FACILITATING COMMUNICATION STUDY (FCS2)

Protocol Number: UW STUDY00005369
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Sponsor: University of Washington School of Medicine

Grant Title: Evaluating Effectiveness of a Communication Facilitator to Reduce Distress and Improve Goal Concordant Care for Critically Ill Patients and Their Families: A Randomized Trial
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CONFIDENTIALITY STATEMENT

This document is confidential communication. Acceptance of this document constitutes agreement by the recipient that no unpublished information contained herein will be published or disclosed without prior approval of the Principal Investigator or other participating study leadership and as consistent with the NIH terms of award.

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STATEMENT OF COMPLIANCE

The trial will be carried out in accordance with International Council on Harmonisation Good Clinical Practice (ICH GCP) and the following:

- United States Code of Federal Regulations (CFR) applicable to clinical studies (45 CFR Part 46, 21 CFR Part 50, 21 CFR Part 56, 21 CFR Part 312, and/or 21 CFR Part 812).

National Institutes of Health (NIH)-funded investigators and clinical trial site staff who are responsible for the conduct, management, or oversight of NIH-funded clinical trials have completed Human Subjects Protection and ICH GCP Training.

The protocol, informed consent form(s), recruitment materials, and all participant materials will be submitted to the IRB for review and approval. Approval of both the protocol and the consent form(s) must be obtained before any participant is consented. Any amendment to the protocol will require review and approval by the IRB before the changes are implemented to the study. All changes to the consent form(s) will be IRB approved; a determination will be made regarding whether a new consent needs to be obtained from participants who provided consent, using a previously approved consent form.

INVESTIGATOR'S SIGNATURE

The signature below constitutes the approval of this protocol and provides the necessary assurances that this study will be conducted according to all stipulations of the protocol, including all statements regarding confidentiality, and according to local legal and regulatory requirements and applicable US federal regulations and ICH guidelines, as described in the *Statement of Compliance* above.

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1 PROTOCOL SUMMARY

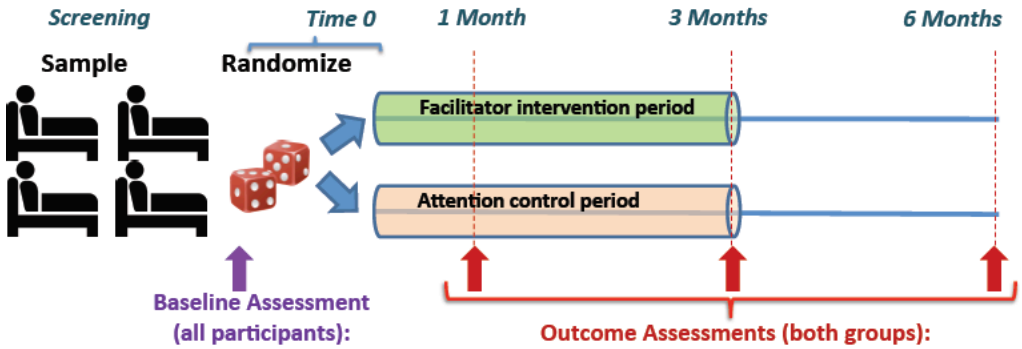
1.1 SYNOPSIS

Title:	Evaluating effectiveness of a communication facilitator to reduce distress and improve goal concordant care for critically ill patients and their families: A randomized trial
Grant Number:	R01NR018161
Study Description:	This study is a randomized clinical trial of an intervention to improve outcomes for patients and their family by using ICU nurse facilitators to support, model, and teach communication strategies that enable patients and their families to secure care in line with patients' goals of care over an illness trajectory, beginning in the ICU and continuing to care in the community.
Objectives*:	The long-term objectives of this study are to evaluate, implement, and disseminate a model of care that ensures patients with critical illness receive care that is concordant with their goals over time, and across settings and providers. Specific Aims: 1. Evaluate the effectiveness of an innovative communication facilitator on patient- and family-centered outcomes after critical illness, beginning with a critical care hospitalization and continuing through transitions in care. 2. Evaluate the effectiveness for increasing healthcare value (defined as quality over costs), including reduced costs and cost-consequence ratios (dollars per unit change in depression, anxiety, or quality of life). 3. Use qualitative methods to explore implementation factors (intervention, settings, individuals, processes) associated with improved implementation outcomes (acceptability, fidelity, penetration) to inform dissemination of this type of intervention to support patients and their families. ["Post-study interview"] 4. Identify predictors of poor patient- and family-centered outcomes among patients admitted to the intensive care unit (ICU) with chronic illness with the goal of identifying those patients who are at high risk for poor outcomes and thus have the most opportunity to benefit from targeted supportive and palliative interventions. 5. Explore patient, family, and clinician perspectives on the types, timing, and feasibility of supportive and palliative interventions that they believe would improve patient- and family-centered outcomes for patients with chronic illness via qualitative interviews. ["Post-study interview"] 6. Explore the impact of the COVID-19 pandemic on the families of patients with critical illness, including those with and without COVID-19 and identify opportunities to support family members through the restricted visitation that has resulted from the COVID-19 pandemic.

Endpoints*:	Primary Outcome/Endpoint: Family member symptoms of depression assessed with the Hospital Anxiety and Depression Scale (HADS) Secondary Outcomes/Endpoints: Family member symptoms of anxiety assessed with the Hospital Anxiety and Depression Scale (HADS); Concordance between the care patients want and the care they are receiving will be measured with two questions from the SUPPORT study; Subjective distress caused by a traumatic event assessed with the Impact of Event Scale-6 (IES-6); Family experience of quality of life at the end of life for patients with serious illness using the QUAL-E (Fam); Health care utilization during and after index hospitalization; Mediators: Participants' feelings of competence (self-efficacy) using the Perceived Competence Scale (PCS) Implementation Outcomes: acceptability, fidelity, penetration Other: Family member assessment of perceived financial stress using modified FACIT-COST instrument
Study Population:	Patients: adult, seriously ill, admitted to ICU; Seattle Washington: N=376 Family: adult, caregivers to patients: N=564 Clinicians/Administrators: adult, key informants familiar with intervention and hospital systems; Seattle Washington: N=15
Phase* or Stage:	Phase II
Description of Sites/Facilities Enrolling Participants:	University of Washington Medicine Centers: 1. Harborview Medical Center 2. UWMC 3. Northwest ~~4. Valley Medical Center~~
Description of Study Intervention/Experimental Manipulation:	Facilitator-Based Intervention. Facilitators interact in person or by telephone with patients, family, and clinicians both during and following the patient's ICU stay for 3 months. In-person contacts include visits to patients' homes and/or care facilities; phone contacts include calls to patients, families and clinicians. Patients and families have access to facilitators through phone and email 5 days per week. Facilitators may attend clinic visits with patients. In addition to checking directly with patients/families during regular contacts, facilitators also access the electronic health record to ensure they have accurate information about appointments and treatment plans and to document key points for the clinical team. Facilitators encourage referral to inpatient or outpatient palliative care services when needs are identified.
Study Duration*:	60 months + no-cost extension
Participant Duration:	6 months

1.2 SCHEMA

Figure 2: Overview of the study timeline



1.3 SCHEDULE OF ACTIVITIES

	Screening	Enrollment	Baseline Questionnaire	Month 1	Month 2-3	Month 6	Post-Activity	
EHR Review Eligibility	X							
Informed Consent		X						
RSQ			X					
Randomization			X					
Intervention - ICU				X	X			
Intervention - Acute Care				X	X			
Intervention - Community				X	X			
Outcome Evaluation								
Survey Check-in/Reminder		X	X	X	X	X		
Questionnaire Administration			X	X	X	X		
Chart Abstraction	X						X	
Implementation								
Fidelity Assessments				X	X	X	X	
Qualitative Interviews							X	
Regulatory								
Adverse Events Reporting		X	X	X	X	X	X	

2 INTRODUCTION

2.1 STUDY RATIONALE

Critically ill patients and their families suffer a high burden of symptoms of depression, anxiety, and post-traumatic stress due, in part, to fragmented medical care that is often poorly aligned with their goals. Fragmented care includes numerous transitions for patients and families across clinicians and across settings, starting in the intensive care unit (ICU) and extending to acute care, skilled nursing facilities, or home. As illness progresses across these transitions, patients and families struggle to navigate the spectrum of goals of care, to match their values and goals with treatments, to communicate their goals to their clinicians, and to make difficult medical decisions without letting unmet emotional needs caused by distress interfere. Poor communication, exacerbated by transitions across the multiple clinical teams, compounds an already stressful experience for patients and their families. Using a randomized trial, this study proposes to evaluate an innovative model of care in which ICU nurse facilitators support, model, and teach communication strategies that enable patients and families to secure care in line with their goals over an illness trajectory. [Aims 1-3][R01]

Nested within this study, we will also investigate the personal financial stress that critically ill patients and their family members experience during and after a stay in the ICU. Although it is recognized that patients and family members experience financial stress during and after critical illness, little is known about how to address this type of stress. Through a novel, validated instrument to measure financial stress, and patient, family member and clinician interviews, we will assess causes of financial stress, the degree to which financial concerns cause distress, and attitudes towards potential services that could possibly reduce financial distress. [Aims 4-5][K23]

Additionally, in the current setting of the COVID-19 pandemic during which families are restricted from visiting their loved ones in the ICU, we will adapt this model of care to rely on distant contacts (phone/video), rather than in-person interactions, by ICU nurse facilitators to support, model and teach communication strategies that enable patients and families to secure care in line with the patient's goals over an illness trajectory. [Aim 6]

2.2 BACKGROUND

In our prior Phase II trial (Family Communication Study, UW IRB#33584), an earlier version of this intervention reduced symptoms of depression among family of critically ill patients and reduced hospital length of stay and costs of care, even after accounting for costs of the intervention. This next study evaluates effectiveness of the intervention with three added improvements based on feedback from family members, as well as experience with the prior trial: 1) we identify high-risk critically-ill patients and their families early in the ICU stay and then support communication across all transitions in care extending beyond the ICU for 3 months; 2) the intervention engages clinicians who regularly staff the ICU and coordinates with post-ICU resources to enhance scalability and dissemination; and 3) we examine factors that can impede or facilitate implementation and dissemination of this or similar interventions in the future.

Our prior work on financial stress suggests that the prevalence of finance-related stress is high and persistent among patients requiring intensive care and their families, and this stress is a mediator of

symptoms of anxiety and depression. This study will allow us to better understand contributors to this stress and potential interventions that might help reduce financial stress for patients and their family members.

Our clinical experience working in the hospital during the COVID-19 pandemic is that family members are under tremendous stress caused by the pandemic and the visitation restrictions. In addition, clinicians are also stressed by the workload, the family visitation restrictions, and concerns for their own health. In this context, we need to identify ways to support patients, family members, and clinicians.

2.3 RISK/BENEFIT ASSESSMENT

2.3.1 KNOWN POTENTIAL RISKS

This research has been acknowledged as "minimal risk" by the IRB of record.

There is a potential risk for stress and discomfort among patients and family subjects because of the focus on sensitive health information at a stressful time, including discussions with the facilitator and clinicians about goals of care at the end of life and decisions that may be made at that time. Questions about goals of care and preferences for palliative care and end-of-life care are part of the questionnaire items and outcome measures.

Family member subjects may be upset or distressed by receiving a survey after the patient's death that addresses his or her own personal health and feelings. In order to ensure that families have adequate time to process their loved one's death, this survey will be sent on the same 1-3-6 month schedule but with an interval of at least 1 month following the patient's death.

Based on our prior experience with this intervention, this risk is minor and concerns by participants infrequent.

The potential risks to all subject groups include perceived or real invasion of privacy, and risks of the perception of coercion that may be associated with participation. Subjects will be informed that their questionnaire and interview responses will be kept confidential by the research staff. Interview subjects will additionally be notified that hospital officials and supervisors will not have access to any outcome evaluations or feedback that might be linked to individual clinicians.

There is the risk of a breach of confidentiality.

There is the potential for randomization to the control/comparator arm to cause dissatisfaction for subjects who desire to have the facilitator intervention. If this concern arises, we will explain the principle of randomized trials and the reasons that it is essential to honor the randomization procedures in order to conduct a legitimate study.

Risks will be explained during recruitment and the informed consent procedures. Participation is voluntary and participants may withdraw from the study at any time for any reason.

2.3.2 KNOWN POTENTIAL BENEFITS

There may be some benefit to the participants enrolled in the intervention group. The availability of the communication facilitators and the services they will provide will likely be of assistance during the hospital stay and during transitions following the hospital stay. Participants in the control arm are not likely to benefit from the study's activities. Participants in the comparator group with access to a resource person may receive some benefit by the help and support the resource person can provide. There are no anticipated individual benefits in regard to completion of questionnaires or interviews.

