Use of A Telehealth Intervention to Decrease Readmissions in Cirrhosis: A Randomized Controlled Trial

NCT NUMBER: PENDING
SEPTEMBER 26, 2018

Continuing Review

Basic Info

Confirmation Number:	**chbgaidc**
Protocol Number:	**828183**
Created By:	**FORDE, KIMBERLY**
Principal Investigator:	**KHUNGAR, VANDANA**
Protocol Title:	**Use of A Telehealth Intervention to Decrease Readmissions in Cirrhosis: A Randomized Controlled Trial**
Short Title:	**Telehealth RCT in Cirrhotics**
Protocol Description:	**The proposed study is a randomized controlled trial comparing a simple telehealth intervention implemented after hospital discharge to standard of care for reducing hospital readmissions. All cirrhotic patients admitted to the Hepatology service at The Hospital of the University of Pennsylvania will be randomized to one of the two arms outlined above. Patients will be followed for 90 days. Rates of 30 and 90 day readmission will be compared between the groups.**
Submission Type:	**Social and Biological Sciences**
Application Type:	**FULL**

PennERA Protocol Status

Approved (No CR)

Level of IRB Review Required

Expedited Review

The following documents are currently attached to this item:

There are no documents attached for this item.

Summary of protocol modifications approved since last continuing review
Please provide a description of changes which have been reviewed and approved by the IRB since the last continuing review.

Subject Enrollment

Target subject enrollment at Penn

0

Target enrollment at other centers (multi-center study)

0

Number of subjects enrolled at Penn since the study was initiated

0

Actual enrollment at participating centers

0

Number of subjects enrolled at Penn since the last continuing review

Total number of subjects who provided consent

0

Number of subjects determined to be ineligible

0

Number of subjects currently active/on study

0

Number of subjects lost to follow-up

0

Number of subjects no longer participating for other reasons

0

Number of subjects who have completed the study

0

Number of subjects who have withdrawn from the study

0

Race:

American Indian or Alaskan Native

0

Asian

0

Black or African American

0

Native Hawaiian or Pacific Islander

0

White

0

Other

0

Unknown or Not Reported

0

Ethnicity:

Hispanic or Latino

0

Not Hispanic or Latino

0

Gender

Male

0

Female

0

Other

0

Unknown / Not Reported

0

Total

0

Vulnerable Populations

Has your study enrolled pregnant woman?*

No

Has your study enrolled prisoners?*

No

Has your study enrolled children?*

No

Subject Withdrawal

How many subject voluntarily withdrew from the study?

0

How many subjects were withdrawn from the study at the request of the PI/Co-PI?

0

Number of subjects withdrawn due to adverse events/unanticipated problems

0

Subject withdraw reason*
If subjects voluntarily withdrew or were withdrawn, please indicate the reasons.

Issues with recruitment/retention, informed consent, or other issues
If applicable, please provide a brief summary of any difficulty you experienced obtaining/retaining subjects or obtaining informed consent during the entire approval period. Additionally, please indicate if there have been any complaints about the research.

Informed Consent Process*
Recognizing that informed consent encompasses much more than a form or document there are a number of methods employed to educate a potential subject as to what is involved in a particular research project. The forms used are one method for documenting the informed consent process.Is written informed consent required for this project?
No

Is written HIPAA authorization required?*

No

New Findings

Significant preliminary observations/interim findings
Have there been any significant preliminary observations/interim findings during the past approval period. If yes, please describe below.

DMC or DSMB exists*
Does a data monitoring committee (DMC) or data and safety monitoring board (DSMB) exist?
No

DMC or DMB Report Status

The following documents are currently attached to this item:

There are no documents attached for this item.

Multi-site trial summary
If this study is a multi-site trial, provide a narrative summary of any relevant reports that have been received in the past year, regardless of whether the report has been previously submitted to the IRB.

Disclosure of Significant Financial Interests*
Investigators (persons responsible for the design, conduct or reporting of this research protocol) must disclose any of the following financial interests / relationships with any entity that sponsors, provides support, or otherwise has a financial interest in the conduct or outcome of this research protocol (Outside Organization): Payments received for the past 12 months from a publicly traded Outside Organization for personal services (e.g., consulting, lecturing / speaking, service on the Scientific Advisory Board) plus the value of any current equity that when aggregated exceeds $5,000Payments received for the past 12 months from a non-publicly traded Outside Organization for personal services that in total exceed $5,000, or having any equity interestMembership on the governing board of any Outside Organization, including service on its board of directors, or having a position of authority or responsibility to act in its best interests, including being an officer, manager, partner, or limited liability company member with management responsibilityInvestigators must also disclose any financial interest in a drug, device or other product or a competing product (IP rights), regardless of whether the IP has been patented, licensed, or assigned to the Penn, if such IP is being tested, evaluated, or developed in, or if its commercial value could be affected by, this protocol.Investigators are not required to disclose equity in mutual funds and retirement accounts, as long as the Investigator does not directly control the investment decisions made in these vehicles.Does any Investigator (or his or her spouse or dependent children) have a SIGNIFICANT FINANCIAL INTEREST, as defined above?
No

