Aim 2 - Development and Pilot Testing of an Intervention to Support Interhospital Transfer Decisions (SITe) Regarding Older Adults with Emergency General Surgery Diagnoses

Document: Study Protocol

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Please note that the study was terminated early. Thus, not all activities and analyses outlined below were completed. The study team completed surveying referring and accepting providers who discussed potential transfers of emergency general surgery patients who were at least 60 years old prior to the intervention training. We also completed the intervention training. We did not complete any surveys of referring or accepting providers after the intervention training. We also did not collect any patient- or transfer-specific outcomes.

Research Design and Procedures

Overall Purpose

Care coordination for older patients with emergency general surgery (EGS) diagnoses suffers because conversations between referring and accepting providers regarding decisions to transfer between acute care hospitals are ineffective, incomplete, and inefficient. To standardize a method to support transfer decisions that is tailored to older adults within extant transfer processes, we will (Aim 1) engage key stakeholders to develop an intervention to Support Interhospital Transfer Decisions (SITe) for older EGS patients by adapting an existing intervention for interhospital handoffs. Then, through Aim 2, we will assess the acceptability of the SITe intervention, test the feasibility of study procedures, and explore efficacy outcomes for evaluation in a future, larger clinical trial. Using a pre-post design, we plan to study 100 transfer calls of older EGS patients to our tertiary care center over an anticipated six-month period. We will collect data from chart reviews, transfer center logs, and Qualtrics surveys. We define adequate acceptability as >85% utilization of the tool. We define fidelity to the tool as <15% missing patient information. We will measure the rate of survey completion for study-eligible transfer calls and examine rates of and reasons for missing data on our outcomes. To prepare to test intervention effectiveness in a future study, we will measure the potential to avoid transfer, efficiency of communication, emotional labor, and patient health outcomes.

Pre-Existing Information/Background Knowledge

Every year, nearly 240,000 patients aged 65 and older are transferred between acute care hospitals for non-traumatic surgical emergencies. Moreover, the percent of emergent surgical admissions that were interhospital transfers increased 150% between 2002 and 2011 and will continue to increase due to the population aging. These transfers include emergency general surgery (EGS) diagnoses, such as bowel obstructions, diverticulitis, and soft tissue infections. In contrast to patients admitted directly from an emergency department (ED) within a given hospital, transferred patients are moved from one ED or inpatient unit to a new ED or inpatient unit for care. Older patients with EGS diagnoses in the United States (US) are more likely to be transferred and experience worse outcomes than younger patients. Furthermore, transferred patients experience worse outcomes than directly admitted patients. Nationwide, we have shown that transferred EGS patients experience significantly increased in-hospital morbidity (38.8 vs 26.1%), mortality (4.4 vs 1.6%), length of stay (4.3 vs 3.0 days), and cost ($8,935 vs $7,167), which persist after risk-adjustment. Finally, up to 27% of interhospital transfers for acute surgical diseases may be clinically unnecessary and thus potentially avoidable. Potentially avoidable transfers burden patients and families due to large travel distances, unfamiliar hospitals, and difficulty accessing social support systems and burden the healthcare system by consuming resources at tertiary sites unnecessarily.

A contributing factor to the worse outcomes of older patients transferred for surgical emergencies is that care coordination suffers during interhospital transfers. Prior to transfer, 84% of US tertiary centers require a 3-way conversation between referring providers (information “givers”), accepting surgeons (information “receivers”), and transfer center nurses (information “receivers”) to discuss decisions to transfer. At the University of Wisconsin, our transfer center is called the Access Center (AC). Provider communication is particularly critical to decisions about interhospital transfers of older adults due to circumstances that are unique to their care. Comorbid conditions and acute illness can limit older adults’ cognitive capacity to provide their health history and fully participate in medical decision-making, including transfer decisions. Also, interhospital transfers fragment care and separate older adults from their regular healthcare providers and, at least temporarily, family support and surrogate decision makers, who often advocate for their care needs and medical decision-making.