If successful, this research activity will provide a valuable model to improve the quality of care for patients and their families during and after critical illness through the use of a feasible and generalizable communication intervention that identifies and communicates the goals of care across the spectrum of goals from curative and restorative to palliative care. The goals of the intervention are to reduce the psychological stress of critical care and transitions during and after critical care, improve goal-concordant care, and improve quality of life while simultaneously reducing unwanted high-intensity care at the end of life.

2.3.3 ASSESSMENT OF POTENTIAL RISKS AND BENEFITS

All subjects will be informed of the research nature of the activity, including the composition of specific questionnaire items, the estimated time required to complete the activities, and that participation is voluntary. All study personnel will be trained in the protection of human subjects, HIPAA regulations, and will sign confidentiality agreements. We will clarify and ensure that questionnaires and interviews are confidential, and results will not be shared among patients, family groups, or other care providers. Identifying information and de-identified study records will be kept in locked file cabinets and password protected computers. All study databases will be maintained on password protected computers and routinely backed up to password protected files. Identifying information will be deleted at the earliest possible date and in compliance with University of Washington guidelines. Data presentations will include only group data and will be presented in a way that ensures individual participants cannot be identified. If respondents may be identified by a specific subgroup analysis due to the low numbers of these types of respondents (e.g., patients aged >90), these subgroup data will not be presented in any format.

For all participants, it will be emphasized that participation is voluntary, that all steps involved with participation are voluntary, that they are allowed to refuse to complete any activity or to answer any question they are asked, and that they may withdraw from the study or any study procedures at any time without any loss of rights or benefits to which they are otherwise entitled and without losing status or standing within the institution. Additionally, subject payments and tokens of appreciation will be kept small to minimize potential coercion or the appearance of coercion.

All potential participants will be provided contact information for the IRB of record (University of Washington Human Subjects Division) to register complaints or other problems. Adverse events will be reported by the principal investigators to the IRB and the chair of our Data and Safety Monitoring Committee (DSMC) at the time of occurrence. The DSMC will modify or stop the study if any such complaints represent a legitimate concern about the study procedures or methods.

Our goal in this randomized trial is to evaluate, implement, and disseminate a model of care that ensures patients with critical illness receive care that is concordant with their goals over time, and across settings and providers. This model of care uses a nurse-led communication facilitator who will assist patients and their families in identifying, communicating and enacting their goals of care, and will be feasible for implementation in routine clinical practice. A test of this intervention will not only advance the science

and practice of supporting patients with critical illness and their families by reducing the distress caused by critical illness and fragmented healthcare, but it will also address key knowledge gaps to improve outcomes for the critically ill and their families.

3 OBJECTIVES AND ENDPOINTS

OBJECTIVES	ENDPOINTS	JUSTIFICATION FOR ENDPOINTS
Primary		
Assessing family member symptoms of depression over time, from baseline through 6 months	Family member symptoms of depression assessed with the Hospital Anxiety and Depression Scale (HADS-D) subscale	The HADS has become standard for ICU and post-ICU studies. It is a reliable and valid 14-item, 2-domain (anxiety and depression) tool used to assess symptoms of psychological distress. Seven items evaluate depression. Each item is scored on a 4-point scale (ranging from 0-3) with scores ranging from 0-21. HADS has been used in over 700 studies with evidence of reliability, validity and responsiveness among critically ill patients and their family.
Secondary		
Assessing family member symptoms of anxiety over time, from baseline through 6 months	Family member symptoms of anxiety assessed with the Hospital Anxiety and Depression Scale (HADS-A) subscale	The HADS has become standard for ICU and post-ICU studies. It is a reliable and valid 14-item, 2-domain (anxiety and depression) tool used to assess symptoms of psychological distress. Seven items evaluate anxiety. Each item is scored on a 4-point scale (ranging from 0-3) with scores for ranging from 0-21.
Goal-concordant care	Concordance between the care patients want and the care they are receiving will be measured with two questions from the SUPPORT study. The first defines patients' preferences: "If the patient had to make a choice at this time, would the patient prefer a course of treatment focused on extending life as much as possible, even if it means having more pain and discomfort, or would the patient	The outcome is a dichotomous variable of whether the preference matches the report of care received. Although this creates a "false dichotomy" in that many patients want both, this "forced choice" helps identify patients' top priority. Based on prior studies, we expect only 50-60% of controls will report goal-concordant care. Items completed by family respondents.

OBJECTIVES	ENDPOINTS	JUSTIFICATION FOR ENDPOINTS
	want a plan of care focused on relieving pain and discomfort as much as possible, even if that means not living as long?" The second question assesses perceptions of current treatment using the same two options.	
Post-traumatic stress (civilian)	Subjective distress caused by a traumatic event assessed with the Impact of Event Scale-6 (IES-6).	The IES-6 uses 6 self-report items to assess subjective distress caused by a traumatic event. Items are rated on a 5-point scale ranging from 0 ("not at all") to 4 ("extremely").
Family experience of quality of life at the end of life for patients with serious illness	Measure of family experience of patients with serious illness using the QUAL-E (Fam). Outcomes will be focused three of the instrument's subscales: Relationship to Healthcare Providers, Sense of Completion, and Preparation Issues	The QUAL-E (Fam) is a validated ~17-item companion instrument to the patient QUAL-E measure of quality of life at the end of life.
Healthcare Costs and Utilization	Index hospitalization length of stay; subsequent hospitalization and ICU admissions; palliative care consults; outpatient visits/Emergency Department visits (as available).	We will measure hospital readmission after initial hospital discharge through the electronic health record (EHR), institutional billing systems and, patient/family self-reports. All hospitals are in one system facilitating data collection. By using all three sources for data, we will capture hospitalizations regardless of healthcare system. Our primary focus will be readmission within 30 days as this is a national standard, but we will also collect data from the EHR ~~and from patient/family interviews to record all readmissions, emergency department visits, clinic visits, inpatient and outpatient palliative care consults, and home care~~ over 6 months. ~~All occasions of healthcare use will be confirmed through chart review and valued using the~~

OBJECTIVES	ENDPOINTS	JUSTIFICATION FOR ENDPOINTS
		~~Medical Expenditure Panel Survey and the Healthcare Cost and Utilization project, with additional information from~~ Institutional financial systems will be used to capture costs of care rather than charges.
Tertiary/Exploratory		
Key Implementation Factors	Factors include: aspects of the intervention, inner and outer settings, individuals, and processes of care.	Qualitative interviews after individual participation. Interviews will be guided by the Consolidated Framework for Implementation Research (CFIR) to explore the factors associated with implementation. Individual constructs within these domains were chosen to fit this specific intervention and context.
Key Implementation Outcomes	Outcomes include: acceptability, fidelity, and penetration of the intervention.	Qualitative interviews after individual participation. Interviews will also explore three key implementation outcomes that will guide future dissemination of the intervention.
Perceived Competence	Participants' feelings of competence assessed with Perceived Competence Scale (PCS)	PCS is a short, 4-item questionnaire assessing participants' feelings of competence. Items can be worded differently for different target behaviors. Validity was established in a study of medical students, and then in studies of diabetes self-management. Cronbach's alpha has consistently been above 0.80 in multiple studies. The scale has been used in several studies. The mean of 4 items is used as the scale score. The 4 items have also been used to form a latent variable and assessed for change over time. Responses range from "Not at all true" (1) to "Very True" (7); higher score on the

OBJECTIVES	ENDPOINTS	JUSTIFICATION FOR ENDPOINTS
		latent variable would indicate greater competence.
Financial Toxicity	Family member assessment of perceived financial stress will be measured with a modified FACIT COST (Comprehensive Score for Financial Toxicity) instrument.	The 11-item COST instrument has demonstrated reliability and validity in measuring financial toxicity.

4 STUDY DESIGN

4.1 OVERALL DESIGN

This study is a single site, Phase II randomized trial of an intervention to improve outcomes for patients and their family by supporting, modeling, and teaching communication strategies that enable patients and their families to secure care in line with a patient's goals over an illness trajectory, beginning in the ICU and continuing to care in the community.

Aims 1 & 2 & 4 & 6
Subject Identification/Recruitment: We will recruit within the ICUs of three hospitals that compose UW Medicine in the Puget Sound region. [Dropped 4th site January 2023, inactive.][See Section 5.5]

Randomization: If patients and family agree to participate and are decisionally capable, they will complete informed consent procedures and HIPAA authorization. Randomization will occur after completion of the baseline questionnaire, with the patient as the unit of randomization. Randomization will occur in variable-sized blocks stratified by site using a computer-based algorithm. Subjects assigned to the intervention arm will work with a communication facilitator and will complete assessments/measures; subjects assigned to the control arm will complete assessments/measures only. [See below for details on measures and data collection.] Family will be clustered under patients.

Documentation: A short study summary will be included in the patient's electronic health record (EHR). This summary will be included for both the intervention and control patients.

Control Arm/Usual Care: Family members of patients randomized to the control arm will complete the same study measures at all data collection points, but the facilitator will not be involved. Instead, these subjects will be contacted prior to the follow-up questionnaires at 1-month, 3-months and 6-months from randomization. During the calls for these subjects, they will be asked if they have any questions about study procedures and be reminded about upcoming surveys.

Information & Resources Provision Arm/Comparator: This new study arm is an adaptation to the Facilitator Protocol for use during the COVID-19 pandemic. For those randomized to "Control/Usual Care," participation in this comparator arm will be available at the participant's request. The goal of this comparison group is to offer family members a contact person for questions related to their loved one's care. The resource person (trained study staff) will contact family members within 1-2 days of enrollment and randomization. They will introduce themselves as a resource for finding or providing information in

this stressful and difficult time. All contact will be by telephone or UW HIPAA-compliant Zoom on the following schedule:

a. Within 1-2 days of randomization
b. Within 1-2 days of transfer to acute care.
c. Within 1-2 days of hospital discharge.

The resource person is intended to provide information and help families connect with the right person at the hospital or on the patient's healthcare team to provide help and support.

Intervention Administration: Intervention activities will be conducted with intervention subjects only. During the ICU stay, facilitators will interact in person by telephone or UW HIPAA-compliant Zoom with patients and family subjects, and those clinicians (physicians, nurses, social workers, spiritual care, etc.) involved with patients' care. Following the ICU stay, facilitators will interact with patients, family and clinicians in person and by phone or UW HIPAA-compliant Zoom for 3 months from randomization (when most first readmissions occur) or for 1 month after a patient death occurring in the first 3 months. In-person contacts, when possible, will include visits to patients' homes and/or care facilities; phone or UW HIPAA-compliant Zoom contacts will include calls to patients, families and clinicians. Facilitators will visit with or contact patients and families on the following schedule: daily during the ICU stay, every 72 hours or more frequently on the acute care floor, weekly during the first month following hospital discharge, and twice monthly for the remaining intervention period (3 months from randomization). Facilitators will have the leeway to use their clinical judgment if additional contacts are needed and may extend the follow up period for up to 6 months from randomization if needed. Facilitators will carry a caseload of up to 20 patients per facilitator per month.

Facilitator Intervention: After baseline data collection, the facilitator will begin providing the intervention to patients in the ICU and their families. The intervention will include communication activities such as: discussion of values using the Facilitated Values History, provision of educational and informational materials as needed, and support and mediation if conflicts arise among the family or between family and the clinical team. The facilitators will provide these activities in a manner consistent with the subjects' preferred attachment styles that are assessed at baseline.

During the patient's hospitalization, the facilitators may enter notes in the EHR to relay information in the patient's chart that is relevant to communication between patient/family and the clinical team, for example: "The patient's daughter expressed questions about rehab;" or "The patient's son may be reluctant to ask questions, informing him about what to expect next may be helpful." The facilitators also enter a Research Intervention Introductory note into the patient EHR so inform the clinical staff about their role with the patient/family. These notes will appear under "Chart Review/Notes/Type: Research Note" in the EHR system. Additionally, we will have signage in the hospital room noting that study facilitators are available for the patient enrolled in the intervention. The sign will mirror the note in the EHR.

After the ICU stay, the facilitator will guide the patient and family through transitions to the acute care floor, discharge to home/rehabilitation or skilled nursing facility (SNF). Outside the hospital in the community, the facilitator will be available to make visits to a SNF or rehabilitation unit and/or the patient's home, and participate in outpatient clinic visits. The primary mission of the facilitator at these transitional contacts will be to support, model, and teach the communication skills that advance self-efficacy, outcome expectations, and behavioral capacity for goals-of-care discussions that will advance care in line with those goals and across transitions.