Penn Intellectual Property*
To the best of the Principal Investigator's knowledge, does this protocol involve the testing, development or evaluation of a drug, device, product, or other type of intellectual property (IP) that is owned by or assigned to the University of Pennsylvania?
No

Certification
I have reviewed the Financial Disclosure and Presumptively Prohibited Conflicts for Faculty Participating in Clinical Trials and the Financial Disclosure Policy for Research and Sponsored Projects with all persons who are responsible for the design, conduct, or reporting of this research; and all required Disclosures have been attached to this application.
Yes

Study Completion / Expiration

Study Complete*
Is this study complete?
No

Study Complete - Explanation
If study is completePlease indicate why (eg., research related activities and data analysis are complete, required number of subjects reached, issues with protocol safety,etc.)

The following documents are currently attached to this item:

There are no documents attached for this item.

IRB Approval Expired*
Has IRB approval for this protocol expired or will it expire before the scheduled IRB review?
No

Research During IRB Approval Lapse
If the IRB approval for the protocol has expired or will expire before the scheduled IRB review, confirm that no research related activities occurred/will occur without approval from the IRB unless the PI contacted the Office of Regulatory Affairs and the IRB Executive Chair (or authorized designee) determined that it is in the best interest of subjects to continue during the lapse in IRB approval. For example, in a clinical trial there are (1) subjects who are enrolled but not on intervention, (2) subjects who are on intervention, and (3) subjects who have completed the intervention phase and are in follow up. The IRB Executive Chair must evaluate each of these groups separately regarding continuation of participation in the research after IRB approval has expired.Have any research activities occurred, or will any research activities need to occur, during the lapse in IRB approval?
No

Unanticipated Problems*
Since the last IRB Review, have there been any unanticipated study related events that have not been previously reported to the IRB?
No

The following documents are currently attached to this item:

There are no documents attached for this item.

Adverse Events*
Since the last IRB review, has the profile of adverse events (in terms of frequency, severity, or specificity) changed from previous experience or as documented in the research protocol, informed consent document, or investigator's brochure?
No

The following documents are currently attached to this item:

There are no documents attached for this item.

Documents attached from the IRB protocol application.

The following documents are currently attached to this item:

Informed consent form (livebettercirrhosisinformedconsent_03.08.2018.pdf)

Informed consent form (livebettercirrhosis_verbal_consentclean17april2018.pdf)

List of Documents Details

Please detail the rationale for why any of the above documents are not attached to the submission (i.e. No Investigator's Brochure, Protocol, or Consent Forms are utilized for this protocol).

Protocol Details

Resubmission*
Yes

Study Personnel

Principal Investigator

Name:	**KHUNGAR, VANDANA**
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City State Zip:	**PHILADELPHIA PA 19104-6160**
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Fax:	-
Pager:	
Email:	**Vandana.Khungar@uphs.upenn.edu**
HS Training Completed:	**Yes**
Training Expiration Date:	**06/04/2020**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Study Contacts

Name:	**GEPTY, CHRISTINE**
Dept / School / Div:	**4237 - DM-Gastroenterology**
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City State Zip:	**PHILADELPHIA PA 19104-6160**
Phone:	**215-360-0836**
Fax:	-
Pager:	
Email:	**christine.gepty@uphs.upenn.edu**
HS Training Completed:	**Yes**
Training Expiration Date:	**05/07/2020**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**KIM-LEE, GRACE**
Dept / School / Div:	**4237 - DM-Gastroenterology**
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Phone:	**215-360-0836**
Fax:	**215-615-3756**
Pager:	
Email:	**leeg@uphs.upenn.edu**
HS Training Completed:	**Yes**
Training Expiration Date:	**04/06/2020**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**EICHELDINGER, EMILY**
Dept / School / Div:	**4237 - DM-Gastroenterology**
Campus Address Mail Code	**6160**
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City State Zip:	**PHILADELPHIA PA 19104-6160**
Phone:	**215-360-0947**
Fax:	
Pager:	
Email:	**emily.eicheldinger@uphs.upenn.edu**
HS Training Completed:	**Yes**
Training Expiration Date:	**06/18/2020**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Other Investigator

Name:	**FORDE, KIMBERLY**
Dept / School / Div:	**4237 - DM-Gastroenterology**
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Phone:	**215-573-4264**
Fax:	-
Pager:	
Email:	**kimberly.forde@uphs.upenn.edu**
HS Training Completed:	**Yes**
Training Expiration Date:	**03/29/2019**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Responsible Org (Department/School/Division):

4237 - DM-Gastroenterology

Key Study Personnel

Name:	**LEITNER, AARON**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**04/16/2018**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**SEVINC, CHRISTIANNE**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**08/01/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**BERGANDINO, JOHN**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**06/23/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**ROSENBACH, BENJAMIN**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**05/11/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**TAYLOR, DEVON**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**02/22/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**FOOTE, CONNOR**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**09/12/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**GOLDBERG, DAVID S**
Department/School/Division:	**DM-Gastroenterology**
HS Training Completed:	**Yes**
Training Expiration Date:	**07/18/2018**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**MCGROGAN, KYLE**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**02/27/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**PEYTON, DIANE**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**05/01/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**VIQAR, ASIM**
Department/School/Division:	**Health System**
HS Training Completed:	**No**
Training Expiration Date:	
Name of course completed:	

