific tool was mentioned, no statistics reported	ICU diaries are a promising narrative intervention to promote healing Reading the diary helped patients understand the seriousness of their illness or injury, fill in gaps of memory, and come to terms with what happened	S= recent and original research was used L= No specific tools for evaluating articles were mentioned, differences in measures and designs of qualitative studies, small n, no quantitative data	Level 5

Halm, M. A. (2019). Intensive Care Unit Diaries, Part 2: Impact of Diaries and Follow-up Consultation on Post-Intensive Care Syndrome. American *Journal of Critical Care*, 28(6), 488-492. doi: https://doi.org/10.4037/ajcc2019839	Do ICU diaries and/or follow-up consultation reduce anxiety, depression, PTSD, or physical/cognitive impairments and improve quality of life in patients who survive critical illness	Systematic Review of both qualitative and quantitative studies studies identified through CINAHL and PubMed with key words ICU, critical care, PICS, diaries, follow-up consultation, patients, and relatives. All results were filtered for within the last 5 years. All data was reviewed by 1 author. Development of evidence map with source meeting the following criteria: must have comprehensively searched at least 2 databases, used validated criteria to assess methods and potential bias, and explicitly focused on diaries or follow-up consultation	n=11 Of 11 studies 1 was a meta-analysis, 2 were systematic reviews/meta-analyses, 2 were systematic reviews, 3 were randomized controlled trials (RCTs), 1 was observational, and 2 were descriptive. 5 studies were focused on diaries, 2 were focused on follow-up consultation, and 4 addressed mixed interventions (diaries/follow-up).	ID: ICU diary use DV: Anxiety, depression, PTSD, Physical/ cognitive impairments, quality of life after illness (HRQoL)- measured by different tools in each study	No statistical analysis reported. Found that ICU diaries have a positive effect on patients' anxiety, depression, and HRQoL outcomes and on PTSD among relatives - Potentially positive effect on PTSD of patients	S: Studies of different types included, thorough examination and comparison of all studies L: Only 1 author reviewed, so likely to have more bias, no strict framework used for evaluation, low level evidence only – need more research in this area, all studies used different evaluation methods at different time frames, so generalizability may not be as reliable	Level 5

Holme, A. N., Halvorsen, K., Eskerud, R. S., Lind, R., Storli, S. L., Gjengedal, E., & Moi, A. L. (2020). Nurses' experiences of ICU diaries following implementation of national recommendations for diaries in intensive care units: A quality improvement project. *Intensive & Critical Care Nursing*, 59, 102828. https://doi.org/10.1016/j.iccn.2020.102828	To evaluate critical care nurses' experiences of ICU diaries following the implementation of national recommendations for the use of diaries for critically ill patients	Quality improvement project Follow-up survey to nurses across Norway after country wide implementation of ICU diaries. Data analyzed via descriptive statistics, qualitative data from surveys were organized by themes and reported as such	n = 39 Norwegian ICUS	ID: Use of ICU diaries DV: Critical care nurse's experiences measured by a questionnaire asking about experiences of implementing national recommendations on diaries in Norwegian ICUs, as well as their impact and how they are used	Diaries were provided in 24 (61.5%) of the responding ICUs. Fifty-six per cent of the ICUs had revised their routines, of which 62% had updated and 38% had developed new protocols. Most ICUs kept the diary along with other medical information describing patient care, but only 50% of the ICUs scanned handwritten diaries into the electronic medical records before handing them over to patients or the bereaved. ICU nurses reported that implementing national recommendations had increased their awareness and knowledge on patient and family needs, as well as the long-term effects of critical illness.	S- Large N, wide range of nursing perspective should be generalizable L- patients and their next of kin were not involved, and the fact that different methods were used in contacting the ICUs in 2009 (telephone) and in 2014 (postal questionnaire). Moreover, Norwegian hospitals have centralized the care for patients in need of ventilator support in recent years, reducing the number of departments treating the main target group for receiving an ICU diary, done in Norway	Level 6