Dr. Angela Ingraham's funded work has demonstrated that conversations between referring and accepting providers discussing decisions to transfer EGS patients are ineffective, incomplete, and inefficient. This results in poor care coordination, increased emotional labor among providers, a lack of consensus between providers about transfer

decisions, and potentially avoidable transfers. Because conversations are not standardized, the information shared varies widely. Access Center nurses (ACNs) and accepting surgeons report that these conversations are challenged by inappropriate, incomplete information and inefficient communication. For example, referring providers share information ACNs and accepting surgeons may consider irrelevant to the acute illness or decision to transfer. At the same time, accepting surgeons ask for varying details regarding patients from ACNs and referring providers. Because a structured process does not guide conversations regarding transfer decisions, accepting surgeons struggle to understand patients' clinical condition and reason(s) for transfer, leading to emotional labor and frustration. When this occurs, accepting surgeons tell referring providers to "just send the patient" taking a "we'll figure it out when they get here" approach.

Standardizing handoffs for interhospital transfers of patients between inpatient units facilitates communication, resulting in improved patient care and outcomes. Theobald et al. developed a handoff intervention for adult (≥18) transfers between inpatient units of referring hospitals and accepting hospitals. A one-page template is completed by the referring provider, faxed to the accepting hospital, and scanned into the health record. Adherence to the intervention (returning a completed handoff template) was 85%. After implementation, length of stay declined (6.5 to 5.8 days [adjusted p=0.06]) and in-hospital mortality decreased (12.0% to 8.9%; adjusted OR 0.7, 95% CI, 0.5–1.0, p=0.04]).

Conceptual Model:

The Relational Model of Organizational Change proposes that modifying organizational structures and practices strengthens Relational Coordination to improve performance outcomes. Relational coordination is "a mutually reinforcing process of interaction between communication and relationships carried out for the purpose of task integration." Relationships are characterized by shared goals, shared knowledge, and mutual respect, which reinforce and are reinforced by frequent, timely, accurate, and problem-solving communication. Relational coordination optimizes highly interdependent, uncertain, and time-constrained work, such as interhospital transfers. Applying the Relational Coordination Framework, we found that conversations regarding EGS transfers lack shared knowledge because inappropriate information is exchanged inefficiently and shared goals because providers struggled to reach consensus about transfer decisions. Building on the Relational Coordination Framework, the Relational Model of Organizational Change applies to the coordination of work between organizations: "Inter-organizational design (e.g., boundary spanners, information systems) can improve quality and efficiency performance by strengthening inter-organizational coordination networks." In our study, organizational structures include ACNs as boundary spanners (i.e., people who coordinate work between organizations) and a standardized decision support tool and process as shared protocols and information systems. We will study the following performance outcomes: quality (potential to avoid transfers, patients' health outcomes), efficiency (time to complete transfer conversations and the physical transfer), and worker (provider emotional labor) outcomes.

Innovation:

We will engage key stakeholders to develop an intervention to Support Interhospital Transfer Decisions (SITe) regarding older adults with EGS diagnoses. Through a pre-/ post-pilot study, we will test the acceptability of SITe, assess the feasibility of study procedures, and explore efficacy outcomes in preparation for a large, randomized trial to study the effectiveness of our intervention. The SITe intervention is clinically innovative as it addresses the need for accepting surgeons making decisions about transfers of older EGS patients to quickly develop shared knowledge and shared goals with referring providers from other specialties. Unlike transfers between hospitalist or intensive care unit (ICU) services, transfers for surgical emergencies are usually negotiated by providers from different specialties within hours as opposed to days of patient presentation. Furthermore, while existing handoff interventions exclude ED patients or focus on ICU transfers, our intervention meets an unmet, critical need as it applies to older patients originating from and/or

transferring to EDs. The SITe intervention is conceptually innovative as it focuses on information "receivers" as compared to "givers." Handoff interventions emphasize the "giver" being charged with providing factual, complete, and pertinent information. This approach is difficult to implement for interhospital transfer decisions due to the vast number of referring providers. Among 32 US tertiary centers, 65% receive patients from ≥100 institutions. Conversely, 12 surgeons accept EGS patients to the University of Wisconsin (UW). Thus, a "receiver" driven intervention is more practical.