Name:	**MEHTA, SHIVAN**
Department/School/Division:	**DM-Gastroenterology**
HS Training Completed:	**Yes**
Training Expiration Date:	**10/07/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**MACK, IRIS**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**11/09/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**BROWN, STEPHANIE N**
Department/School/Division:	**ME-Division of Health Policy**
HS Training Completed:	**Yes**
Training Expiration Date:	**06/20/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**LYDON, CONOR**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**03/08/2020**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Disclosure of Significant Financial Interests*
Does any person who is responsible for the design, conduct, or reporting of this research protocol have a **FINANCIAL INTEREST**?
No

Penn Intellectual Property*
To the best of the Principal Investigator's knowledge, does this protocol involve the testing, development or evaluation of a drug, device, product, or other type of intellectual property (IP) that is owned by or assigned to the University of Pennsylvania?
No

Certification
I have reviewed the *Financial Disclosure and Presumptively Prohibited Conflicts for Faculty Participating in Clinical Trials* and the *Financial Disclosure Policy for Research and Sponsored Projects* with all persons who are responsible for the design, conduct, or reporting of this research; and all required Disclosures have been attached to this application.
Yes

Social and Biological Sciences

Study Instruments
Discuss the particulars of the research instruments, questionnaires and other evaluation instruments in detail. Provide validation documentation and or procedures to be used to validate instruments. For well know and generally accepted test instruments the detail here can be brief. More detail may be required for a novel or new instrument. For ethnographic studies identify any study instruments to be used (i.e. for deception studies) and describe in detail where, when and how the study will be conducted and who or what are the subjects of study. Note: For more information on how to conduct ethical and valid ethnographic research, follow the link For oral histories or interviews provide the general framework for questioning and means of data collection. If interviews or groups settings are to be audio taped or video taped describe in detail the conditions under which it will take place. Include a copy of any novel or new test instruments with the IRB submission.
Way to Health is a web-based platform that automates many functions necessary for conducting randomized controlled trials of health behavior interventions. The platform, designed by faculty and staff at the Leonard Davis Institute's Center for Health Incentives and Behavioral Economics (CHIBE), is utilized to create an efficient, scalable, and low cost way to test behavioral interventions using a technology that can be deployed anywhere. The Way to Health platform will be utilized to support the randomized controlled trial herein proposed. A Way to Health Site will be constructed for this study based on observations and refinements of study materials utilized for a pilot study conducted by the research group in this patient population, the platform will be utilized to store demographic data, document consent, conduct randomization procedures, obtain elicited biometric data and provide clinical monitoring based on received biometric data for participants. Daily SMS prompts as mapped out by the study team (see flow diagrams attached as supporting materials) will be sent to enrolled participants randomized to the intervention arm) and a clinical patient liaison will be trained to augment biometric data collected as needed and act on or escalate review of data that may require physician intervention, Additionally, survey data will also be collected though Way to Health on a daily basis. Any concerning symptoms elicited by the daily surveys will also be reviewed by the clinical patient liaison and if necessary communicated to the participants' clinician as needed via phone, email or text. The telehealth monitoring provided by the Way to Health Platform will be utilized to document changes in daily weights, symptoms of hepatic decompensation (hepatic encephalopathy, volume overload, and/ or bleeding) and adherence with prescribed medication regimens. SMS messages will be sent to participants randomized to the intervention arm twice daily, AM messages including an assessment of weight and a rotating survey question to assess other concerning symptoms and a PM message to review medication adherence. Once weekly, an assessment of confusion using a number connection test will be administered. Additional surveys to be administered will include the following: pre and post quality of life assessment (SF 36 and the chronic liver disease questionnaire, CLDQ, see attached), and an assessment of patient satisfaction (survey) administered at the beginning, middle and end of the intervention.

Group Modifications
Describe necessary changes that will or have been made to the study instruments for different groups.
No changes will be made to study instruments based on differential group assignment. No SMS messages will be provided to those participants randomized to the usual care arm until completion of

their observation period. To allow all participants to experience the intervention, the usual care arm subjects will be offered 90 days of telehealth monitoring after completion of the study. Additionally, the program and quality of life surveys required for study participation are identical regardless of group assignment.

Method for Assigning Subjects to Groups
Describe how subjects will be randomized to groups.
Permuted block randomization will be utilized to randomize patients to the intervention and usual care arms, maintaining a 1:1 ratio as determined most efficient for obtaining the necessary sample size but decreasing the ability of study staff to known to which group a new participant will be assigned. All randomization procedures will be executed on the Way to Health Platform.