Intervention Fidelity: We will record type (mode), frequency and duration of all facilitator contacts for each patient and family so that we will have this information to assess intervention fidelity as well as "dose." We will also ask participants for permission to periodically audio-record their visits with the interventionist. This procedure will assist in monitoring and maintaining intervention delivery. De-identified transcripts may also be used for training future interventionists.

Outcome Assessment: Both intervention and control subjects will be asked to complete questionnaires. At baseline/enrollment, prior to the facilitator's involvement, both intervention and control group subjects will meet or confer with the research staff who will distribute initial questionnaires. The questionnaires will be self-administered, although study staff will be available to provide assistance. The study staff member collecting the baseline questionnaires will be able to notify the subjects about their randomization status at that time.

Chart abstraction of patient data from EHR will include: age, sex/gender, Race, Ethnicity, primary diagnosis, secondary diagnoses and comorbidities, admission dates (e.g. hospital, ICU, acute care) , discharge dates (e.g. hospital, ICU, acute care), processes of care (e.g. care planning, transitions) , treatment intensity (e.g. receipt of CPR, use of mechanical ventilation), Referrals/Consults (e.g. palliative care) , data required to calculate APACHE II scores (e.g. lab values, Glasgow Coma Scale, medication dosage), outpatient healthcare utilization: number, type and dates of primary and specialty care visits, and date of death. Dates of death will also be collected from publicly available death certificate data.

Family questionnaires will be completed at baseline, 1-month, 3-months, and 6-months post randomization. Questionnaires will contain measures including:

- Relationship Scales Questionnaire (RSQ) – initial survey
- Hospital Anxiety and Depression Scale (HADS) – initial and follow-up surveys
- Concordance between the care patients want and the care they are receiving will be measured with two questions from the SUPPORT study. The first defines patients' preferences: "If the patient had to make a choice at this time, would the patient prefer a course of treatment focused on extending life as much as possible, even if it means having more pain and discomfort, or would the patient want a plan of care focused on relieving pain and discomfort as much as possible, even if that means not living as long?" The second question assesses perceptions of current treatment using the same two options. The outcome is a dichotomous variable of whether the preference matches the report of care received. Although this creates a "false dichotomy" in that many patients want both, this forced choice helps identify patients' top priority. – initial and follow-up surveys
- Single-Item health status question (SF-1): "In general, would you say your health is: Excellent, Very good, Good, Fair, Poor" – initial survey and follow-up surveys
- Single-Item health status question (SF-1): "In general, would you say your family member/friend's health is: Excellent, Very good, Good, Fair, Poor" – initial survey and follow-up surveys (proxy for patient)
- FRAIL scale (Fatigue, Resistance, Ambulation, Illnesses, & Loss of Weight) – initial survey and follow-up surveys (proxy for patient)
- Preferred Role in Decision-Making – initial survey and follow-up surveys
- Perceived Competence Scale (PCS) – initial and follow-up surveys
- Impact Of Events Scale-Revised (IES-6) – follow-up surveys
- Measuring the Quality of Life of Seriously Ill Patients (QUAL-E FAMILY) – initial and follow-up surveys
- Comprehensive Score for Financial Toxicity (modified FACIT-COST) – follow-up surveys

- Healthcare Utilization – follow-up surveys (proxy for patient)
- Intervention Assessment – follow-up surveys (intervention arm only); and
- demographic items, including social support and health literacy (single item).

Family of patients who die will receive after-death questionnaires at the usual schedule but at least 4 weeks after the patient's death. The after-death questionnaire contains: decision-making, FACIT-COST, QUAL-E FAMILY (revised), HADS, IES-6, SF-1 and demographic items.

The research staff will contact both the intervention and control/comparator group subjects in person and by phone/text or email. for the evaluation phase. Participants will complete questionnaires at several timepoints: 1, 3, and 6 months after randomization. At each point after the initial questionnaire, they will complete the same measures (without demographics or relationship questionnaire) as well as information about subsequent patient healthcare utilization. Although all questionnaires can be completed by phone, mail, or online, we will contact participants at each interval by phone/text or email. During those calls, study staff will administer the questionnaires or remind participants to complete questionnaires by mail or online.

Participating family subjects of patients who die will receive after-death questionnaires 4 to 6 weeks after a patient's death. The purpose of the after-death questionnaires is to examine outcomes for Aim 1 (psychological distress and quality of life). We are collecting this information from bereaved family members because we would like to know if family members who report better outcomes in this regard did or did not work with a facilitator. The after-death questionnaire will be delivered to the family subject in place of the next follow-up questionnaire. For example, if the patient dies after two months from enrollment, the family member will receive the after-death questionnaire as their 3-month questionnaire; the family member will then receive a 6-month questionnaire as scheduled, but the number of items will be reduced as questions about interacting with the patient's health care team will no longer be applicable. (See Section 5.2)

Follow-up contacts will be done after the initial mailings of the questionnaire booklets to non-responders. The follow-up will consist of a reminder/thank you postcard after 10 days, and for the 3- and 6-month questionnaires, a second set of materials after 4 weeks if there has been no response in that time. For the 6-month questionnaire, if there has been no response to the second set of materials after an additional 4 weeks, we will send out one last questionnaire.

At 6 months post-randomization, or at one month after the patient's death, study staff will collect additional information from the patient's electronic health record (EHR). Study staff will record healthcare use, disease characteristics and processes of care during and after the ICU stay, including treatment intensity (e.g. receipt of CPR, use of mechanical ventilation), transitions in care, and palliative care consults. Data will be abstracted using automated EHR data collection and "gold standard" manual abstraction using standardized methods for training and quality control.

Aims 3 & 5

Post-study Interviews: Included in the consent form will be a provision informing patient and family member subjects that they may be contacted at the end of their study involvement (after 6 months) to take part in a short, semi-structured interview to evaluate their study participation, and to explore feedback on the intervention and ways to improve the intervention delivery and implementation. Interviews will also ask how being in the ICU may add to a subject's financial worries and how financial stress could be reduced and explore three key implementation outcomes (acceptability, fidelity,

penetration) that will guide future dissemination of the intervention. To these ends, study staff will also recruit clinicians and hospital administrators familiar with the study to participate in a short feedback interview as well. The purpose and procedures for these clinicians (physicians and others) and administrators are the same as those for the patient and family subjects. We anticipate that the study facilitators will be able to identify clinicians and administrators that they encountered during the course of the intervention activities.

Patients, family, clinician & administrator interview participants will be selected using purposive sampling to ensure a diverse group based on race/ethnicity, age, gender, experience and, for clinicians, specialty and year of training. Subject interviews will be audio recorded, transcribed, and analyzed using thematic analyses. Subjects may participate even if they choose not to be audio recorded. To ensure trustworthiness, interviewers will perform a "member check" of the results with prior participants (n=10 to 15) selected for diversity of participant type.

Interventionist feedback interviews will be recorded and transcribed. Subjects may participate even if they choose not to be audio recorded.

4.2 SCIENTIFIC RATIONALE FOR STUDY DESIGN

Key communication problems that both patients and their families face include: 1) being unable to articulate their goals of care; 2) not having skills, confidence, and beliefs that communicating with multiple clinicians can lead to better outcomes; and 3) being too distressed to process information to make informed choices that are goal-concordant (i.e., treatment chosen is consistent with patient values). Our goal is to test the effectiveness of a nurse communication facilitator who will support, model, and teach communication skills and strategies to patients and families with the goal of ensuring goal-concordant care across transitions in clinicians, clinical teams, and care settings. Facilitators will target the following: 1) improving patients' and families' self-efficacy for communicating with their clinicians by increasing their knowledge of their goals of care; they will also address negative emotion to improve patient and family members' ability to absorb this knowledge; 2) fostering and modeling positive outcome expectations for effectively conveying goals of care to providers; they will support these outcome expectations by matching communication to patients' and family members' attachment and communication styles; and 3) bolstering behavioral capability by modeling successful resolution of obstacles to goals of care discussions and mediating conflict. In addition, by clarifying goals of care, periodically reassessing these goals, and ensuring that goals transfer across transitions, this intervention can reduce psychological distress and harm caused by fragmented care. Importantly, the facilitator would not replace clinicians in our system, but would maximize the potential of our system to provide high-quality, patient- and family-centered care.

Prior studies have included some components of our intervention, including patient navigation, discharge planning, transitional care, care coordination, and case management. Although some showed reductions in re-hospitalizations, few have had a significant effect on psychological distress or other key patient-centered outcomes. Also, a recent systematic review found few studies that addressed hospital-based programs to improve transitions and none that incorporated multiple transitions during and after the hospital. The authors conclude that "because of scant evidence, no conclusions could be reached on methods to prevent post-discharge adverse events."[1] Similarly, an AHRQ Evidence Report found existing interventions to improve continuity and transitions had moderate strength evidence for improving satisfaction, but low strength for other patient-reported outcomes or healthcare utilization.[2-5]

Importantly, a recent randomized trial examined palliative care-led ICU family conferences that were not well integrated with the ICU team, finding no improvement in family symptoms of depression or anxiety and increased symptoms of PTSD at 3 months.[6]

Our intervention is different from these prior efforts in ~~five~~ four key ways. First, rather than focusing on a single transition, such as hospital discharge, or a single event, such as the family conference, we identify high-risk critically ill patients and their families early in the hospitalization and support communication across multiple transitions in clinicians, teams, and settings. Second, the intervention is designed to help support communication across the full range of goals of care from curative and restorative care through palliative and end-of-life care, thereby reducing stress and readmissions by clarifying goals of care. Third, this intervention is built on social cognitive theory, a well-supported theory for behavior change; intervention components are designed to enhance self-efficacy, outcome expectations and behavioral capability of patients and families by ensuring that patients, families, and clinicians understand and implement the patient's goals of care. ~~Fourth, we adapt a previously developed decision support tool in the novel context of a facilitator to support its use~~. Finally, the intervention is designed to synergize, rather than compete, with existing resources such as discharge planning and care coordination.

• Importance of family psychological distress as outcomes: The importance of improving outcomes for family caregivers and the value this brings to patient outcomes is well-established. When family members suffer from the burden of critical illness, patients also suffer. Much of the suffering comes from the difficulties of surrogate decision-making and the fact that most critically ill patients don't have decisional capacity. Interventions that reduce family member distress also improve the care they can provide. In addition, stress extends beyond the ICU as family bear a significant burden of caregiving after the ICU. As many as 20-60% of families and patients suffer a high burden of psychological symptoms during and after the ICU. Improving communication is key because poor communication worsens distress, and interventions that improve communication reduce distress. Further, caregiver stress increases healthcare use and reduces quality of life. Although we will assess symptoms in patients and family, most critically ill patients are unable to participate. Thus, we focus on family member symptoms as the primary outcome.

• Key role of goal-concordant care as an outcome: Care that is concordant with patients' goals is a critical component of high quality, patient-centered care for all patients, but especially those with serious illness. Therefore, a key outcome for an intervention designed to improve communication about goals of care is whether patients receive the care they want. For critically ill patients, decisions about goals of care are often made by surrogate decision-makers. We will assess goal concordance using two validated questions from the landmark SUPPORT trial. The first defines patient preferences for either extending life or ensuring comfort (from the patient or family perspective). The second assesses patient and/or family's perceptions of current treatment. The outcome will be a dichotomous variable of concordance between these two items.

• The role of cost-consequences: With the increasing cost of healthcare, interventions that ensure value–high quality, cost-effective care–are essential. However, traditional cost-effectiveness analyses have important limitations in the context of palliative care, because of the limited potential for a traditional survival effect. Therefore, we use a more comprehensive cost-consequence framework, to test the hypothesis that the intervention reduces costs while improving patient and family outcomes (i.e., consequences).

4.3 JUSTIFICATION FOR INTERVENTION

Although navigators or facilitators have been evaluated in some settings, our intervention is unique by its inclusion of nurse facilitators with novel training that supports, models and teaches communication skills to patients and family facing critical illness. This intervention will be implemented both during and after critical illness and addresses key gaps identified in past systematic reviews by: 1) beginning early in the high stress time of critical illness and following patients after ICU; 2) focusing on communication about goals of care; and 3) targeting a diverse population (e.g. age, diagnoses, SES) to enhance generalizability, scalability, and cost-effectiveness.