Study Procedures and Interventions

Modeling a similar, successful pilot, we will conduct a pre (control)/post (intervention) study with an anticipated 50 transfer calls in each arm. We will collect pre- and post-intervention data after each eligible transfer call through (1) chart review and access center logs and (2) Qualtrics surveys of referring providers and UW (accepting) providers. We will collect baseline (pre) and post-intervention measures of the potential to avoid transfers, efficiency of transfer communication and execution, provider emotional labor, and patient health outcomes. Providers will utilize the SITe intervention during transfer calls discussing transfer decisions regarding older emergency general surgery (EGS) patients. The research team will be listening retrospectively to recordings of eligible transfer calls through the Calabrio System to observe whether key elements of the intervention items were discussed during the calls. The Calabrio System is a recording system that automatically records transfer calls for the UW Health-Meriter Access Center. Supervisors and managers can access the Calabrio Call Recording Management portal by going to: https://calabrio.uwhealth.wisc.edu. We will request access to the Calabrio system and listen to eligible transfer calls directly in the system and will not download any recordings.

Participants:

- Patients: We will include all calls from referring providers requesting transfer of emergency general surgery patients age 60 and older from a referring ED or inpatient floor to the UW ED or inpatient floor.

- Providers: We will include all UW (accepting) surgeons and all referring providers who execute transfer calls of eligible patients. There will be no exclusions regarding referring providers' position (e.g., physician, mid-level provider), specialty (e.g., emergency medicine, internal medicine), or affiliation (e.g., UW or non-UW).

SITe Intervention Training:

-UW (accepting) surgeons: We will complete SITe intervention training over two months. Utilizing the implementation toolkit developed by stakeholders in Aim 1, we will hold web-based seminars at various dates and times to accommodate differing schedules.

- Referring providers: Consistent with our focus on information "receivers" and because it is not feasible to train all potential referring providers, at the start of the intervention training, the PI will send a letter and email to referring providers who have transferred EGS patients to UW. We will introduce the SITe intervention as part UW's goal of optimizing communication regarding transfer decisions. We will describe our intervention and procedures for data collection, and provide contact information. UW Physician Liaisons will also promote the study.

Data collection:

We anticipate collecting data on approximately 50 patient transfer calls in each pre- and post-intervention period. Based on recent data, we expect each period to last approximately five months. Research staff will screen AC logs and reference

the electronic medical record to identify eligible patients, UW (accepting) surgeons, and referring providers. We will collect data via review of UW electronic health records and AC logs. Within approximately 48 hours of each qualified transfer, we will email the UW (accepting) provider and referring provider who executed the transfer an approximately three-minute, personalized Qualtrics survey, to be completed at their convenience within an anticipated three days. A survey will be sent during the pre- and post-intervention period. We will also text providers who prefer texting to receive survey links and reminders. We will send reminder emails and/or text to providers who have not responded the surveys before their due date. Since this study is considered a clinical trial, for reporting and grant purposes, we will track provider and patient demographics such as age, gender, and race. We will send accepting providers a pre-survey form requesting their contact information, texting preferences, and request consent to listen to their transfer calls. RPs will be asked to provide demographic information and consent for listening to recordings when taking the actual SITe survey. We have included recording consent language in the surveys. We will listen to eligible transfer call recordings during the pre and post intervention phases to observe if intervention items were discussed during the call. We will listen to call recordings only if both the AP and the RP provide consent to the recording portion of this study. If both providers do not consent to the recording portion, we will review the Access Center notes. No protected health information or patient or provider details will be recorded. The call recordings will stay in the Calabrio system and not be downloaded.