Administration of Surveys and/or Process
Describe the approximate time and frequency for administering surveys and/or evaluations. For surveys, questionnaires and evaluations presented to groups and in settings such as high schools, focus group sessions or community treatment centers explain how the process will be administered and who will oversee the process. For instance, discuss the potential issues of having teachers and other school personnel administer instruments to minors who are students especially if the content is sensitive in nature. Describe the procedure for audio and videotaping individual interviews and/or focus groups and the storage of the tapes. For instance, if audio tape recording is to be used in a classroom setting, describe how this will be managed if individuals in the class are not participating in the study. Explain if the research involves the review of records (including public databases or registries) with identifiable private information. If so, describe the type of information gathered from the records and if identifiers will be collected and retained with the data after it is retrieved. Describe the kinds of identifiers to be obtained, (i.e. names, social security numbers) and how long the identifiers will be retained and justification for use.
All participants randomized will take a pre and post study quality of life assessment (SF-36 and CLDQ, as described previously) and evaluate the program three times during the study period (90 days). Participants randomized to the telehealth intervention arm will also complete surveys / symptom questionnaires on a daily basis through the SMS feature provided through Way to Health, as outlined above. Data will be transmitted directly to the Way to Health platform and stored securely. Identifiers such as name, address, date of birth and social security number will be entered into the platform at enrollment. Only de-identified data will be available for review/ analysis. Additionally, access to the Way to Health Platform is password protected and access to data with be assigned and be commensurate with nature study staff involvement.

Data Management
Describe how and who manages confidential data, including how and where it will be stored and analyzed. For instance, describe if paper or electronic report forms will be used, how corrections to the report form will be made, how data will be entered into any database, and the person(s) responsible for creating and maintaining the research database. Describe the use of pseudonyms, code numbers and how listing of such identifiers will be kept separate from the research data.
The data will be securely stored on the Way to Health platform, with limitations in access to the PI, Dr. Vandana Khungar, and Way to Health staff. At the time of analysis, a deidentified version of the data will be provided to the designated biostatistician/ biostatisical staff for analysis.

Radiation Exposure*
Are research subjects receiving any radiation exposure (e.g. X-rays, CT, Fluoroscopy, DEXA, pQCT, FDG, Tc-99m, etc.) that they would not receive if they were not enrolled in this protocol?
No

Human Source Material*
Does this research include collection or use of human source material (i.e., human blood, blood products, tissues or body fluids)?
No

CACTIS and CT Studies*
Does the research involve Center for Advanced Computed Tomography Imaging Services (CACTIS) and CT studies that research subjects would not receive if they were not part of this protocol?
No

CAMRIS and MRI Studies*
Does the research involve Center for Advanced Magnetic Resonance Imaging and Spectroscopy (CAMRIS) and MRI studies that research subjects would not receive if they were not part of this protocol?
No

Cancer Related research not being conducted by an NCI cooperative group*
Does this protocol involve cancer-related studies in any of the following categories?
No

Medical Information Disclosure*
Does the research proposal involve the use and disclosure of research subject's medical information for research purposes?
Yes

CTRC Resources*
Does the research involve CTRC resources?
No

If the answer is YES, indicate which items is is provided with this submission:

Modified research informed consent document that incorporates HIPAA requirements

Use of UPHS services*
Does your study require the use of University of Pennsylvania Health System (UPHS) services, tests or procedures*, whether considered routine care or strictly for research purposes?
No

Primary Focus*
Clinical Trial (prospectively assigning subjects to health-related interventions to evaluate outcomes)

Protocol Interventions

x	**Sociobehavioral (i.e. cognitive or behavioral therapy)**
	Drug
	Device - therapeutic
	Device - diagnostic (assessing a device for sensitivity or specificity in disease diagnosis)
	Surgical
	Diagnostic test/procedure (research-related diagnostic test or procedure)
	Obtaining human tissue for basic research or biospecimen bank
x	**Survey instrument**
	None of the above

The following documents are currently attached to this item:

There are no documents attached for this item.

Sponsors

Business Administrator

Name:	**MEYERS-MC COMBS, KIM A**
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Fax:	**215-573-2024**
Pager:	
Email:	**kimmeyer@pobox.upenn.edu**

Department budget code

400 - 400 - 2 - 014001 - xxxx - 2001 - 0917

Funding Sponsors

Name:	**MCCABE FUND**
Type:	**UPENN Other Non-Profit Organizations**

Funding sponsors billing address
If you have selected a commercial or industry sponsor, please provide the appropriate address and contact information for the Sponsor for the purposes of billing for IRB review fees (initial review, continuing review and convened modification fees apply here). If the Sponsor is not industry/ commercial, this information is not necessary to provide with your application.

Funding sponsors gift
Is this research being funded by a philanthropic gift?
No

Regulatory Sponsor

IND Sponsor

none

400 - 400 - 2 - 014001 - xxxx - 2001 - 0917

Industry Sponsor

None

Project Funding*
Is this project funded by or associated with a grant or contract?
Pending

Sponsor Funding
Is this study funded by an industry sponsor?
No

Status of contract

The following documents are currently attached to this item:

There are no documents attached for this item.