Despite advances in our ability to provide life-sustaining treatments and manage chronic illness, our ability to integrate high-quality palliative care remains limited. Our failure to integrate palliative care stems, in part, from our system's inability to identify, periodically reassess, and consistently communicate patients' informed goals of care. For this reason, important advances in palliative care do not reach many patients with serious illnesses. One fifth of deaths in the US occur in the ICU, highlighting the importance of identifying and implementing patients' goals of care in this setting. As demonstrated in a landmark randomized trial of early palliative care for patients with lung cancer,7 improving care for patients with serious illness requires that discussions about goals of care start early and continue across all settings. However, a recent trial of palliative care-led ICU family meetings (with little integration with the ICU team) was associated with worse family outcomes.6 Another recent trial showed worse family outcomes with a condolence letter after the ICU.8 Both trials had unintended consequences, highlighting the importance of rigorous evaluation. We hypothesize that early and integrated goals-of-care conversations will allow seamless and coordinated transitions across clinicians and settings, and we propose a rigorous evaluation to explore mechanisms and potential unintended consequences. Our facilitator is an ICU nurse – a type of clinician present in all ICUs who can be trained for this role and has clinical expertise to incorporate best practices for transitions enhancing scalability.

4.4 END-OF-STUDY DEFINITION

A family member participant is considered to have completed the study if he or she has contributed outcome data for the 1-, 3- and 6-month follow-up assessments. Some family participants will also contribute to a qualitative interview at the end of the 6-month follow-up period

A patient subject is considered to have completed the study when all data collection (chart abstraction) has been completed at the end of the 6-month follow-up period.

A clinician or administrator interview subject is considered to have completed the study at the conclusion of any 'member check' conducted after their single qualitative interview.

5 STUDY POPULATION

5.1 INCLUSION CRITERIA

--PATIENTS--
Eligible patients will be those who are 18 years of age or older, English-speaking, with a chronic life-limiting illness suggesting a median survival of approximately 2 years or a severe acute illness with a risk of hospital mortality of at least 15%.

• Chronic life-limiting illnesses include:
  - cancer with a poor prognosis (e.g. metastatic cancer);
  - chronic pulmonary disease (e.g. COPD or restrictive lung disease;
  - coronary artery disease (CAD);
  - congestive heart failure (CHF);
  - peripheral vascular disease (PVD);
  - severe liver disease (e.g. cirrhosis);
  - diabetes with end-organ damage;
  - renal failure; and
  - dementia.
  - We will also include patients who are ventilator-dependent (receiving long-term mechanical ventilation) and have been admitted from a long-term acute care (LTAC) facility.

• Acute illness criteria include APACHE II (~~alternately SOFA or trauma severity~~) score predicting a 15% or greater risk of hospital mortality.

• Acute illnesses and conditions include:
  - acute respiratory distress syndrome (ARDS) with P/F ratio <=300;
  - on extracorporeal life support (ECLS or ECMO);
  - cardiopulmonary arrest, with Glasgow coma score ≤12;
  - subarachnoid hemorrhage (SAH) Fisher grade 3/4 with Glasgow coma score ≤12;
  - spontaneous hemorrhage (ICH, IPH, EDH, SDH) with Glasgow coma score ≤12;
  - stroke or cardiovascular accident (CVA) with Glasgow coma score ≤12;
  - decompressive/crash craniotomy (bone flap) with Glasgow coma score ≤12;
  - traumatic brain injury (TBI) or diffuse axonal injury (DAI) based on MRI ~day 10; or
  - anoxic brain injury due to cardiac arrest >48 hours;
  - or acute respiratory failure requiring invasive mechanical ventilation.
  - We will also include patients with: new spinal cord injury causing quadriplegia, and confirmed COVID-19 who are admitted to the ICU.

• If patients do not have decisional capacity and have no legal surrogate decision-maker to provide consent, they will not be eligible for participation.

--FAMILY--

Eligible family subjects will be those who are 18 years of age or older, English-speaking, and identified by the patients as someone they would want involved in his or her medical care or decision-making.

• Eligible family may include any of the following: legal guardians, durable power of attorney for healthcare, spouses, adult children, parents, siblings, domestic partners, other relatives, and friends. "Family" is not confined to legal next-of-kin or immediate family members.

• If the patient does not have decisional capacity at the time of enrollment, family subjects will be identified by the patient's legal surrogate decision-maker or legal next of kin, which in Washington State is determined by a hierarchical list of the following: legal guardian, durable power of attorney for healthcare, spouse or legal domestic partner, adult children, parents, and adult siblings, and extended family (e.g. adult grandchildren, aunts/uncles) and close friends who are familiar with patient.

• There is no limit on the number of family members allowed to participate.

--CLINICIAN AND ADMINISTRATOR POST-STUDY INTERVIEW SUBJECTS--

Eligible clinicians and administrators will be those who are 18 years of age or older, English-speaking, employed at a participating hospital and who we believe have a familiarity with the study and the intervention based on study enrollment and tracking data.

5.2 EXCLUSION CRITERIA

--PATIENTS--
We will exclude patients: with an anticipated ICU stay of less than 2 days/48 hours, as assessed by the critical care attending physician or his/her designee; those admitted for suicide attempt; or those withdrawal of life support (WDLS) pending. Reasons for exclusion for a patient also include: legal or risk management concerns (as determined by the attending physician or via hospital record designation); psychological illness or morbidity; physical or mental limitations preventing ability to complete questionnaires; and prior refusal or enrollment to this study (e.g. for patient that has been readmitted to ICU during the study period). We will also exclude patients who have been in the ICU for >14 days. During access and visitation restrictions due to COVID-19, we will be excluding patients with clearly documented decisional-capacity who meet eligibility requirements but cannot be contacted and recruited/consented for the study.

--FAMILY--
Reasons to exclude family member subjects include: legal or risk management concerns (as determined by the attending physician or via hospital record designation); psychological illness or morbidity; physical or mental limitations preventing ability to complete questionnaires; and prior refusal or enrollment to this study (e.g. family of a patient who has been readmitted to ICU during the study period).

--CLINICIAN AND ADMINISTRATOR POST-STUDY INTERVIEW SUBJECTS-- N/A

5.3 LIFESTYLE CONSIDERATIONS

N/A

5.4 SCREEN FAILURES

Screen failures are defined as participants who consent to participate in this study but are not subsequently assigned to the study intervention or entered in the study. Family member subjects who do not complete the baseline questionnaire will be “withdrawn”. If they decline to continue participation, we will note the ‘refusal reason’. If we are unable to contact them after that point, we will consider them to be ‘passive refusals.’

5.5 STRATEGIES FOR RECRUITMENT AND RETENTION

Strategies for Recruitment: We will recruit within the ICUs of three hospitals that compose UW Medicine in the Puget Sound region.

As of March 2020, due to the COVID-19 pandemic, we are making modifications to apply to patients and family members affected by the outbreak --both directly (e.g. testing positive) and/or indirectly (e.g. social distancing/staying home) -- to limit contact between patients, family, and research staff members and to accommodate the limited visiting policies in place at UW Medicine hospitals. There are two scenarios to which these changes apply: 1) Patients with COVID-19 disease or on COVID-19 rule-out status. In this

scenario, all contact with family (or patient) will be by phone or Zoom; and 2) Patients with non-COVID-19 status (after ruling out or not tested). In this scenario during the COVID-19 Adaptation implementation, most contact will be by phone or UW Zoom, although in person contact is acceptable if family are interested, family have no symptoms, and staff are able, willing, and without any symptoms of COVID-19.

--PATIENTS--
Study staff will identify consecutive patients in the ICU by screening the prior 12 months or longer of the patient's medical records to determine potential eligibility of patient subjects. In order to conduct the screenings, the research team will obtain: 1) a waiver of consent; 2) a waiver of HIPAA authorization; and 3) all necessary institutional confidentiality agreements. If a patient meets the entry criteria, study staff will then approach the primary physician caring for the patient to confirm the patient's eligibility. The physician will also have an opportunity at this time to exclude a patient or family who, in the physician's judgment, would not be an appropriate participant.

For patients without capacity, study staff will ascertain who is the legal surrogate decision-maker (LNOK). This legal surrogate decision-maker will be identified using current Washington State law. If willing to participate, the legal surrogate will be asked to go through informed consent for the incapacitated patient. If there is more than one individual who is a legal surrogate decision-maker, we will obtain consent from all legal surrogate decision-makers who are interested in being involved in the consent process (i.e., adult children or siblings) although we will obtain written documentation of consent for the patient's involvement from only one legal surrogate decision-maker. The LNOK will also be consented in their own capacity as a participating family member, if willing to participate.

Eligible patients will also be screened for limited English proficiency or cognitive impairment with a six-item screening tool to assess cognitive impairment for participation in research. Study staff will contact the patient in person or by telephone or, if the patient does not have decisional capacity, a legal next of kin (LNOK) in person or by telephone. A study staff member will provide an overview of the study via talking points, handouts, and/or an informational video, and ask if the patient/LNOK is willing to continue with recruitment and consent processes. Enrollees will be provided with a packet of information that includes the study overview and checklist of activities, as well as copies of the signed consent documents. All conversations with potential subjects regarding the study will be held in a private setting or by telephone; study staff will allow for potential subject's desire to have family present or to confer and make participation decisions in his or her own time. Decisional capacity will be determined by the attending physician (or designee) to align with clinical practice. If patients regain capacity, they will be asked to provide consent and HIPAA authorization. Patients with neither capacity nor an available LNOK will be ineligible.

In the event that the patient/LNOK cannot be recruited in person due to COVID-19 involvement, we will take the following steps:

- Confirm that the LNOK is aware of the patient's hospitalization and health status by reviewing Social Work notes from the time of admission.
- Call the LNOK to initiate recruitment by telephone.
- Provide consent and HIPAA forms for the LNOK by mail or email.
- Waive written documentation of consent and HIPAA for interested participants; attempt to collect signed forms by mail whenever possible.

Consent from the LNOK will be sufficient to allow the patient to be enrolled even if other family members do not choose to participate. For instance, after enrollment the LNOK may choose to meet with the

facilitator even though other family members have declined; however, if non-consenting family members choose to be in an activity with intervention components, those components may be discontinued, if requested by the family, to allow all family members to participate in the activity. If a family conference is scheduled and both consenting and non-consenting family members attend, the facilitator will offer to not attend the conference. If the legal surrogate decision-maker(s) would like to have other family members involved in the study, these other family members will be asked to consent for their own role as study participants as noted below. If the patient has a family member or friend that is not recognized as the legal surrogate decision-maker by state law, this person will also be included in the study as a participant provided the legal surrogate decision maker does not object (or, if there is more than one legal surrogate decision-maker, that none of them object).

--FAMILY--
Family members will be recruited in person, by telephone or UW HIPAA-compliant Zoom for the main study. A study staff member will provide an overview of the study via talking points, handouts, and/or an informational video, and ask if the family is willing to continue with recruitment and consent processes. Enrollees will be provided with a packet of information that includes the study overview and checklist of activities as well as copies of the signed consent documents. All conversations with the family members regarding the study will be held in a private setting by telephone or UW HIPAA-compliant Zoom. Only study staff will have access to the contact information provided by the family members for participation purposes.

In the event that the family member cannot be recruited in person due to COVID-19 involvement, we will take the following steps:

- Confirm that the family member is aware of the patient's hospitalization and health status by reviewing Social Work notes from the time of admission.
- Call the family member to initiate recruitment by telephone.
- Provide a consent form for the family member by mail or email.
- Waive written documentation of consent for interested participants.

--PATIENTS and FAMILIES FOR POST-STUDY INTERVIEWS--
For the recruitment for patient and family post-study interview, we will re-contact enrolled subjects as noted in their consent forms. We anticipate contacting participants by phone to arrange an interview date and time. We will mail or email supplemental information sheets specific to the interview with appointment reminders and thank you payments. If a participant would like to complete the interview at the time of this initial call, we will still provide them with the paper information sheet when we send the thank you payment.

--CLINICIAN AND ADMINISTRATOR and INTERVENTIONIST POST-STUDY INTERVIEW SUBJECTS--
Clinicians and administrators will be identified by the study team via purposive sampling and recruited by email, phone or in person. Contact information for clinicians and administrators is available through institutional directories. A study staff member will provide a scripted overview of the interview component including the purpose, procedures and expected time commitment.