Johansson, M., Wåhlin, I., Magnusson, L., & Hanson, E. (2019). Nursing staff's experiences of intensive care unit diaries: A qualitative study. *Nursing in Critical Care*, 24(6), 407-413. doi:10.1111/nicc.12416	This study aimed to explore how nursing staff experienced the use of ICU patient diaries	Qualitative design using focus group interviews Semi-structured, focus groups interviews were carried out over a 6-month period in 2016–2017 They were conducted in a secluded room lasting 45-75 mins. The data were analyzed via thematic content analysis	n=27 Six focus group interviews were conducted with 27 nursing staff recruited from one university and two county hospitals Sweden	ID: ICU Diary use DV: Nursing staff experience measured by semi-structured interviews	The theme identified was 'An effort to do good in words and actions', and four interconnected themes were derived from the analysis. By creating the diary, nursing staff had to deal with a variety of ethical and practical dilemmas, but feedback from patients, family members and ICU follow-up services reinforced the feeling of doing good.	S= Same moderator for all focus groups, nursing participants included both those who wrote and those who did not write in patient diaries. Participants comprised a heterogeneous sample varying in age and professional experience in critical care. Both female and male participants contributed to the study. The focus groups were homogeneous in that nurses and nursing assistants were interviewed as separate L= The first moderator was an active clinical nurse in one of the participating units, which might have had an influence on the dynamics of the group. There was low attendance (3) in one group, and overall, participants were predominantly positive to diarizing.	Level 6

Jones, C., Backman, C., Capuzzo, M., Egerod, I., Flaatten, H., Granja, C., Sahlgrenska Academy. (2010). Intensive care diaries reduce new onset post traumatic stress disorder following critical illness: A randomized, controlled trial. *Critical Care (London, England),* 14(5), R168-R168. http://ccforum.com/content/14/5/R168	To evaluate whether a prospectively collected diary of a patient's intensive care unit (ICU) stay when used following critical illness will reduce the development of new onset PTSD.	RCT Inclusion: Adult ICU patients >72 hr length of stay & ventilated > 24 hrs Patients randomized into groups, all patients who met criteria had a diary written for them, patients ICU memories were assessed at 1 week post ICU, Intervention patients received their ICU diary at 1 month following critical care discharge along with a baseline PTSD assessment and the final assessment of the development of acute PTSD was made at 3 months. Control group could receive their diary after the 3 month mark and questionnaire was completed.	n= 352 six general district hospitals and six university hospitals in six European countries.	IV: ICU diary use DV: new PTSD development assessed by- ICUMT and PTSS-14	The incidence of new cases of PTSD was reduced in the intervention group compared to the control patients (5% versus 13%, P = 0.02). Fewer intervention patients, compared with controls, were diagnosed as having new onset PTSD at three months, 8 of 162 (5%) versus 21 of 160 (13.1%) (chi-squared = 7.15, P = 0.02; Table 2). This is despite 70 of 162 (43.2%) intervention patients and 76 of 160 (47.5%) controls reporting on the PDS that they found their ICU experience traumatic = PTSD	S- Randomization, low attrition rate, direct question interview instead of postal delivery, 12 ICUs increases generalizability of the results. Scoring of the PDS is difficult to influence unconsciously L- Investigator going through the diary with the patient could influence results, not all patients could get back to the hospital to receive their diary or for the final interview due to travelling distance and so these interviews were conducted by telephone, Inability to use longer scale for PTSD at 1 month	Level 2

Knowles, R. E., & Tarrier, N. (2009). Evaluation of the effect of prospective patient diaries on emotional well-being in intensive care unit survivors: A randomized controlled trial. *Critical Care Medicine*, 37(1), 184-191. doi:10.1097/ccm.0b013e31819287f7	To evaluate the effect of a prospective diary intervention on levels of anxiety and depression in a group of intensive care unit survivors	RCT Inclusion: admitted for a minimum of 48 hrs, ages 18-85 Prospective diary kept by nurses for the duration of the patient's stay on intensive care unit. All participants were assessed on two occasions 3 weeks apart, The experimental group was offered the diary intervention in between the two assessment points, while the other did not receive the diary until after the second meeting and acted as the control group. Staff were blinded.	n= 36 Adult intensive care unit, medical/surgical wards of a district general hospital and community bases between March 2006 and March 2007	ID: Use of ICU diary DV: anxiety and depression levels- measured by HADS APACHE Structured Clinical Interview for DSM-IV Screening Module.	At initial assessment, almost half of patients fell into the "disorder likely" category on the HADS (44% for anxiety and 47.2% for depression). Paired-samples Student's t tests to compare the HADS scores at time 1 and time 2 in the two participant groups revealed that the experimental group displayed statistically significant decreases in both anxiety ($t(1,17)$ 2.65, $p < 0.05$) and depression ($t(1,17)$ 3.33, $p < 0.005$) scores, while the control group did not	S= Able to maximize findings due to "real life" service innovation, used valid and reliable tools L= Small sample size due to recruitment issues during doctoral study process	Level 2