Multi-Site Research

Other Sites

No other sites

Management of Information for Multi-Center Research

The following documents are currently attached to this item:

There are no documents attached for this item.

Protocol

Abstract
To compare rates of 30 and 90-day readmission of cirrhotic patients to The Hospital of the University of Pennsylvania randomized to telehealth monitoring, as administered by the Way to Health Platform, or usual care. 2. To use a patient centered approach to determine the specific interventions which are most helpful as perceived by patients and have an impact on quality of life. Approximately 426 subjects will be enrolled.

Objectives

Overall objectives
1. To compare rates of 30 and 90 day readmission of cirrhotic patients to The Hospital of the University of Pennsylvania randomized to telehealth monitoring, as administered by the Way to Health Platform, or usual care. 2. To use a patient centered approach to determine the specific interventions which are most helpful as perceived by patients and have an impact on quality of life.

Primary outcome variable(s)
A decrease in readmission rates of cirrhotic patients.

Secondary outcome variable(s)
An improvement in patient, provider and caregiver satisfaction post-discharge.

Background
It is well known that patients with cirrhosis have high morbidity and mortality and that early re-hospitalization in any disease process is known to be costly and partially preventable. Few studies exist in the literature on the topic of readmissions in cirrhosis and none use a patient centered approach or a telehealth strategy to reduce readmissions and improve quality of care nor impact quality of life. Volk et al. demonstrated in 2012 that rates of hospital readmission among patients with cirrhosis are higher than other diseases such as CHF, making this patient group at high risk for poor health outcomes. Predictors of readmission include Model For End Stage Liver Disease, MELD, score, serum sodium, and number of concomitant medications used. Frequent readmissions are independently associated with increased mortality, making this not just an economic but also a human concern. The 1st and 2nd most common causes for readmission in cirrhotics are fluid imbalances (overload or dehydration) and hepatic encephalopathy (HE) or confusion resulting from liver disease. Overt HE occurs in 30-40% and minimal HE in 20-80% of patients with cirrhosis. It presents a unique clinical challenge not present in most populations with severe underlying medical conditions as confusion can lead to poor adherence with treatment, making cirrhotics arguably one of the highest risk populations for poor health outcomes. Unfortunately, little attention has been paid to this area thus far. More recently the NACSELD consortium, a 14 center group of liver transplant centers including Penn, showed a 53% 90-day readmission rate for cirrhotics (Bajaj et al). Discrete data from the consortium is limited compared to that from single center studies and no intervention was performed to decrease readmissions or improve patient involvement in their care through this consortium. Authors Tapper, Kumral and Fortune have shown in the last year that readmission rates of cirrhotics at their liver transplant centers are 38%, 62%, and 40%. At The Hospital of the University of Pennsylvania, the 30-day readmission rate for cirrhotic patients is 28%. The hepatology service at the Hospital of The University of Pennsylvania has the highest percentage of potentially preventable readmissions (PPRs) of any service (23.3%) and

approximately 50% of PPRs return within 10 days of discharge. There is significant room for improvement. The cost of hospital readmissions in the United States is a focus of Medicare and private insurance companies alike with an estimated cost of unplanned readmissions in Medicare recipients of $17.4 billion in year 2004 alone. As this comprised 20% of the Medicare hospital payments made, readmission rates are now considered a national quality indicator. Patients with cirrhosis and ascites comprise a large percentage of hospital admissions. At the University of Pennsylvania, as a large transplant center, an average of 54-65 cirrhotic patients are admitted to the hepatology service every month. Many admissions are due to poor medication adherence and a lack of early detection of clinical deterioration. This study will help to determine rates of 30 and 90-day readmissions and examine the impact of a simple telehealth intervention compared to usual care. In a pilot study, we were the first group to explore telehealth interventions in cirrhosis and the first to examine patient involvement and social support tools to decrease readmissions in cirrhosis. It is our hope that testing this intervention in a randomized controlled trial, further refining the intervention and addressing gaps in knowledge will help to bridge gaps in care. We believe that this patient centric approach will provide the most useful information on which to base future clinical care models and to optimize patient centered interventions.

Study Design

Phase*
Not applicable

Design
A randomized controlled trial will be conducted. The 2 potential groups to which patients may be randomized are: 1) a simple telehealth intervention that utilizes the Way to Health Platform to send SMS messages directly, and 2) standard of care. Given that assignment to the interventions will be obvious to the participants, study staff and investigators, no blinding procedures will be employed. Of note, any participant randomized to the usual care arm will be offered 90 days of telehealth monitoring after study completion.

Study duration
The estimated length of the study will be approximately one year. Each participant will be enrolled for a period of 90 days. The period of follow up with begin on the discharge day and end exactly 90 days from that date. Once patients have completed the 90 days of observation, they are not permitted to be re-enrolled in the study. If a control patient chooses to receive telehealth text messages after the 90 days, they will be in the study for up to 180 days.