<u>Anticipated Enrollment</u>:
Patient Subjects, n=376

Racial Categories	Ethnic Categories				Total
	Not Hispanic or Latino		Hispanic or Latino		
	Female	Male	Female	Male	
American Indian/ Alaska Native	1	1	1	1	4
Asian	23	35	2	4	64
Native Hawaiian or Other Pacific Islander	1	1	1	1	4
Black or African American	9	14	1	2	26
White	94	140	10	15	259
More than One Race	7	10	1	1	19
Total	135	201	16	24	376

Family Member Subjects, n=564

Racial Categories	Ethnic Categories				Total
	Not Hispanic or Latino		Hispanic or Latino		
	Female	Male	Female	Male	
American Indian/ Alaska Native	3	1	1	1	6
Asian	61	26	6	3	96
Native Hawaiian or Other Pacific Islander	3	1	1	1	6
Black or African American	25	10	3	1	39
White	246	106	26	11	389
More than One Race	18	7	2	1	28
Total	356	151	39	18	564

Clinician & Administrator Interview Subjects, n=15

Racial Categories	Ethnic Categories				Total
	Not Hispanic or Latino		Hispanic or Latino		
	Female	Male	Female	Male	
American Indian/ Alaska Native	1	0	0	0	1
Asian	1	1	0	0	2
Native Hawaiian or Other Pacific Islander	1	0	0	0	1
Black or African American	1	1	0	0	2
White	3	2	1	1	7
More than One Race	0	0	1	1	2
Total	7	4	2	2	15

Inclusion of Women and Minorities: Based on our prior ICU-focused communication facilitator study, we estimate the proportion of women among patients in the proposed study will be approximately 40%; this

is slightly less than the proportion of women in King County (50%), but reflects the population of critically ill patients. We estimate the proportion of women among family subjects in the proposed study will be approximately 70%; this is slightly more than the proportion of women in King County, but reflects the population of the family and caregivers of critically ill patients. We anticipate that minority representation of the patient and family subjects will reflect the demographics in the areas under study, specifically the residents of King County Washington where the three participating hospitals are located. ~~Clinician and Administrator subjects will be purposively sampled to ensure a diverse group based on race/ethnicity, age, and gender.~~

Although we are using a population-based sampling strategy in which we are identifying all eligible ICU patients without over-sampling by gender or race/ethnicity, we will use accepted methods for enhancing recruitment and retention of minorities. These include: 1) use of culturally sensitive recruitment materials; 2) incorporation of appropriate reading levels in all study materials; 3) attention to aspects of health literacy as it influences both the intervention and evaluation; 4) staff support for questionnaire completion; and 5) staff training in cultural sensitivity. These methods will also be used with family subjects; however, their association with enrolled patients will determine their identification. ~~We will monitor patient recruitment and, if necessary, institute over-sampling to ensure minority representation.~~ In addition, the School of Medicine has a Center for Equity, Diversity and Inclusion (CEDI) dedicated to workforce diversity, multicultural education, and community engagement and development [http://cedi-web01.s.uw.edu]. CEDI provides training, tools, and resources, including support for designing recruitment materials and inclusive curricula, cultural proficiency training, and community engagement. The CEDI will serve as a resource for training, tools, and recruiting a diverse research staff and also as a resource for recruiting diverse research participants. Based on our previous studies, we do not expect differences due to minority status, but we are collecting sex/gender and race/ethnicity data and will include them as covariates in our multivariate analyses.

Participants must have sufficient proficiency with the English language to be able to adequately participate in study activities including interacting with the communication facilitator both in-person and by telephone, and completing self-administered questionnaires. Although we would like to broaden our sample to include non-English speakers, the diversity of languages that are characteristic of our region makes it difficult to provide adequate coverage for this randomized trial. For example, although 15% of the patient population at Harborview Medical Center is non-English speaking, no single non-English language predominates and at least eight different languages are common among this population.

Proposed Engagement Strategies for Retention: Study participants in the RCT will be engaged throughout the study period through regularly scheduled contacts with the facilitator (for intervention subjects) or study staff (for intervention and control subjects). Initial intervention activities will occur during the hospitalization for patients and families in the intervention arm; patients in the control arm will receive usual care without the assistance of the facilitator but will be offered the opportunity to speak to the research coordinator (as an additional resource) at regular intervals. Intervention subjects will receive services from the facilitator for the 3-month period after randomization. Both intervention and control subjects will complete questionnaires at 1, 3, and 6 months after enrollment. Qualitative interviews will occur by phone after patients and families have completed their final questionnaires. Study staff conducting recruitment will be encouraged to provide a clear explanation of how the study could help patients and families in the future; offer time for them to consider participation; and to have excellent communication skills, express empathy, and be knowledgeable about ICU, hospital and community resources.

Intervention Subjects. During the ICU stay, facilitators will have daily (Monday-Friday) interactions with patient and family subjects. Depending on need, facilitators may also be available at other times. Following the ICU stay, facilitators will interact with patients and family in person at patients' homes and/or care facilities and by phone for three months from randomization or for one month after a patient death occurring in the first three months. Because prior studies suggest frequent contact is important, the schedule for contact will be a minimum of every 48 hours in the hospital, within 72 hours of change in care setting, weekly for a month after hospital discharge, and then twice monthly for the remainder of the 3-month period. The facilitators will use clinical judgment if they feel more frequent contact is warranted, and patients and families will have access to facilitators through phone and email 5 days per week. During the follow-up questionnaire period, study staff will contact each participant at each interval (1, 3 and 6 months) by phone. During those calls, study staff will administer the questionnaires or remind participants to complete questionnaires by mail or online. All questionnaires and other study materials will be created with an appropriate reading level, formatted for ease of use, and have contact information for the study staff or study office clearly visible.

Control Subjects. Patients and family members randomized to the control arm will complete the same study measures at all data collection points, but the facilitator will not be involved. Instead, these patients will receive an attention control in which study staff will contact enrolled patients and family members regularly to answer questions, provide information about resources, track participants' location and health status, as well as provide reminders about upcoming questionnaire mailings and the need to complete and return questionnaires. While participating patients are in the hospital and for the first month after enrollment, study staff will contact the patients/families on an as-needed basis; for the remaining five months, study staff will contact the patient/family at the times of the follow-up questionnaires (3 and 6 months). During these calls, study staff will administer the questionnaires or remind participants to complete questionnaires by mail or online. All questionnaires and consent materials will be created with an appropriate reading level, formatted for ease of use, and have contact information for the study staff or study office clearly visible.

Family of patients who die during the study. For patients who die in the hospital or during the follow-up period, we will send a condolence card when we become aware of the patient's death, and will delay sending any additional study materials until a month after the patient's death.

Participant Incentives:
In order to encourage participation and acknowledge the time involved in questionnaire completion, we are providing $10 to each participant. These incentives are provided in advance of the completion of the questionnaires as it has been shown that it is at this time point, rather than after completion of questionnaires, that they are most effective. Interview subjects will receive $25 after the interview as an acknowledgement of their contribution to the study. 'Thank you' payments are kept small to minimize coercion or undue influence.

6 STUDY INTERVENTION(S) OR EXPERIMENTAL MANIPULATION(S)

6.1 STUDY INTERVENTION(S) OR EXPERIMENTAL MANIPULATION(S) ADMINISTRATION

6.1.1 STUDY INTERVENTION OR EXPERIMENTAL MANIPULATION DESCRIPTION

This study is a randomized trial of an intervention to improve outcomes for patients and their family by supporting, modeling, and teaching communication strategies that enable patients and their families to secure care in line with a patient's goals over an illness trajectory, beginning in the ICU and continuing to care in the community.

If patients with decisional capacity and family agree to participate, they will complete informed consent procedures and HIPAA authorization. If patients do not have decisional capacity but are eligible for the study, LNOK will complete informed consent procedures and HIPAA authorization. Subjects assigned to the intervention arm will work with a communication facilitator and will complete assessments/measures; subjects assigned to the control arm will complete assessments/measures only. Family will be clustered under patients.

A short study summary will be included in the patient's electronic health record (EHR). This summary will be included for both the intervention and control patients.

- Control Arm/Usual Care: Patients and family members randomized to the control arm will complete the same study measures at all data collection points, but the facilitator will not be involved. Instead, these subjects will be contacted prior to the follow-up questionnaires at 1-month, 3-months and 6-months from randomization. During the calls for these subjects, they will be asked if they have any questions about study procedures and be reminded about upcoming surveys. The revised "Information & Resources Provision Arm/Comparator" study arm is an adaptation to the Facilitator Protocol for use during the COVID-19 pandemic. For those randomized to "Control/Usual Care," participation in this comparator arm will be available at the participant's request. The goal of this comparison group is to offer family members a contact person for questions related to their loved one's care. The resource person (trained study staff or research RN) will contact family members within 1-2 days of enrollment and randomization. They will introduce themselves as a resource for finding or providing information in this stressful and difficult time. All contact will be by telephone or UW HIPAA-compliant Zoom on the following schedule:
    a. Within 1-2 days of randomization
    b. Within 1-2 days of transfer to acute care.
    c. Within 1-2 days of hospital discharge.

The resource person is intended to provide information and help families connect with the right person at the hospital or on the patient's healthcare team to provide help and support.

- Intervention Administration: Intervention activities will be conducted with intervention subjects only. Beginning during the ICU stay, and continuing for three months, facilitators will interact in person, by telephone, or UW HIPAA-compliant Zoom with patients and family subjects, and those clinicians (physicians, nurses, social workers, spiritual care, etc.) involved with patients' care.

After baseline data collection, the facilitator will begin providing the intervention to patients in the ICU and their families. The intervention will include communication activities such as: discussion of values, provision of educational and informational materials as needed, and support and mediation if conflicts arise among the family or between family and the clinical team. The facilitators will provide these activities in a manner consistent with the subjects' preferred attachment styles that are assessed at baseline.

During the patient's hospitalization, the facilitators may enter notes in the electronic health record (EHR) to relay information in the patient's chart that is relevant to communication between patient/family and the clinical team, for example: "The patient's daughter expressed questions about rehab;" or "The patient's son may be reluctant to ask questions, informing him about what to expect next may be helpful." The facilitators also enter a Research Intervention Introductory note into the patient EHR so inform the clinical staff about their role with the patient/family. These notes will appear under "Chart Review/Notes/Type: Research Note" in the EHR system. Additionally, we will have signage in the hospital room noting that study facilitators are available for the patient enrolled in the intervention. The sign will mirror the note in the EHR.

After the ICU stay, the facilitator will guide the patient and family through transitions to the acute care floor, discharge to home/rehabilitation or skilled nursing facility (SNF). Outside the hospital in the community, the facilitator will be available to make visits to a SNF or rehabilitation unit and/or the patient's home and participate in outpatient clinic visits. The primary mission of the facilitator at these transitional contacts will be to support, model, and teach the communication skills that advance self-efficacy, outcome expectations, and behavioral capacity for goals-of-care discussions that will advance care in line with those goals and across transitions.

6.1.2 ADMINISTRATION AND/OR DOSING

During the ICU stay, facilitators will interact in person with patients, family, and many types of clinicians (physicians, nurses, social workers, etc.). Following the ICU stay, facilitators will interact with patients, family and clinicians in person and by phone for 3 months from randomization (when most first readmissions occur) or for 1 month after a patient death occurring in the first 3 months. In-person contacts may include visits to patients' homes and/or care facilities; phone contacts will include calls to patients, families and clinicians. Because prior studies suggest frequent contact is important,[9-14] the schedule for contact will be a minimum of every 48 hours in the hospital, within 72 hours of change in care setting, weekly for a month after hospital discharge, and then twice monthly for the 3 months. The facilitators will use clinical judgment if they feel more frequent contact is warranted, and patients and families will have access to facilitators through phone and email 5 days per week. Facilitators will be available to attend clinic visits with patients. In addition to checking directly with patients/families during regular contacts (calls, visits), facilitators will also access the EHR to ensure they have accurate information about appointments and treatment plans and will document their interactions and key points for the clinical team.

We strive to have the same facilitator work with the patient and family throughout the study. Facilitators will encourage referral to inpatient or outpatient palliative care services when palliative care needs (i.e., communication, decision-making, and symptom needs) are identified. Based on prior studies, sample size, and time projections, we estimate facilitators can have a caseload of 20 patients/facilitator/month, accounting for 1.6 FTE.[15,16] This estimate is based on the following: 1) 4-5 new patients/month per facilitator; 2) an average of 12-15 visits/patient (i.e., 4-5 during the ICU stay, 4-5 during the first month following the ICU, and 4-5 during the remaining study period; 3) an average of 20-30 minutes per visit; and 4) 1 hour of preparation per visit. We will attempt to document facilitator contacts for each patient and family to assess intervention fidelity, "dose," and costs.

6.2 FIDELITY

6.2.1 INTERVENTIONIST TRAINING AND TRACKING

- Training of facilitators: Training will be provided by all investigators and consultants with specific roles in: facilitator communication skills, decision support, the use of attachment theory, and mediation. Training will address the use of these skills across care settings (e.g., inpatient, outpatient, home, care facility). Communication training will include identification of goals of care, incorporating principles of advance care planning and the facilitated values history. Training in the decision support will address the use of goals to support decision-making. Attachment theory training will include understanding the four attachment styles, the consequences of these styles for communication, and the approaches most appropriate for each style. Mediation training will cover skills associated with assessment and preparation; mediator opening; presentation of the case, information gathering and exchange; development and evaluation of options; and resolution. Facilitators will participate in role-playing exercises during a two-day training and they will be required to demonstrate mastery of intervention skills before starting and during fidelity checks. We have conducted similar training previously with good results. We will expand the training manual to enhance dissemination of the intervention to other institutions.