Kredentser, M. S., Blouw, M., Marten, N., Sareen, J., Bienvenu, O. J., Ryu, J., Olafson, K. (2018). Preventing posttraumatic stress in ICU survivors: A single-center pilot randomized controlled trial of ICU diaries and psychoeducation. *Critical Care Medicine*, 46(12), 1914-1922. http://dx.doi.org/10.1097/CCM.0000000000003367	To inform the design of a larger trial, we assessed feasibility of ICU diaries and psychoeducation to prevent PTSD, depression, and anxiety following ICU stays	single-center, pilot RCT Collection of patient memories was completed at 1 week post ICU discharge using the ICUMT, as well as completion of the HADS and PTSD IESR were both completed as 30 and 90 days post discharge. The interventions were delivered during the 30 day follow-up.	n=58 tertiary, 10-bed mixed medical-surgical ICU in Winnipeg, MB, Canada. Between May 30, 2014, and November 30, 2016	ID: ICU Diary use/ Psychoeducation use DV: PTSD, Anxiety, depression measured by ICUMT, HADS and PTSD IESR	Those who received the diary intervention had significantly lower median HADS anxiety (3.0 [interquartile range, 2–6.25] vs 8.0 [interquartile range, 7–10]; p = 0.01) and depression (3.0 [interquartile range, 1.75–5.25] vs 5.0 [interquartile range, 4–9]; p = 0.04) symptom scores at 90 days than patients who did not receive a diary. Almost all participants recalled some portion of their ICU stay, mostly unpleasant. Participants who received a diary had significantly lower anxiety and depression scores than those who did not	S- randomized, high rate of buy-in and participation in the study from family and healthcare providers. L- inadequate power for true analysis of the differences in groups, a small N, and one center site use. Attrition rates were also higher than expected at 13%. Use of self-report symptom measures instead of diagnostics tools/ interviews may also affect the outcomes here. Few patients met eligibility criteria which may limit generalizability of the intervention to the whole ICU population.	Level 2

Levine, S. A., Reilly, K. M., Nedder, M. M., & Avery, K. R. (2018). The Patient's perspective of the intensive care unit diary in the cardiac intensive care unit. *Critical Care Nurse*, 38(4), 28-36. doi:10.4037/ccn2018970	To describe implementation of an intensive care unit diary in the cardiac intensive care unit and to describe the patient's perspective of the diary	Descriptive qualitative Inclusion: English speaking adults intubated >24 hrs The study consisted of 3 phases: writing in the diary about the patient's events in the cardiac intensive care unit, a follow-up visit with the patient within 1 week of cardiac intensive care unit transfer, and a follow-up telephone call 2 months after hospital discharge. Data was then reviewed for themes	n= 13 (completed all phases of the study) 10 bed CCU in a large, urban, academic medical center located in the northeastern United States CCU patients who were intubated for a minimum of 24 hours and who were without any preexisting dementia or history of posttraumatic stress disorder or PICS to participate in the study	ID: Use of ICU diary DV: Patient's perspective of diary use measured by follow up telephone call scripted open ended question interview	No statistical analysis reported Findings are summarized: (1) The diary allowed patients to correlate memories to actual events, (2) it enabled patients to read about their families' experiences during their critical illness, (3) recovery was an emotional process that affected the patient's readiness to read the diary, and (4) patients expressed a desire for more entries by caregivers.	S- excellent patient perspective information along with details about the program that apply directly to my DNP project plans L- single unit, single institution, exclusion of non English speaking patients, participation was optional for nursing staff, involvement of the research team in post ICU interviews may have cause bias	Level 6