Resources necessary for human research protection
Describe research staff and justify that the staff are adequate in number and qualifications to conduct the research. Describe how you will ensure that all staff assisting with the research are adequately informed about the protocol and their research related duties. Please allow adequate time for the researchers to conduct and complete the research. Please confirm that there are adequate facilities for the research.
All investigators and research staff on this protocol are well trained on the study and all have current CITI certifications. They are attending physicians that will be caring for this patient population as standard of care and will be involved in every aspect of study procedures.

Characteristics of the Study Population

Target population
Cirrhotic patients admitted to the Hepatology service at the Hospital of the University of Pennsylvania and who are between the ages of 18 and 80 will be eligible for study enrollment. Patients with a history of liver transplantation and recurrent cirrhosis for which they are admitted to the Hepatology service are also eligible for enrollment. Patients being discharged to hospice or those who have a disease process other than cirrhosis (such as severe heart disease or cancer) accounting for a high chance of mortality in the next six months will be excluded.

Subjects enrolled by Penn Researchers
426

Subjects enrolled by Collaborating Researchers
0

Accrual
Penn is a leading liver transplant center, and therefore treats hundreds of patients with liver cirrhosis. The investigators on this protocol are the Hepatology attending physicians and therefore will be treating these patients as standard of care The study population will be drawn from adults who have been admitted to the Hepatology service at the Hospital of the University of Pennsylvania and the Gastroenterology clinic. Dr. Khungar and the research staff will identify subjects.

Key inclusion criteria
1. Cirrhotic patients between the ages of 18-80 years old 2. Admitted to the Hospital of the University of Pennsylvania or an outside hospital in the last 30 days 3. Ability to consent for themselves or surrogate can consent. 4. Ability to read and provide informed consent in English. 4. Possess a cell phone and willing to receive text messages.

Key exclusion criteria
1. Inability to provide informed consent or do not have a surrogate who can provide consent 2. Patients discharged to hospice or those who have a disease process other than cirrhosis (such as severe heart disease or cancer) accounting for a high chance of mortality in the next six months will be excluded. 3. Individuals actively using illicit substances of alcohol. 4. Does not have access to a cell phone with text capability.

Vulnerable Populations

	Children Form
	Pregnant women (if the study procedures may affect the condition of the pregnant woman or fetus) Form
	Fetuses and/or Neonates Form
	Prisoners Form
	Other
x	**None of the above populations are included in the research study**

The following documents are currently attached to this item:

There are no documents attached for this item.

Populations vulnerable to undue influence or coercion
Although not directly targeted, mentally disabled persons, economically or educationally disadvantaged persons, and/or employees or students of the University of Pennsylvania will not be denied enrollment and any special protections and/or additional safeguards will be undertaken in order to protect the rights and welfare of these subjects from coercion or undue influence as appropriate.

Subject recruitment
Study recruitment will be accomplished by personal interviews conducted by the PI or study staff prior to discharge from an inpatient hospitalization at the University of Pennsylvania or during a schedules clinic visit. Patients will be screened and approved by the study investigator prior to contact We will call potential patients to gage interest in the study and set up a time to consent in person or over the phone. Potential study subjects will be informed of the criteria for study inclusion, data to be collected during study inclusion, as well as the risks and benefits of study enrollment. This information will be provided in the body of the consent form as well as presented verbally during the consent process. Consent will be documented by signature of the subject and will be witnessed by clinical personnel not affiliated with the study. A copy of the signed consent will then be provided to the subject for their records.

Will the recruitment plan propose to use any Penn media services (communications, marketing, etc.) for outreach via social media avenues (examples include: Facebook, Twitter, blogging, texting, etc.) or does the study team plan to directly use social media to recruit for the research?
No

The following documents are currently attached to this item:

There are no documents attached for this item.

Subject compensation*
Will subjects be financially compensated for their participation?
Yes

The following documents are currently attached to this item:

There are no documents attached for this item.

If there is subject compensation, provide the schedule for compensation per study visit or session and total amount for entire participation, either as text or separate document

All participants, regardless of which arm to which they are randomized, will receive $25 after 30 days of enrollment and $25 after 90 days of enrollment (end of observation period) as long as they remain enrolled in the study. Therefore, all participants will receive a total of $50 for compensation. Compensation will be provided to participants via the Way to Health Platform via a check generated and sent to their home, assuming participants are willing to provide their social security number and any other additional information required.

Study Procedures

Suicidal Ideation and Behavior
Does this research qualify as a clinical investigation that will utilize a test article (ie- drug or biological) which may carry a potential for central nervous system (CNS) effect(s)?
No

Procedures
All cirrhotics admitted to the Hospital of the University of Pennsylvania between the ages of 18 and 80 will be approached for consent (see attached consent forms in the designated section of the protocol). If patients are missed due to being discharged on the weekend, during a holiday or timing issue, patients may be contacted by phone to enroll in the study. If interested, patients can give verbal consent over the phone or written consent at their following clinic visit. After consent is obtained and information is entered into the Way to Health Platform, the participant will be randomized. During this period of time, the participant will be asked to complete the quality of life assessments/ program surveys. Depending on the group to which they are randomized, those in the intervention group will receive welcome items (scale, stop watch, and binder, all necessary for proper data collection in the intervention group). Those randomized to the usual care arm will receive their standard discharge paperwork. Clinical data (readmissions, reasons for readmissions, and length of stay) will be determined for both groups at 30 and 90 days. The groups will additionally be asked to complete quality of life assessments at the end of the study period and a program assessment in the middle and end of the protocol. Additionally, as assessment of readmission rates will be determined in both groups for another 90 days after the end of the intervention (to determine if the health behaviors learned in the intervention group are durable and to determine if providing the intervention to those in the usual care arm is beneficial even if there is a delay in initiation).