- Intervention fidelity: To ensure scientific rigor, intervention fidelity will be assessed with methods outlined by the NIH Behavioral Treatment Fidelity Workgroup on consistency in dose, providers, delivery, receipt, and enactment of interventions.[17-18] Facilitators will meet weekly with investigators to discuss the intervention subjects and ensure intervention fidelity overall and between facilitators. We will use an intervention checklist assessing completion of all components. If concerns arise regarding fidelity, the appropriate expert will be consulted. There will also be a formal fidelity check via audio-recording and review of 10% of encounters. Refresher-training sessions will be conducted regularly.

6.3 MEASURES TO MINIMIZE BIAS: RANDOMIZATION AND BLINDING

The unit of randomization is the patient. The potential for contamination is minimized because the focus of the intervention is specific to the individual patient and family and tailored to their needs. Randomization will occur in variable-sized blocks stratified by site. Family will be clustered under patients.

The intervention precludes blinding clinicians, patients, or family to treatment group. However, we will blind study staff involved in data collection to group assignment via surveys send and completed by mail and online. A number of the outcomes could theoretically allow the introduction of bias if patients or family in the intervention arm give different ratings for reasons other than the intervention (i.e., to please researchers). Therefore, we will not highlight the primary outcome during the consent process, and all participants will receive contact with study staff for completion of study materials which will help mitigate this potential source of bias.

6.4 STUDY INTERVENTION/EXPERIMENTAL MANIPULATION ADHERENCE

N/A

6.5 CONCOMITANT THERAPY

N/A

6.5.1 RESCUE THERAPY

N/A

7 STUDY INTERVENTION/EXPERIMENTAL MANIPULATION DISCONTINUATION AND PARTICIPANT DISCONTINUATION/WITHDRAWAL

7.1 DISCONTINUATION OF STUDY INTERVENTION/EXPERIMENTAL MANIPULATION

Subjects may be withdrawn from the study without their consent if they can no longer meet the study requirements (e.g. no longer able to complete questionnaires). For any withdrawal, investigator or subject initiated, we will retain all data that was previously collected and continue to collect chart abstraction data, unless the subject specifically requests that the data no longer be used and access to records is revoked.

7.2 PARTICIPANT DISCONTINUATION/WITHDRAWAL FROM THE STUDY

Participation is voluntary and participants may withdraw from the study at any time for any reason.

An investigator may discontinue a participant from the study for the following reasons:

- The participant meets an exclusion criterion (either newly developed or not previously recognized) that precludes further study participation,
- Lost-to-follow up; unable to contact subject,
- Any event or medical condition or situation occurs such that continued collection of follow-up study data would not be possible.

The reason for participant discontinuation or withdrawal from the study will be recorded study tracking database. Subjects who sign the informed consent form and are randomized but do not receive the study intervention will be replaced in order to meet enrollment goals. Subjects who sign the informed consent form, and are randomized and receive the study intervention, and subsequently withdraw, or are discontinued from the study, will be replaced in order to meet enrollment goals.

7.3 LOST TO FOLLOW-UP

A participant will be considered lost to follow-up if he or she fails to return any of the study questionnaires scheduled visits and study staff are unable to contact the participant after at least 3 attempts at each time point.

The following actions must be taken if a participant fails to return a study questionnaire:

- The RC will attempt to contact the participant, resend the survey packet or online link, and offer to complete the study instruments by phone. The RC will remind the participant that we value their responses and participation.

- Should the participant continue to be unreachable, he or she will be considered to have withdrawn from the study with a primary reason of lost to follow-up.

8 STUDY ASSESSMENTS AND PROCEDURES

8.1 ENDPOINT AND OTHER NON-SAFETY ASSESSMENTS

Pre-Screening: automated lists of consecutive patients admit to participating ICU services are generated using ICD10 codes and calculated APACHE II scores to narrow assessment of eligibility; time frame is within 48 hours of ICU admission; existing information from the patient's EHR will be accessed, obtained and kept as study data under a waiver of HIPAA authorization.

Screening: study staff manually screen patient electronic health records to confirm eligibility using established inclusion and exclusion criteria; time frame is 10-14 days from eligibility.

Recruitment: study staff contact eligible patient, LNOKs, family members to inform them about the study and ascertain if they are interested and able to participate; time frame is 10-14 days from eligibility.

Enrollment: subjects complete informed consent procedures with study staff and are given baseline questionnaires to complete (in person, by mail, by telephone, or online); time frame is 10-14 days from eligibility, however additional family members may be enrolled after this period until 1-month from patient randomization.

Randomization: subjects are randomized when a family member's completed baseline questionnaire has been received by the study; time frame is within 1 business day from receipt.

Intervention: a communication facilitator (study nurse/interventionist) makes contact with the enrolled subject within 1 business day from randomization; duration of intervention is 3 months, however this may be shorter if the patient dies, or extended if the facilitator finds a need to do so based on her clinical judgement; facilitators have a final contact with participants at the end of the period.

Control: subjects are contacted by study staff as the patient's hospital trajectory is monitored; time frame for check-in contacts is at transition out of ICU/to acute care, discharge from hospital, and in the event of patient death (condolence card).

Follow-up at 1-month: subjects are contacted by study staff and reminded of the first follow-up questionnaire at 1 month after randomization; reminders are sent at two weeks if questionaries have not been returned; subjects may also be reminded by phone, email, text for six weeks (one contact per week).

Follow-up at 3-months: subjects are contacted by study staff and reminded of the second follow-up questionnaire at 1 month after randomization; reminders are sent at two weeks if questionaries have not been returned; subjects may also be reminded by phone, email, text for eight weeks (one contact per week).

Follow-up at 6-months: subjects are contacted by study staff and reminded of the third follow-up questionnaire at 1 month after randomization; reminders are sent at two weeks if questionaries have not

been returned; subjects may also be reminded by phone, email, text for eight weeks (one contact per week) and a second reminder questionnaire is sent at the end of the eight weeks.

Interview: purposively sampled participants will be contacted by study staff to ascertain their availability and interest in participating in a qualitative interview at the end of their study period.

Chart abstraction: additional data will be collected from the patient's EHR at the end of the study period to evaluate the intervention; existing information from the patient's EHR will be accessed, obtained and kept as study data with HIPAA authorization from patient or the patient's LNOK/LAR.

8.2 SAFETY ASSESSMENTS

N/A

8.3 ADVERSE EVENTS AND SERIOUS ADVERSE EVENTS

8.3.1 DEFINITION OF ADVERSE EVENTS

This protocol uses the definition of adverse event from 21 CFR 312.32 (a): any untoward medical occurrence associated with the use of an intervention in humans, *whether or not considered intervention related*.

8.3.2 DEFINITION OF SERIOUS ADVERSE EVENTS

The UW IRB definition of Serious Adverse Events is: Any untoward or unfavorable medical occurrence in a human subject, including any abnormal sign (for example, abnormal physical exam or laboratory finding), system, or disease temporally associated with the subject's participation in the research. The research may or may not be causally related to it.

8.3.3 CLASSIFICATION OF AN ADVERSE EVENT

8.3.3.1 SEVERITY OF EVENT

For adverse events (AEs), the following guidelines will be used to describe severity.

- **Mild** – Events require minimal or no treatment and do not interfere with the participant's daily activities.
- **Moderate** – Events result in a low level of inconvenience or concern with the therapeutic measures. Moderate events may cause some interference with functioning.
- **Severe** – Events interrupt a participant's usual daily activity and may require systemic drug therapy or other treatment. Severe events are usually potentially life-threatening or incapacitating. Of note, the term "severe" does not necessarily equate to "serious".

8.3.3.2 RELATIONSHIP TO STUDY INTERVENTION/EXPERIMENTAL MANIPULATION

All adverse events (AEs) will have their relationship to study procedures, including the intervention, assessed by appropriately trained clinicians based on temporal relationship and their clinical judgment. The degree of certainty about causality will be graded using the categories below.

- **Definitely Related** – There is clear evidence to suggest a causal relationship, and other possible contributing factors can be ruled out. The clinical event, including an abnormal laboratory test result, occurs in a plausible time relationship to study procedures administration and cannot be explained by concurrent disease or other drugs or chemicals. The response to withdrawal of the study procedures should be clinically plausible. The event must be pharmacologically or phenomenologically definitive.
- **Probably Related** – There is evidence to suggest a causal relationship, and the influence of other factors is unlikely. The clinical event, including an abnormal laboratory test result, occurs within a reasonable time after administration of the study procedures, is unlikely to be attributed to concurrent disease or other drugs or chemicals, and follows a clinically reasonable response on withdrawal.
- **Potentially Related** – There is some evidence to suggest a causal relationship (e.g., the event occurred within a reasonable time after administration of study procedures). However, other factors may have contributed to the event (e.g., the participant's clinical condition, other concomitant events). Although an AE may rate only as "possibly related" soon after discovery, it can be flagged as requiring more information and later be upgraded to "probably related" or "definitely related", as appropriate.
- **Unlikely to be related** – A clinical event, including an abnormal laboratory test result, whose temporal relationship to study procedures administration makes a causal relationship improbable (e.g., the event did not occur within a reasonable time after administration of the study procedures) and in which other drugs or chemicals or underlying disease provides plausible explanations (e.g., the participant's clinical condition, other concomitant treatments).
- **Not Related** – The AE is completely independent of study procedures administration, and/or evidence exists that the event is definitely related to another etiology. There must be an alternative, definitive etiology documented by the clinician.

8.3.3.3 EXPECTEDNESS

A clinician with appropriate expertise in clinician care will be responsible for determining whether an adverse event (AE) is expected or unexpected. An AE will be considered unexpected if the nature, severity, or frequency of the event is not consistent with the risk information previously described for the study procedures.

8.3.4 TIME PERIOD AND FREQUENCY FOR EVENT ASSESSMENT AND FOLLOW-UP

The occurrence of an adverse event (AE) or serious adverse event (SAE) may come to the attention of study personnel during study visits, data collection, reminders or check-in contacts, and/or interviews of a study participant, or upon review by a study monitor.

All AEs, not otherwise precluded per the protocol, will be captured on the appropriate report form. Information to be collected includes event description, time of onset, clinician's assessment of severity, relationship to study procedures (assessed only by those with the training and authority to make a diagnosis), and time of resolution/stabilization of the event. All AEs occurring while on study will be documented appropriately regardless of relationship. All AEs will be followed to adequate resolution.

Changes in the severity of an AE will be documented to allow an assessment of the duration of the event at each level of severity to be performed. Documentation of onset and duration of each episode will be maintained for AEs characterized as intermittent.

Research coordinators will record events with start dates occurring any time after informed consent is obtained until 30 days after the last day of study participation.

8.3.5 ADVERSE EVENT REPORTING

Adverse Events are reported to the UW IRB within 10 business days. Adverse Events are also reported to the Chair of the DSMC, who will make the decision whether to engage the full committee.

8.3.6 SERIOUS ADVERSE EVENT REPORTING

In consultation with the PI, a trained member of the study team will be responsible for conducting an evaluation of a Serious Adverse Event and shall report the results of such evaluation to the NIH, DSMC, and the reviewing Institutional Review Board (IRB) as soon as possible, but in no event later than 10 working days after the investigator first learns of the event.

8.3.7 REPORTING EVENTS TO PARTICIPANTS

N/A

8.3.8 EVENTS OF SPECIAL INTEREST

N/A

8.3.9 REPORTING OF PREGNANCY

N/A

8.4 UNANTICIPATED PROBLEMS

8.4.1 DEFINITION OF UNANTICIPATED PROBLEMS

This protocol uses the definition of Unanticipated Problems as defined by the Office for Human Research Protections (OHRP). OHRP considers unanticipated problems involving risks to participants or others to include, in general, any incident, experience, or outcome that meets all of the following criteria:

- Unexpected in terms of nature, severity, or frequency given (a) the research procedures that are described in the protocol-related documents, such as the Institutional Review Board (IRB)-approved research protocol and informed consent document; and (b) the characteristics of the participant population being studied;
- Related or possibly related to participation in the research ("possibly related" means there is a reasonable possibility that the incident, experience, or outcome may have been caused by the procedures involved in the research); and

- Suggests that the research places participants or others at a greater risk of harm (including physical, psychological, economic, or social harm) than was previously known or recognized.