Data analysis:

We will apply descriptive statistics for counts and ordinal measures. We will summarize free text responses regarding AP's perspectives on the following statements:

-"I felt that the reason for transfer was justifiable"

-"I felt that the referring hospital should have been able to care for the patient."

-"I felt respected by the referring provider."

We will also summarize free text responses regarding RP's perspectives on the following statements:

- "I felt that the UW Surgeon doubted whether the transfer was necessary."

- "I felt respected by the UW Surgeon."

We will not conduct formal tests of efficacy given concerns about inadequate power and sampling error in a pilot of this size. However, we will compare pre-post outcomes to understand the measures and to inform the design of a future, larger clinical trial.

Data Protection:

All communication with providers will be via a secure UW email account. For providers who prefer texting, we will only text links and reminders and not text any personal information. Information collected in this study will be kept on a secure computer within the Department of Surgery network, which is protected by a firewall that ensures the privacy of the network. The data will be stored in a restricted access folder on the department server. Access to the information is limited to those listed in the protocol, all of whom have completed the requisite human subjects/HIPAA training. While the team may incidentally hear non-eligible call recordings as we search for eligible calls, we have created processes to minimize the extent to which we are exposed to protected health information outside of the study purview. We will also attend a virtual training of 30 minutes or less at the UW-Meriter Access Center to orient our team to the Calabrio call system.

Risks and Benefits

This is a pilot study; therefore, we have no evidence-based information about the potential benefits to subjects. Stakeholders who develop the transfer decision intervention may benefit from knowing that they are helping to design an intervention that may benefit future Access Center nurses (ACNs), providers, and patients. While it is not known if participants will benefit from the pilot study, providers may experience a benefit from receiving intervention trainings to improve communication surrounding decisions to transfer older emergency general surgery patients. Patients and their surrogates may benefit from any improvements in communication. The risks of this pilot study are outweighed by the benefits, as the study poses minimal risk to participants and those who participate may benefit by knowing that they are helping future ACNs, providers, and patients.

Potential Benefits to Society

This pilot study engages key parties involved in or impacted by decisions regarding interhospital transfers. Our transfer decision intervention could better address the needs of transferred older adults with emergency general surgery diagnoses and standardize the communication regarding decisions to transfer. In the future, this transfer decision intervention could potentially contribute to improving the health outcomes of approximately 240,000 older patients transferred for surgical emergencies in the United States.

Subject Population

Total Subjects: 212

Inclusion Criteria

Human subjects in Aim 2 of this study include:

Patients: We will include all calls from referring providers requesting transfer of emergency general surgery patients age 60 and older from a referring ED or inpatient floor to the UW ED or inpatient floor. We will do an initial chart review to identify eligible transfer calls.

Providers: UW (accepting) surgeons and referring providers who execute transfer calls of eligible patients. There will be no exclusions regarding referring providers' position (e.g., physician, mid-level provider), specialty (e.g., emergency medicine, internal medicine), or affiliation (e.g., UW or non-UW).

Subjects include 12 UW (accepting) surgeons, 100 patient transfer calls, and 100 referring providers. These numbers assume that each patient is unique and a unique referring provider calls to transfer.

Exclusion Criteria

Providers who do not speak English, prisoners, patients younger than 60 years old, and interhospital transfers other than for EGS diagnoses will be excluded.

Recruitment Plan

Patients:

We will not directly recruit patients but request a waiver of consent as the study involves chart review and could not be practically carried out without a waiver.