The following documents are currently attached to this item:

There are no documents attached for this item.

Deception
Does your project use deception?
No

Analysis Plan
The primary analysis will include a comparison of the demographics and clinical data for the intervention group and the usual care group. To determine if there is a difference in the rates of readmission between the groups, univariable logistic regression analysis will be performed. Any predictors which were different between the groups will be used for adjustment in a multivariable logistic regression. We plan to analyze the data at the 6 month mark. If a significant difference is found, given the low cost of the intervention and potential benefits, the study will be stopped and all patients admitted to the hepatology service will be eligible for telehealth monitoring. Data for the secondary outcomes including changes in quality of life and patient satisfaction will be explored.

The following documents are currently attached to this item:

There are no documents attached for this item.

Are you conducting research outside of the United States?
No

Data confidentiality

x **Paper-based records will be kept in a secure location and only be accessible to personnel involved in the study.**

x **Computer-based files will only be made available to personnel involved in the study through the use of access privileges and passwords.**

Prior to access to any study-related information, personnel will be required to sign statements agreeing to protect the security and confidentiality of identifiable information.

x **Wherever feasible, identifiers will be removed from study-related information.**

A Certificate of Confidentiality will be obtained, because the research could place the subject at risk of criminal or civil liability or cause damage to the subject's financial standing, employability, or liability.

A waiver of documentation of consent is being requested, because the only link between the subject and the study would be the consent document and the primary risk is a breach of confidentiality. (This is not an option for FDA-regulated research.)

Precautions are in place to ensure the data is secure by using passwords and encryption, because the research involves web-based surveys.

Audio and/or video recordings will be transcribed and then destroyed to eliminate audible identification of subjects.

Subject Confidentiality
Confidential information about all enrolled subjects will be secured on the Way to Health Platform. Only necessary study staff will have access to such data. Additionally, only data in a de-identified form will be available for statistical analyses. All study staff will have password protected access to Way to Health. Though we do not expect any breaches of confidentiality, if they do occur they will be reported directly to the IRB within 24 hours of after discovery. Paper-based records will be kept in a secure location in locked file cabinets and only be accessible to personnel involved in the study.

Sensitive Research Information*
Does this research involve collection of sensitive information about the subjects that should be excluded from the electronic medical record?
No

Subject Privacy
Privacy refers to the person's desire to control access of others to themselves. Privacy concerns people, whereas confidentiality concerns data. Describe the strategies to protect privacy giving consideration to

the following: The degree to which privacy can be expected in the proposed research and the safeguards that will be put into place to respect those boundaries. The methods used to identify and contact potential participants. The settings in which an individual will be interacting with an investigator. The privacy guidelines developed by relevant professions, professional associations and scholarly disciplines (e.g., psychiatry, genetic counseling, oral history, anthropology, psychology).
Patients seen in the hospital with a referring clinician will be given the opportunity to obtain further information if they choose. Participants will be told that they do not have to answer any questions if they do not wish and can drop out of the study at any time, without affecting their medical care or the cost of their care. They will be told that they may or may not benefit directly from the study and that all information will be kept strictly confidential, except as required by law. Subjects will be given a copy of the consent document. All efforts will be made by study staff to ensure subject privacy. Subjects will only be seen by the PI and members of the research team in the privacy of their hospital room and will not be identified to anyone in clinic practice as anything other than a regular patient.

Data Disclosure
Will the data be disclosed to anyone who is not listed under Personnel?
No data will be disclosed to anyone not listed under the personnel section of this protocol.

Data Protection*

- x **Name**
- x **Street address, city, county, precinct, zip code, and equivalent geocodes**
- x **All elements of dates (except year) for dates directly related to an individual and all ages over 89**
- x **Telephone and fax number**
- x **Electronic mail addresses**
- x **Social security numbers**
- x **Medical record numbers**
- **Health plan ID numbers**
- **Account numbers**
- **Certificate/license numbers**
- **Vehicle identifiers and serial numbers, including license plate numbers**
- **Device identifiers/serial numbers**
- **Web addresses (URLs)**
- **Internet IP addresses**
- **Biometric identifiers, incl. finger and voice prints**
- **Full face photographic images and any comparable images**
- **Any other unique identifying number, characteristic, or code**
- **None**