McIlroy, P. A., King, R. S., Garrouste-Orgeas, M., Tabah, A., & Ramanan, M. (2019). The effect of ICU diaries on psychological outcomes and quality of life of survivors of critical illness and their relatives: A systematic review and meta-analysis. *Critical Care Medicine*, 47(2), 273-279. doi:10.1097/CCM.0000000000003547	To evaluate the effect of ICU diaries on posttraumatic stress disorder symptoms in ICU survivors and their relatives. Secondary objectives were to determine the effect on anxiety, depression, and health-related quality of life in patients and their relatives.	Systematic review and metanalysis of both qualitative and quantitative studies Studies reviewed independently by two authors. Data was abstracted using a structured template. Data were pooled using inverse variance weighting in random effects models. The Cochrane-Mantel-Haenszel chi-square test statistic was calculated to assess statistical significance. A p value of less than 0.05 was considered significant.	n= 8 RCTs, prospective or retrospective cohort, before-and-after, and case control studies were all included. studies were included if there was an ICU intervention group compared to a non-diary group	ID: Use of ICU diaries DV: PTSD symptoms, anxiety, depression, and Health related quality of life measured by different tools in each study	Pooled results found no significant reduction in patients' posttraumatic stress disorder symptoms with ICU diaries (risk ratio, 0.75 [0.3–1.73]; p = 0.5; n = 3 studies); however, there was a significant improvement in patients' anxiety (risk ratio, 0.32 [0.12, 0.86]; p = 0.02; n = 2 studies) and depression (risk ratio, 0.39 [0.17–0.87]; p = 0.02; n = 2 studies) symptoms. There was a significant improvement in health-related QOL of patients with a mean increase in the Short Form-36 general health score by 11.46 (95% CI, 5.87–17.05; p ≤ 0.0001; n = 2 studies)	S- Included studies other than RCTs so gathered more data, included many papers and studies not mentioned in other reviews (extensive search), L- a large number of publications pertaining to ICU diaries, but few studies were included in this review, quality of studies included (mostly moderate with substantial risk for bias), many observational in nature and included small N, different reporting numbers made findings difficult to pool	Level 5

Nielsen, A. H., Angel, S., Egerod, I., & Hansen, T. B. (2018). The effect of diaries written by relatives for intensive care patients on posttraumatic stress (DRIP study): Protocol for a randomized controlled trial and mixed methods study. *BMC Nursing*, 17(1), 37-10. https://doi.org/10.1016/j.aucc.2019.01.004	To test the hypothesis that a diary written by a close relative of a critically ill patient will reduce the risk of developing symptoms of PTSD in the patient and relatives at 3 months post-ICU. Also to explore the perceptions and use of the diary and describe the diary content and structure	Two-arm, single-blind, randomized controlled trial plus 2 hermeneutical phenomenological Studies Inclusion: ≥ 18 years, expected to stay in the ICU (LOS-ICU) ≥ 48 h and expected to be mechanically ventilated ≥ 24 h. Diary given to a close relative, and with nurse guidance instructed to make one entry per day A questionnaire mailed to all participants at 3 months post-ICU discharge. A reminder mailed 2 weeks later for non-responders to reduce attrition bias. After completion of the questionnaire, two interviews conducted at 3–4 months and 7–12 months post-ICU for the qualitative studies.	n = 116 Denmark Four mixed medical-surgical ICUs at two university hospitals (January 1st-July 1st 2017) and two regional hospitals (March 15th-2015 July 1st 2017) in Western Denmark. Levels of ICU-certified nurses ranged from 65 to 90%.	ID: ICU Diary use DV: PTSD measured by PTSS-14, HADS and the Medical Outcomes Study Questionnaire Short Form 36 (SF-36) Two other associated qualitative studies also completed - hermeneutical phenomenological studies: an interview study addressing patients' and relatives' perception and use of the diary and an analysis of the diary content and structure	Relatives had 26.3% lower scores of posttraumatic stress in the diary group than in the control group (95% confidence interval: 4.8–% to 52.2%). Patients had 11.2% lower scores of posttraumatic stress symptoms in the diary group (95% confidence interval: −15.7% to 46.8%). There were no differences between groups in depression, anxiety, or health-related quality of life. Keeping a diary was perceived by the relatives as a challenging but rewarding task in qual. Studies.	S- Combination of RCT and qualitative studies deepen understanding of results and gather more information, valid and reliable tools used L- lack of blinding of participants, health professionals and the investigator.	Level 2 & Level 5