Corrective actions will be taken as needed and advised.

8.4.2 UNANTICIPATED PROBLEMS REPORTING

The investigator will report Unanticipated Problems (UPs) to the reviewing Institutional Review Board (IRB), and the Chair of the DSMC. The Unanticipated Problems report will include the following information:

- Protocol identifying information: PI's name, and the IRB project number
- A detailed description of the event, incident, experience, or outcome
- An explanation of the basis for determining that the event, incident, experience, or outcome represents an Unanticipated Problem
- A description of any changes to the protocol or other corrective actions that have been taken or are proposed in response to the Unanticipated Problem

To satisfy the requirement for prompt reporting, UPs will be reported using the following timeline:

- Unanticipated Problems that are serious adverse events (SAEs) will be reported to the IRB, the DSMC, and to the funding agency within 10 working days of the investigator becoming aware of the event
- Any other Unanticipated Problems will be reported to the IRB and to the DSMC within 10 working days of the investigator becoming aware of the problem
- All Unanticipated Problems should be reported to appropriate institutional officials in accordance with the IRB's receipt of the report of the problem from the investigator and determination of subsequent action.

8.4.3 REPORTING UNANTICIPATED PROBLEMS TO PARTICIPANTS

N/A

9 STATISTICAL CONSIDERATIONS

9.1 STATISTICAL HYPOTHESES

- Specific Aim 1, Primary Endpoint
  Hypothesis: The intervention will improve patient and family outcomes, compared to attention control.

- Specific Aim 2, Secondary Endpoint
  Hypothesis: The intervention will improve value by reducing ICU costs, hospital costs and readmissions and improve the cost-consequence ratio for each outcome as compared with attention control.

- Specific Aim 3, Other Outcomes

Anticipated findings: We will identify primary factors associated with key implementation outcomes.

9.2 SAMPLE SIZE DETERMINATION

The primary focus for sample size estimation is the primary outcome: mean family member depression over 6 months as assessed by the HADS depression subscale. For all calculations, we assume a two-sided test with a significance level of 0.05. If we assume 300 total family members (1 family member per patient and 150 per arm), a standard deviation of HADS depression scores of 4.2 points in both arms, 3 measurements of depression (at 1,3, and 6 months), and an intraclass correlation (ICC) of 0.2, we will be able to detect a difference in mean depression of at least 0.93 points with 80% power and 1.07 points with 90% power (Power Table Below). These detectable differences at 80% power become 0.86 if the ICC is 0.1 and 1.05 if the ICC is as high as 0.4. If we had only 1 measurement instead of 3 per family member or, equivalently, if the ICC were 1, we would have 80% power to detect a difference of at least 1.36 points. Across all of these varying conditions, detectable differences are slightly within or below estimates of the minimally clinically important difference (MCID) of 1.6 to 2.0 available from the literature, suggesting we will have adequate power to identify a minimally clinically important difference.[19-27] Although these MCIDs and minimum detectable effects are just estimates, they provide the best available evidence that power will be adequate to detect relatively small but important differences. We anticipate >80% complete data for all outcomes so we will randomize 376 patients to achieve 300 patients and at least 300 family members with complete data. If our response rate is 70%, then we would expect responses for 263 patients and at least 263 family members and with an ICC of 0.2, we would be able to detect a difference in mean depression of at least 0.99 points with 80% power. If we have more than 1 family member per patient (1.5 is expected), we will be able to detect smaller differences at the same power. In addition, we have 80-90% power to detect reasonable effects for other continuous outcomes in Aim 1. For the binary outcome of goal-concordance care, we have about 80% power to detect a difference in proportion concordant of 0.6 and 0.7, with 3 measurements from each of 300 total participants and an ICC of 0.13; the estimate of 0.6 for the controls is from a prior study and our preliminary data.[28,29] We targeted power to identify differences within or slightly less than available estimates of "minimally important clinical differences" so that we would be confident that we would be powered to detect a minimally important clinical difference.

Power Table: Range of minimum detectable effects with 80%- 90% power for HADS

OUTCOME MEASURE	Range of Minimum Detectable Effects* (†MCID if known)	Standard deviation[6]
HADS depression subscale	0.86 – 1.3 (†1.6-2.0)	4.2
HADS anxiety subscale	0.97 – 1.47 (†1.6-2.0)	4.75
HADS total score	1.69 – 2.56 (†1.6-2.0)	8.25

*Range due to: intraclass correlation (0.1-0.4), response rate (70% or 80%), and power (80% or 90%); †MCID = estimates of minimal clinically important difference

9.3 POPULATIONS FOR ANALYSES

- Specific Aim 1, Primary Endpoint
  Intention-to-Treat (ITT) Analysis Population: Randomized family members of critically ill patients

- Specific Aim 2, Secondary Endpoint
  ITT Analysis Population: Randomized patients experiencing hospitalization due to critical illness

- Specific Aim 3, Other Outcomes
  Analysis Population: Participating family members and clinicians, administrators

9.4 STATISTICAL ANALYSES

9.4.1 GENERAL APPROACH

Our primary analysis approach involves mixed effects models. This likelihood-based approach assumes that missing data (responses) are missing at random. However, this assumption may not hold, so further sensitivity analysis is necessary. Multiple imputation using MICE will be performed to address missing data. Missing values will be imputed based on patient characteristics (minority race, age and having three or more chronic diagnoses), family characteristics (age, education, employment, self-reported health status and financial situation) and outcomes from previous time points. Twenty imputations will be performed, and final results will be pooled. The multiple imputation approach will be useful for our sensitivity analyses which include adjustment for covariates, some of which may be missing for some participants.

We will also perform sensitivity analyses regarding handling of missing data and enrollment characteristics of participants. We will consider different approaches and summarize any similarities and differences in results or conclusions from these approaches.

Our goal will be to minimize missing data through minimizing respondent burden, offering multiple methods for survey completion, and having trained staff with repeated contact with participants. However, data could still be missing due to skipping individual items on a survey, omissions in EHR, lack of follow-up, or death. We will quantify the amount of missing data, evaluate associations with participant characteristics, and minimize bias by applying appropriate methods to account for missing data.

9.4.2 ANALYSIS OF THE PRIMARY ENDPOINT(S)

- Specific Aim 1, Primary Endpoint

Our primary outcome is family member symptoms of depression over the 6-months post-randomization period. We will follow the intention-to-treat principle. Our primary analysis will use a linear mixed effects model with family member symptoms at all time points (1,3,6 months) as the response, main effects for intervention and time points, and a random effect to account for multiple measurements (time points) per family member. Given multiple family members per patient, we will also include a random effect for family. Time point is included as a factor variable to allow for nonlinear effects. We will also adjust for site, since randomization is stratified by site, and consider adjustment for response (symptoms of depression for primary outcome) at baseline (randomization). This model allows the average response to be different at 1, 3, and 6 months, but assumes the intervention has the same effect at each of these times. The secondary analysis allows the effect of intervention to be different across time by including an interaction between time and intervention. The advantage of using the data at all three time points and

a mixed model approach is that we can gain precision; it also allows for missing responses, assuming the responses are missing at random. We will use a similar approach for the other continuous family and patient outcomes, and a generalized linear mixed effects model for the binary outcome of goal-concordant care. As a sensitivity analysis, we will consider models including only one family member per patient, chosen randomly.

9.4.3 ANALYSIS OF THE SECONDARY ENDPOINT(S)

- Specific Aim 2, Secondary Endpoints

This aim will include utilization and costs during the study period from the EHR and institutional metrics. Results will be reported as:

- Hospital readmission: 30 days after discharge from the index hospitalization
- Hospital free days: 1 month (30 days) after randomization, 3 months (91 days) after randomization, 6 months (183 days) after randomization
- ICU free days; 1 month (30 days) after randomization, 3 months (91 days) after randomization, 6 months (183 days) after randomization
- Healthcare Costs: from randomization to discharge from index hospitalization, up to 6 months (183 days)
- Healthcare Costs: from randomization to 30 days after randomization

- Specific Aim 3, Other Outcomes

We will perform a thematic analysis of transcribed interviews to explore feedback on the intervention and ways to improve the intervention delivery and implementation. Analyses will be guided by the Consolidated Framework for Implementation Research (CFIR) in exploration of factors effecting implementation and by Outcomes for Implementation Research in exploration of implementation outcomes. Qualitative data will be imported into analytic software, where investigators will perform iterative, inductive coding to identify recurrent themes, categories, and relationships among themes and categories.

9.4.4 SAFETY ANALYSES

N/A

9.4.5 BASELINE DESCRIPTIVE STATISTICS

See below.

9.4.6 PLANNED INTERIM ANALYSES

N/A

9.4.7 SUB-GROUP ANALYSES

N/A

9.4.8 TABULATION OF INDIVIDUAL PARTICIPANT DATA

N/A

9.4.9 EXPLORATORY ANALYSES

As an exploratory analysis, we will examine specific a priori sub-groups for heterogeneity of treatment effects to see if the intervention has a differential impact on patients or family members with poorer health competence, higher level of palliative care needs, or higher HADS scores at enrollment to help determine whether future implementation of the intervention should target high-risk groups. We will also explore the impact of patient and family member gender, age, and race/ethnicity on treatment effects. These analyses will use the same analytic approach as outlined above, with inclusion of an interaction between the treatment indicator and the variable of interest (measure of self-efficacy or age, for example) which is measured at enrollment.

10 SUPPORTING DOCUMENTATION AND OPERATIONAL CONSIDERATIONS

10.1 REGULATORY, ETHICAL, AND STUDY OVERSIGHT CONSIDERATIONS

10.1.1 INFORMED CONSENT PROCESS

10.1.1.1 CONSENT/ASSENT AND OTHER INFORMATIONAL DOCUMENTS PROVIDED TO PARTICIPANTS

For this study we have a Waiver of Documentation of Consent where subjects are recruited and enrolled remotely. They will receive copies of a consent form or an information sheet with all elements of informed consent and contact information for key study personnel and for the Human Subjects Division. Participants enrolled in person (patient, LNOK, family members) may complete written documentation of informed consent prior to completing surveys and starting the study intervention.

10.1.1.2 CONSENT PROCEDURES AND DOCUMENTATION

• PATIENTS and FAMILY. Subjects will be approached in person in the hospital/ICU by research study staff who will review the written consent form. The approach will likely take place in the patient's hospital room, or other private area. If any potential subject would like time to review the consent form and consider participation on his/her own, or in consultation with another family member, the study staff will leave copies of the consent form and return to review, answer questions, and collect written consent at a later time (up to a day later).

For COVID-19 Adaptation: Subjects will be approached by phone by research study staff who will review the consent form and send copies via mail or email. The study staff will permit time to review, answer questions, and attempt to collect written consent whenever possible.

• PATIENT, FAMILY, and CLINICIAN/ADMINISTRATOR and INTERVENTIONIST POST-STUDY INTERVIEWS. Subjects will receive an information sheet by mail or email. Research study staff (RA/RC) will review the

form after receipt by telephone and answer any questions before proceeding to schedule or conduct the interview.

Study staff will ask if subjects have any questions, if they understand the procedures as outlined in the consent. Patients will be assessed for decisional capacity as part of recruitment/enrollment in the ICU prior to participation.

Patient and family may feel that they are obligated to participate in the study due to being under the care of the UW Medicine system. We routinely address any concerns of this nature by explaining that participation is voluntary and that whether or not patients or family participate will not adversely affect the care the patient receives during their hospitalization or in the future.

Clinicians/Administrators/Interventionists may similarly feel that they are obligated to participate due to being or having been affiliated with the same health system. We also address any concerns of this nature by explaining that participation is voluntary and that whether or not they participate will not adversely affect their standing within the institution.
Informed consent will be an ongoing process through the duration of the study. Subjects will have opportunities to ask questions and will be reminded that participation is voluntary at each step – interactions with staff/facilitators, receipt of questionnaires, invitations to interview(s).

10.1.2 STUDY DISCONTINUATION AND CLOSURE

This study may be temporarily suspended or prematurely terminated if there is sufficient reasonable cause. Written notification, documenting the reason for study suspension or termination, will be provided by the suspending or terminating party to study participants, investigator, funding agency, and regulatory authorities. If the study is prematurely terminated or suspended, the Principal Investigator (PI) will promptly inform study participants, the Institutional Review Board (IRB), and sponsor/funding agency and will provide the reason(s) for the termination or suspension.