Does your research request both a waiver of HIPAA authorization for collection of patient information and involve providing Protected Health Information ("PHI") that is classified as a "limited data set" (city/town/state/zip code, dates except year, ages less than 90 or aggregate report for over 90) to a recipient outside of the University of Pennsylvania covered entity?
No

Tissue Specimens Obtained as Part of Research*
Are Tissue Specimens being obtained for research?
No

Tissue Specimens - Collected during regular care*
Will tissue specimens be collected during regulator clinical care (for treatment or diagnosis)?
No

Tissue Specimens - otherwise discarded*
Would specimens otherwise be discarded?
No

Tissue Specimens - publicly available*
Will tissue specimens be publicly available?
No

Tissue Specimens - Collected as part of research protocol*
Will tissue specimens be collected as part of the research protocol?
No

Tissue Specimens - Banking of blood, tissue etc. for future use*
Does research involve banking of blood, tissue, etc. for future use?
No

Genetic testing
If genetic testing is involved, describe the nature of the tests, including if the testing is predicative or exploratory in nature. If predictive, please describe plan for disclosing results to subjects and provision of genetic counseling. Describe how subject confidentiality will be protected Note: If no genetic testing is to be obtained, write: "Not applicable."
Not applicable

Consent

1. Consent Process

Overview
Study recruitment will be accomplished primarily by personal interviews conducted by the PI or study staff prior to the date of discharge from an inpatient hospitalization on the Hepatology service at the University of Pennsylvania. Some patients may be enrolled and consented over the telephone. Any patient who consents over the phone, will be given a copy of the in-person consent form by mail or email. Potential study subjects will be informed of the criteria for study inclusion, data to be collected during the period of observation, as well as the risks and potential benefits of study enrollment. This information will be provided in the body of the consent form as well as presented verbally to the study participant during the informed consent process. Consent will be documented by the signature of the participant and will be witnessed by clinical personnel not affiliated with the study. A copy of the signed consent will then be provided to the participant for their records. For those potential participants who are overwhelmed, fail to consent for study inclusion but agree to be approached after discharge, we will attempt a telephone consent within one week of hospital discharge. A proportion of eligible patients may be exhibiting significant cognitive impairment and the lack of capacity to provide consent. As such, all patients will require surrogate consent by a legally authorized representative. The investigator or staff will determine the appropriate family member-person to contact regarding the study, based on the standard operating procedures of the facility and local and state laws.

Children and Adolescents
Not applicable

Adult Subjects Not Competent to Give Consent
Subjects may have Hepatic Encephalopathy or altered mental status and may not be able to give informed consent. In situations when a patient is unable to provide consent, in these cases consent will be obtained from a legally authorized representative as identified by the attending physician/medical team. The patient ability to consent will be re-evaluated within one week of hospital discharge.

2. Waiver of Consent

Waiver or Alteration of Informed Consent*
No Waiver Requested

Minimal Risk*

Impact on Subject Rights and Welfare*

Waiver Essential to Research*

Additional Information to Subjects

Written Statement of Research*
No

If no written statement will be provided, please provide justificiation

The following documents are currently attached to this item:

There are no documents attached for this item.

Risk / Benefit

Potential Study Risks
Study inclusion poses no more than minimal risk to the participant enrolled. There should be no adverse events associated with the collection of vital signs, medication administration records, or symptom logs. Patients and caregivers will have clear instructions as to how to reach the team in the event that it is after hours. This intervention results in no more than minimal risk as compared to that which would be incurred in the context of routine follow up care of a cirrhotic patient. Another potential risk of this study is a breach of participant confidentiality. We will minimize this risk by linking individual identifying information with participant ID numbers only in one single secure file that will only be accessed by the study team in the case of an adverse medical event, participant dropout, or if otherwise deemed necessary by the Principal Investigator. All other identifying information will be discarded after initial contact with the Study Coordinator.

Potential Study Benefits
The study can impact those enrolled in the intervention arm by decreasing their need for hospital readmission and by having a more rapid means for their liver disease symptoms to be addressed. Furthermore, data obtained will allow for identification of factors associated with readmissions in cirrhotic patients and an opportunity to address these factors in the future through refinement of the intervention. Given that the usual care arm is also offered 90 days of telehealth monitoring at the end of the study, both groups reap the potential benefit of the intervention.

Alternatives to Participation (optional)
Participation is voluntary and optional.

Data and Safety Monitoring
Data will be monitored by the PI and Co-investigator. Any adverse events will be reported to the IRB. As this is currently a single site trial, we do not yet need a DSMB.

The following documents are currently attached to this item:

There are no documents attached for this item.

Risk / Benefit Assessment
Given that the study poses no more than minimal risk to the subject enrolled and there are no adverse effects associated with the collection of vital signs, medication administration records, or symptom logs, there are large potential benefits to enrollment that far outweigh the risks. These benefits include rapid identification of clinical deterioration, an opportunity to adjust medications outside of an office visit and in the context of clinical data points, and to refine an intervention to improve readmission rates and quality of life in cirrhotic patients.

General Attachments

The following documents are currently attached to this item:

There are no documents attached for this item.