Nydahl P, Fischill M, Deffner T, Neudeck V, Heindl P. Intensivtagebücher senken Risiko für psychische Folgestörungen : Systematische Literaturrecherche und Metaanalyse [Diaries for intensive care unit patients reduce the risk for psychological sequelae : Systematic literature review and meta-analysis]. *Med Klin Intensivmed Notfmed.* 2019 Feb;114(1):68-76. German. https://doi.org/10.1007/s00063-018-0456-4	To review the literature regarding ICU diaries and their effects on mental disorders, particularly Post Traumatic Stress Syndrome (PTSS)	Systematic literature review and metanalysis of both qualitative and quantitative studies replicated the design of the Cochrane Review done by Ulman with identical search algorithms, but included additional outcomes data from validated methods of diagnostic psychological complications that were not considered in the original Cochrane Review Included studies were independently evaluated and tabulated by 2 authors based on the "Cochrane risk of bias assessment of randomized controlled trials"	n=6 studies 605 patients and 145 relatives were included in the meta-analysis. The evidence of the studies is low to good. Primary outcome parameter was PTSS in patients or relatives with intensive care journals. Secondary outcome parameters were symptoms of anxiety or depressive disorder. The quality of the study was assessed with the Cochrane Risk of Bias Assessment.	ID: Use of ICU Diaries DV: PTSS measured differently in each study	Meta-analysis of PTSS showed a) a non-significant reduction in intensive care patients (4 studies, n = 569 patients) (odds ratio [OR] 0.58; 95% confidence interval [95% CI]: 0.24-1.42; p = 0.23), b) a significant reduction in relatives (2 studies, n = 145 relatives) (OR 0.17; 95% CI: 0.08-0.38; p < 0.0001). For the symptoms of anxiety and depression in intensive care patients (2 studies each, n = 88 patients) there was a significant reduction (OR 0.23, 95% CI: 0.07-0.77; p = 0.02, or OR 0.27; 95% CI: 0.09-0.77, p = 0.01) Intensive diaries can reduce the risks of psychological consequences	S= Use of studies with validated evaluation tools were used, expanded inclusion criteria, utilized a successful framework from prior metanalysis L= small n, limited search time and ability due to resources, included studies show a wide range of results and design methodologies - difficult to compare with so many variables	Level 5

O'Gara, G., & Pattison, N. (2016). A qualitative exploration into the long-term perspectives of patients receiving critical care diaries across the united kingdom. *Intensive & Critical Care Nursing*, 36, 1-7. http://dx.doi.org/10.1016/j.iccn.2016.04.006	Impact of diaries on critical care patients around the United Kingdom in order to describe the long-term effects of patient diaries.	Qualitative exploratory study In-depth qualitative interviews, using principles of grounded theory, via telephone and email were undertaken from former ICU patients who had received diaries within the past 1-3 years participants recruited through responses via advertisements on critical care charity/support websites The analysis process involved coding, which is a process for both categorizing qualitative data and for describing the implications and details of these categories, followed by Grounded Theory analysis	n=8 across the United Kingdom	ID: Use of ICU diaries DV: long term effects of diary use measured by telephone or email interviews	Diaries can offer a means of filling the gaps for patients who struggle with coming to terms with their critical care recovery, but should be given to patients with forethought and subsequent support.	S= Well organized categorization process for qualitative data L= very small n, inconsistent method of interview (phone or email)	Level 6