Circumstances that may warrant termination or suspension include, but are not limited to:

- Insufficient compliance of study staff to the protocol (i.e., significant protocol violations)
- Data that are not sufficiently complete and/or evaluable
- Determination of futility
- Factors that prohibit completion of study activities (e.g. lock-down due to pandemic)

10.1.3 CONFIDENTIALITY AND PRIVACY

Participant confidentiality and privacy is strictly held in trust by the participating investigators, their staff, the safety and oversight monitor(s), and the sponsor(s) and funding agency. This confidentiality is extended to the data being collected as part of this study. Data that could be used to identify a specific study participant will be held in strict confidence within the research team. No personally identifiable information from the study will be released to any unauthorized third party without prior written approval of the sponsor/funding agency.

All research activities will be conducted in as private a setting as possible.

The study monitor, other authorized representatives of the sponsor or funding agency, representatives of the Institutional Review Board (IRB), regulatory agencies or representatives from companies or organizations supplying the product, may inspect all documents and records required to be maintained by the investigator, including but not limited to, medical records for the participants in this study. The study site will permit access to such records.

The study participant's contact information will be securely stored at each clinical site for internal use during the study. At the end of the study, all records will continue to be kept in a secure location for as long a period as dictated by the reviewing IRB, Institutional policies, or sponsor/funding agency requirements.

Study participant research data, for purposes of statistical analysis and scientific reporting, will be stored on site. These data will not include the participant's contact or identifying information. Rather, individual participants and their research data will be identified by a unique study identification number. The study data entry and study management systems used by research staff will be secured and password protected.

Measures Taken to Ensure Confidentiality of Data Shared per the NIH Data Sharing Policies. It is NIH policy that the results and accomplishments of the activities that it funds should be made available to the public (see https://grants.nih.gov/policy/sharing.htm*).* The PI will ensure all mechanisms used to share data will include proper plans and safeguards for the protection of privacy, confidentiality, and security for data dissemination and reuse (e.g., all data will be thoroughly de-identified and will not be traceable to a specific study participant). Plans for archiving and long-term preservation of the data will be implemented, as appropriate.

Certificate of Confidentiality. To further protect the privacy of study participants, the Secretary, Health and Human Services (HHS), has issued a Certificate of Confidentiality (CoC) to all researchers engaged in biomedical, behavioral, clinical or other human subjects research funded wholly or in part by the federal government. Recipients of NIH funding for human subjects research are required to protect identifiable research information from forced disclosure per the terms of the NIH Policy (see https://humansubjects.nih.gov/coc/index). As set forth in 45 CFR Part 75.303(a) and NIHGPS Chapter 8.3, recipients conducting NIH-supported research covered by this Policy are required to establish and maintain effective internal controls (e.g., policies and procedures) that provide reasonable assurance that the award is managed in compliance with Federal statutes, regulations, and the terms and conditions of award. It is the NIH policy that investigators and others who have access to research records will not disclose identifying information except when the participant consents or in certain instances when federal, state, or local law or regulation requires disclosure. Investigators will inform research participants of the protections and the limits to protections provided by a Certificate issued by this Policy in the consent documents per the IRB template language.

10.1.4 FUTURE USE OF STORED SPECIMENS AND DATA

N/A

10.1.5 KEY ROLES AND STUDY GOVERNANCE

Co-Principal Investigator	**Chair: DSMC**
Ruth A. Engelberg, PhD	*Kathleen Puntillo RN, PhD*

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This study has oversight by the IRB of record and a Data and Safety Monitoring Committee (DSMC).

10.1.6 SAFETY OVERSIGHT

Safety oversight will be under the direction of a Data and Safety Monitoring Committee (DSMC) composed of individuals with the appropriate expertise, including: Physiological Nursing, Implementation Research, Palliative Care and Medical Ethics, Family and Preventive Medicine, Pulmonary Sciences and Critical Care Medicine, and Biostatistics. Members of the DSMC will be independent from the study conduct and free of conflict of interest. The DSMC will convene biannually to assess safety and efficacy data from the study. The DSMC will operate under the rules of an approved data and safety monitoring plan that will be written and reviewed at the organizational meeting of the DSMC. At this time, each data element that the DSMC would like to assess will be clearly defined.

10.1.7 CLINICAL MONITORING

N/A

10.1.8 QUALITY ASSURANCE AND QUALITY CONTROL

Quality control (QC) procedures will be implemented as follows:

Informed consent --- Study staff will review both the documentation and the consenting process. This review will evaluate compliance with GCP, accuracy, and completeness. Feedback will be provided by the Study Coordinator to the study team to ensure proper consenting procedures are followed.

Intervention Fidelity — Consistent delivery of the study interventions will be monitored throughout the intervention phase of the study. Procedures for ensuring fidelity of intervention delivery are described in *Section 6.2.1, Interventionist Training and Tracking*.

Protocol Deviations – The study team will review protocol deviations on an ongoing basis and will implement corrective actions when the quantity or nature of deviations are deemed to be at a level of concern.

10.1.9 DATA HANDLING AND RECORD KEEPING

10.1.9.1 DATA COLLECTION AND MANAGEMENT RESPONSIBILITIES

Data collection will be the responsibility of the clinical trial staff under the supervision of the study coordinator and the site investigator. The investigator will be responsible for ensuring the accuracy, completeness, legibility, and timeliness of the data reported. All source documents should be completed in a neat, legible manner to ensure accurate interpretation of data.

Screening and tracking data will be entered into a separate study database and maintained by the research team with oversight from the study coordinator.

Outcomes data will be collected into an Access database from hardcopy questionnaires completed in person or returned by mail. Questionnaires completed online will be compiled by the REDCap databases.

10.1.9.2 STUDY RECORDS RETENTION

Study records will be retained according to the schedules required by the University of Washington [*https://finance.uw.edu/recmgt/gs/research*].

10.1.10 PROTOCOL DEVIATIONS

This protocol defines a protocol deviation as any noncompliance with the clinical trial protocol. The noncompliance may be either on the part of the participant, the investigator, or the study site staff. As a result of deviations, corrective actions will be developed by the site and implemented promptly.

It will be the responsibility of the site investigator to use continuous vigilance to identify and report deviations within 10 working days of identification of the protocol deviation, or within 10 working days of the scheduled protocol-required activity. Protocol deviations will be sent to the reviewing Institutional Review Board (IRB) and the Chairperson of the DSMC for this study. The site investigators will be responsible for knowing and adhering to the reviewing IRB requirements and recommended actions by the DSMC.

10.1.11 PUBLICATION AND DATA SHARING POLICY

This study will be conducted in accordance with the following publication and data sharing policies and regulations:

National Institutes of Health (NIH) Public Access Policy, which ensures that the public has access to the published results of NIH funded research. It requires scientists to submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central upon acceptance for publication.

This study will comply with the NIH Data Sharing Policy and Policy on the Dissemination of NIH-Funded Clinical Trial Information and the Clinical Trials Registration and Results Information Submission rule. As such, this trial will be registered at ClinicalTrials.gov, and results information from this trial will be submitted to ClinicalTrials.gov. In addition, every attempt will be made to publish results in peer-reviewed journals. Data from this study may be requested from other researchers after the completion of the primary endpoint by contacting the Principal Investigators. Considerations for ensuring confidentiality of these shared data are described in Section 10.1.3.

10.1.12 CONFLICT OF INTEREST POLICY

The independence of this study from any actual or perceived influence is critical. Therefore, any actual conflict of interest of persons who have a role in the design, conduct, analysis, publication, or any aspect of this trial will be disclosed and managed. Furthermore, persons who have a perceived conflict of interest will be required to have such conflicts managed in a way that is appropriate to their participation in the design and conduct of this trial. The study leadership in conjunction with the NINR has established policies and procedures for all study group members to disclose all conflicts of interest and will establish a mechanism for the management of all reported dualities of interest.

10.2 ADDITIONAL CONSIDERATIONS

N/A

10.3 ABBREVIATIONS AND SPECIAL TERMS

AE	adverse events
AHRQ	Agency for Healthcare Research and Quality
ARDS	acute respiratory distress syndrome
CAD	coronary artery disease
CEDI	Center for Equity, Diversity and Inclusion
CFIR	Consolidated Framework for Implementation Research
CFR	Code of Federal Regulations
CHF	congestive heart failure
CoC	Certificate of Confidentiality
COPD	Chronic obstructive pulmonary disease
COVID-19	Coronavirus disease 2019
CPR	cardiopulmonary resuscitation
CVA	cardiovascular accident
DAI	diffuse axonal injury
DSMC	Data *and* Safety Monitoring Committee
ECLS	extracorporeal life support
ECMO	Extracorporeal membrane oxygenation
EDH	epidural hematoma
EHR	electronic health record
GCP	good clinical practices
GCS	Glasgow Coma Score
HADS	Hospital Anxiety and Depression Scale
HIPAA	Health Insurance Portability and Accountability Act
ICC	intraclass correlation
ICD-10	International Classification of Diseases, version 10

ICH	intracerebral hemorrhage
ICH GCP	International Council on Harmonisation Good Clinical Practice
ICU	intensive care unit
IES-6	Impact of Event Scale-6
IPH	Intraparenchymal hemorrhage
IRB	institutional review board
ITT	Intention-to-Treat
LAR	legally authorized representative
LNOK	legal next of kin
LTAC	long-term acute care
MCID	minimally clinically important difference
MICE	Multiple Imputation by Chained Equations
MRI	Magnetic resonance imaging
N/A	not applicable
NCT	National Clinical Trial
NIH	National Institutes of Health
NINR	National Institute of Nursing Research
OHRP	Office for Human Research Protections
PCS	Perceived Competence Scale
PTSD	Post-traumatic stress disorder
PVD	peripheral vascular disease
QC	Quality control
QUAL-E (Fam)	quality of life at the end of life (Family Version)
RA	research assistant
RC	research coordinator
RSQ	Relationship Style Questionnaire
SAE	serious adverse events
SAH	subarachnoid hemorrhage
SDH	subdural hematoma
SES	socio-economic status
SNF	skilled nursing facility
SOFA	sequential organ failure assessment
SUPPORT	Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments
TBI	traumatic brain injury
UP	Unanticipated Problems
UW	University of Washington
UWMC	University of Washington Medicine Centers
WDLS	withdrawal of life support

10.4 PROTOCOL AMENDMENT HISTORY

Version	Date	Description of Change	Brief Rationale
1.1	10/24/18	Clarification on recruitment and contact procedures requested by IRB	Clarifying recruitment and contact procedures
1.2	3/11/19	Screening changes; and Instrument changes	Defining additional chronic and acute illness criteria and conditions for inclusion; and Refining data collection instruments
1.3	4/19/19	Additional study aims addressing financial stress; and increasing sample size of clinician interviews	Coordination with Financial Health and Wellness Study
1.4	7/3/19	Revisions to recruitment protocol	Revisions for assessing cognitively impaired subjects for inclusion
1.5	7/25/19	Added chart note template; and Instrument changes	Chart note documentation to alert clinicians to facilitators involvement; and refining data collection instruments
1.6	8/26/19	Changes to interview guides	Adding questions about financial stress
1.7	10/3/19	Change to eligibility criteria; recruitment materials; DSMC; and Instrument changes	Clarifying chronic illness conditions; change in state law regarding LNOK; timing of after-death surveys; change in DSMC chairperson; and refining data collection instruments
2.10	2/3/20	Adding audio recording for fidelity assessment	Adding audio recording for fidelity assessment
2.11	3/30/20	Adding a new aim to explore the impact of COVID-19; adding eligibility criteria; revisions to recruitment protocol; adding contacts with research coordinator (RC) in usual care arm	Adjustments in order to continue while hospital visitation and contact restrictions are in place; having RC as a resource to provide help and support for family members impacted by COVID-19 pandemic
2.12	6/10/20	Updating Interview Guide	Including questions specifically for control/usual care subjects, and to add

			items pertinent to change in procedures due to COVID-19
2.13	8/25/20	Screening changes; and Inclusion criterion	Coordinating with other ongoing studies
3.15	2/14/21	Updating eligibility criteria; updating contact schedule	Broadening acute criteria; adding additional reminders in order to increase response rates
4.17	8/25/21	Dropping patient questionnaires	Have had only one patient well enough to complete a baseline questionnaire in the ICU. Lacking baseline questionnaires, we have not collected follow-up questionnaires from patients.
4.19	2/22/22	Study information poster for patient hospital room	Letting attending clinical team know that study facilitators are available for patient
4.21	5/23/22	Increasing sample size of administrator interviews	Broaden scope of respondents
5.22	12/21/22	Increasing anticipated number of enrolled family members	Continuing to recruit new subjects into no-cost extension
5.23	2/6/23	Updating PI in all protocol and documentation	Change in principal investigators
6.0	6/7/24	Extending NIH certificate of confidentiality	Extension to allow additional data collection if required

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