Pattison, N., O'Gara, G., Lucas, C., Gull, K., Thomas, K., & Dolan, S. (2019). Filling the gaps: A mixed-methods study exploring the use of patient diaries in the critical care unit. *Intensive & Critical Care Nursing*, 51, 27-34. https://doi.org/10.1016/j.iccn.2018.10.005	Exploration of the impact of diaries on critical care patients in order to describe the long-term effects of patient diaries	Mixed methods exploratory sequential study (qualitative emphasis) study Inclusion: patients likely to remain in the CCU for >48 h, able to read and understand English and minimum 18 years of age A two phase study including a prospective diary intervention and evaluation and subsequent in-depth interviews, using the principles of Grounded Theory	n = 50 tertiary referral cancer hospital in England with a designated 19-bed critical care unit	ID: ICU diary use DV: long term effects of patient diaries evaluated by-PTSS-14 and EuroQol EQ-5D-3L, and a questionnaire about diary use was completed by participants and content analysis of the diary was also undertaken, alongside basic demographics to explore patient characteristics.	95% found diaries helpful and 90% found it helped fill memory gaps. Mean scores for PTSS-14 (cumulative) at four months and 12 months: 30.5 (SD=10.8) and 25.7 (SD=11.7). Mean EuroQol visual analogue scores at four months and 12 months were 77.8 (SD=14.3) and 71.8 (SD=18.5) respectively.	S- Mixed methods, thematic analysis of each diaries content, L- Done in the critically ill cancer population (subset of typical ICU patients with other issues), a large proportion of patients died during follow-up, possibly the sickest patients who might have derived most benefit from the diaries, not randomized or controlled study and no formal power calculation was carried out, limited conclusions can be drawn. Families were not included, and despite possible benefit, unknown psychiatric comorbidities, response bias in diary questionairre	Level 6

Sarada, P., Edwards, S., Poole, A., & Chapman, M. (2018). The impact on new-onset stress and PTSD in relatives of critically ill patients explored by diaries study (The "INSPIRED" study). Australian critical care : *official journal of the Confederation of Australian Critical Care Nurses*, 31(6), 382–389. https://doi-org.ezaccess.libraries.psu.edu/10.1016/j.aucc.2	To determine if relatives of an Australian critically ill population were interested in using ICU diaries. To determine the prevalence and impact of ICU diaries upon symptoms of PTSD, depression and anxiety in relatives of an Australian critically ill population.	Prospective, observational, quantitative exploratory study Inclusion: patients staying >48 h in a level 3 ICU were identified A survey using DASS-21, IES-R questionnaires was performed on admission followed by a repeat survey 90 days post discharge from ICU. An IES-R score >33 was used to define severe PTSD symptoms. A comparison between subjects who did and did not complete their diaries was performed	n=108 Royal Adelaide Hospital (RAH), Adelaide, Australia. single-centre study of relatives of patients admitted to a mixed, level 3 (medical/surgical) intensive care unit in a major quaternary referral center in South Australia between July 2015 and June 2016 convenience sample size of 100 chosen	ID: Use of ICU diaries DV: PTSD symptoms, depression and anxiety measured by the IESR and Depression, Anxiety and Stress Scale	Family members had significantly higher odds of PTSD at baseline compared to 3 month follow up (P value ¼ 0.0092, Odds Ratio ¼ 3.3, 95% CI: 1.3, 8.2). Family members with incomplete diaries were less likely to report depressive symptoms at baseline (P value ¼ 0.0218, estimate ¼ 4.6, 95% CI: 8.5, 0.7). Diary completion was not indicative of the likelihood of family members to report PTSD symptoms (P value ¼ 0.5468, estimate ¼ 1.6, 95% CI: 6.8, 3.6).	S= prospective and pragmatic design. Introduction and interviews were standardized, a standardized framework utilized in the documentation of the ICU diaries with formal training given to nursing staff with regards to detailing events during the patients stay. Thirdly, the primary relative was screened at inclusion for premorbid mental health problems, same provider doing all diaries L= a single quaternary hospital ICU and was constrained by a relatively small sample size with only sixty family members included which might potentially limit the generalizability of the results, high proportion of incomplete diaries (40%) which probably reflects the practical difficulties in organizing a patient diary in a busy ICU with conflicting commitments	Level 6

Sayde, G. E., Stefanescu, A., Conrad, E., Nielsen, N., & Hammer, R. (2020). Implementing an intensive care unit (ICU) diary program at a large academic medical center: Results from a randomized control trial evaluating psychological morbidity associated with critical illness. *General Hospital Psychiatry*, 66, 96-102. https://doi.org/10.1016/j.genhosppsych.2020.06.017	To assess the efficacy of a diary versus bedside PTSD education-only on reducing symptoms of new-onset PTSD in patients after their ICU course.	RCT randomized to get both ICU diary and bedside PTSD education or bedside PTSD education only Inclusion: ICU stay > 72 hrs, sedated and intubated >24hrs, no pre-existing PTSD, dementia, head injury, or neurocognitive diseases documented Psychological symptom screening at baseline within 1 week of ICU discharge, at 4 weeks, 12 weeks and 24 weeks after ICU discharge	n=60 60 bed Surgical and Medical ICUs in a University Medical Center in New Orleans, September 2017-September 2018,	ID: ICU diary use vs. bedside PTDS education only DV: PTSD measured by IES-R, PHQ-8, HADS, and GAD-7	No significant differences in PTSD symptoms in either group at any timeframe- all groups exhibited clinically significant PTSD symptoms at all timeframes post discharge. Identified a care gap in patients getting resources post ICU discharge.	S: Randomized sample, standardized intervention, comparison between 2 groups, valid and reliable tools used L: Unable to control for most variables, small sample size with loss of many participants to withdrawal (42%) within 1 week of enrollment, difficulty generating staff involvement, inconsistent family investment, little use of diary after discharge, lack of resources for follow-up, no prior hospital system exposure to ICU diary use, likely that the diaries had benefits in other ways that were not captured due to focus on psychological aspect of PICS in this study	Level 2

Strandberg, S., Vesterlund, L., & Engström, Å. (2018). The contents of a patient diary and its significance for persons cared for in an ICU: A qualitative study. *Intensive & Critical Care Nursing*, 45, 31-36. https://doi.org/10.1016/j.iccn.2017.12.004	To describe the contents of a patient diary and its significance for persons cared for in an ICU.	Empirical study with a qualitative design Inclusion criteria for this study included - >18 yo -had previously been treated in an ICU for at least 72 hours - had read their diary. Eight telephone interviews and one face-to-face interview were conducted with nine persons previously been treated in an ICU and been given a patient diary Responses were reviewed multiple times by authors, categories and themes were identified	n = 9 February–March 2017 Northern Sweden Participants were selected by a contact critical care nurse (CCN) at the ICU who is responsible for following up with previous intensive care patients.	ID: Use of ICU Diary DV: Significance for patients measured by semi-structured qualitative telephone interviews (which had been verified to meet study aims by a pilot interview) were conducted by two authors	Patients feel cared for when they read a diary written especially for them. Guidelines outlining what should be in a diary would encourage critical care nurses and relatives to write and place photos in it.	S- allows understanding from the patient's perspective/ thoughts/ feelings about the diary L- Phone interviews instead of face to face, very small N, not structured of based on any mentioned framework or theories	Level 6

Teece, A., & Baker, J. (2017). Thematic analysis: How do patient diaries affect survivors' psychological recovery? *Intensive & Critical Care Nursing*, 41, 50-56. https://doi.org/10.1016/j.iccn.2017.03.002	To use thematic analysis to explore and synthesis evidence of the actual or potential reported effects of diaries on the psychological rehabilitation and recovery of discharged critical care patients.	Literature review using thematic analysis of both qualitative and quantitative studies MEDLINE, Embase, CINAHL, and the Cochrane Library were searched (2006–2016)	n=10 Primary research studies focused on adult critical care survivors were included Ten primary studies were selected to be included in the thematic analysis, four quantitative and five qualitative, high quality studies originate from England, France, Scandinavia and the United States	ID: Use of ICU diaries DV: effects on the psychological rehab and recovery measured in different ways by different studies Deductive thematic analysis was used to identify and synthesize themes	3 themes: 1) Reclaiming ownership of lost time. 2) Emphasizing personhood. 3) Fear and frustration. The diary intervention was shown to have a largely positive impact on survivors' psychological rehabilitation. caution: recipients could find the contents painful and emotional. Diaries should be embedded within a robust critical care follow-up plan.	S= However, the quantitative studies produced robust evidence indicating that receiving a diary impacts positively on health-related quality of life reduces anxiety and depression and reduces new-onset PTSD L= The review is limited by the paucity of studies eligible for inclusion and small cohort sizes. The majority were qualitative, reflecting the human experience of receiving and reading a diary	Level 5

Ullman, A. J., Aitken, L. M., Rattray, J., Kenardy, J., Le Brocque, R., MacGillivray, S., & Hull, A. M. (2015). Intensive care diaries to promote recovery for patients and families after critical illness: A cochrane systematic review. *International Journal of Nursing Studies*, 52(7), 1243-1253. http://dx.doi.org/10.1016/j.ijnurstu.2015.03.020	To assess the effect of an intensive care unit (ICU) diary versus no ICU diary on patients, and their caregivers or families, during the patient's recovery from admission to an ICU	Cochrane systematic review of 3 RCTS Reviewed the following sources: CENTRAL, MEDLINE, CINAHL, EMBASE, PsycINFO, PILOT; Web of Science Conference Proceedings, clinical trial registries and reference lists of identified trials excluded non-randomized studies to decrease potential bias All abstracts were reviewed by two authors Cochrane systematic review protocol	n=3 Randomized controlled trials and controlled clinical trials evaluated the effectiveness of patient diaries for their impact on recovery after admission to ICU	ID: ICU diary use DV: effects of diary measured by different methods throughout studies	No statistical analysis was reported 1 study found significant differences in patient family outcomes who had ICU diaries, but no difference was found in patient groups.	S: Methods for literature search were clear and reproducible L: Small sample sizes of studies make it difficult to adequately examine results, overall quality of the evidence in this review is considered low to very low, very few RCTs in this area of research- need more investigation on this topic	Level 1

Wang, S., Xin, H., Chung Lim Vico, C., Liao, J., Li, S., Xie, N., & Hu, R. (2020). Effect of an ICU diary on psychiatric disorders, quality of life, and sleep quality among adult cardiac surgical ICU survivors: A randomized controlled trial. *Critical Care (London, England),* 24(1), 81-81. https://doi.org/10.1186/s13054-020-2797-7	effects of using an ICU diary on psychiatric disorders, sleep quality, and quality of life (QoL) in adult ICU survivors in China	RCT The patients in the intervention group received the use of ICU diaries during the period of post-ICU follow-up, while the patients in the control group received usual care without ICU diaries. IES-R; total score ≥ 35 was defined as significant PTSD symptoms) and its severity in patients 3 months post-ICU. memories of the ICU at 1 month, QoL, sleep quality (Pittsburgh Sleep Quality Index Questionnaire, PSQI), anxiety, and HADS at 3 months.	n=126 cardiac surgery patients whose stay was expected to be >24 hrs February 2016 to January 2017	ID: ICU diary use DV: Psychiatric disorders, sleep quality, ICU memories and quality of life after illness measured by Chinese version of IES-R, QOL Medical Outcomes Study 36-item short form, HADS, ICUMT, and Pittsburg Sleep Quality Index Questionnaire	Significant PTSD symptoms were reported by 6 of 41 (14.63%) in the intervention group vs 9 of 42 (21.43%) in the control group (risk difference, − 9% [95% CI, − 2% to 21%], P = 0.10). significant differences in hyperarousal score, numbers of factual memories and PSQI score (P < 0.05). No adverse effect was reported	S= Randomized, many valid and reliable tools used L= Did not measure patients' compliance with the intervention, may cause the study being underpowered when estimating the effect of the diary. high rates of drop-out and small sample sizes were limited to the power of our statistical analyses. No private area to review diary process, may have affected the diary's effectiveness	Level 2

APACHE: Acute Physiology and Chronic Health Evaluation; ASDS: Acute Stress Disorder Scale; CCU: Cardiac Care Unit; D/C: discharge; DV: Dependent Variable; GAD-7: Generalized Anxiety Disorder 7-item;HADS: Hospital Anxiety and Depression Scale; ICU: Intensive care unit; ICUMT: ICU Memory Tool; IESR: Impact of Events Scale- Revised; IV: Independent Variable; K-10 PTSD Symptom Checklist- 5: Kessler-10 Posttraumatic Stress Disorder Symptom Checklist – 5; L: Limitations; PCL5: Post Traumatic Stress Disorder Symptom Checklist – Civilian V5; PHQ-8: Patient Health Questionnaire; PICS: Post Intensive Care Syndrome; PTSD or PTSS: Post Traumatic Stress Disorder/ Syndrome; PTSS-14: Post Traumatic Stress Scale- Version 14; RCTs: Randomized Control Trials; S: Strengths; SF-36: Medical Outcomes Study 36-Item Short-Form; QoL: Quality of Life

*Note: IV & DV were used within qualitative studies to highlight relationships