All providers (pre- and post-intervention survey completion):

To encourage participation, at the beginning of the study, the PI will send a letter and email to UW (accepting) surgeons and referring providers who have transferred EGS patients to UW. We will do Google searches and explore referring facility pages to obtain contact information for CMOs and referring providers. We will also utilize a service called RocketReach [https://rocketreach.co/] to obtain contact information of CMOs and providers. RocketReach is a legally compliant tool that allows users to find emails and phone numbers of individuals. Its search technology scans for publicly available contact information on third party websites such as social media sites, corporate websites, and public records. Our team will create an account and pay a monthly fee for this service. Obtaining contact information is key to distributing study information and contacting referring providers for eligible transfer calls. Additionally, leadership from Wisconsin Surgical Society and Wisconsin Chapter - American College of Emergency Physicians will also be asked to help us spread the word about this study. Additionally, we will also collaborate with the UW Health Physician Liaison team and our current EGS stakeholder group to help us distribute information about this study to referring providers and request provider's preferred contact information. Leadership, the Physician Liaison team, and EGS stakeholder group will utilize scripts and flyers to only share information to create awareness of study and will not be enrolling or interacting further with eligible participants. Informational materials and scripts describe our procedures for administering the Qualtrics survey, what participation entails, provide contact information for questions, feedback, or concerns, but will not introduce the intervention until the post-intervention period. After each eligible transfer call, our study team members will invite the involved providers to participate in the study by emailing with a link to complete the survey. We will also send texts to providers who prefer to receive the survey links and reminders via text. We will send reminder emails and/or text to providers who have not completed the survey before their deadline. We will obtain electronic consent for each survey. We will not be providing incentives to referring and accepting providers as advised by the UW Health legal department and leadership. Incentivizing providers after every eligible transfer call may be perceived as incentivizing referring providers to transfer to UW Health or accepting providers to take more transfer calls, which violates anti-kickback statutes.

UW (accepting) surgeons (intervention training):

We will invite all eligible UW (accepting) surgeons to participate by email. We will inform accepting surgeons of the study and provide information about consent. To participate in trainings, providers will provide written consent. Participation will be voluntary. Compensation will be $100 for the intervention training.

Privacy Plan

All interactions with subjects will take place via email or phone utilizing a UW secure email account and phone line. We will only text providers if they note they prefer their survey links and reminders to be sent via text. We will use a secure UW approved video communication application such as Webex or Zoom to provide trainings to participants. For surveys, we will send a personalized email with the Qualtrics survey link to each provider. We will also ask participants to provide some basic demographic information such as age, race, gender, and years in practice. Subjects will mainly provide responses related to their experience executing an emergency general surgery transfer. Accepting providers will also attend a training via a secure meeting format to learn about the checklist to assist decisions to transfer.

Data Protection Plan

To minimize the risk of a breach of confidentiality, information collected in this study will be kept on a secure server within the UW Department of Surgery network, which is protected by a firewall that ensures the privacy of the network. The data will be stored in a restricted access folder on the department server. Study status tracking will be done in Department of Surgery REDCap, a secure web platform for building and managing online databases and surveys. Access to the information is limited to the study researchers, all of whom will have completed the requisite Collaborative Institutional Training Initiative human subjects and Health Insurance Portability and Accountability Act trainings. The study team will retrospectively listen to eligible transfer calls recordings utilizing the Calabrio system to conduct a retrospective review of the transfer calls to assess whether the information listed in the SITe intervention is discussed. The study calls will not be downloaded or transcribed; they will be listened to in the call recording system. No PHI will be collected from recordings. The research team will simply note the presence or absence of information items in a REDCap form.

In addition, any field notes will be stored in a locked office in a locked filing cabinet, which will only be accessible to study personnel. For data collection and analysis procedures, all participants will be assigned an identification code. This numeric code, not a name, will be used to label all data collection forms including surveys. After data analysis is complete and the manuscripts have been accepted for publication, hard copies and digital copies of all subject data and records will be destroyed.

Consent Process

The Principal Investigator will send an email to UW (accepting) surgeons and referring providers and CMOs at hospitals that have transferred EGS patients to UW informing them of our study. We have also developed different scripts and flyers to be sent out to accepting providers and referring providers by the UW Health Physician Liaison team, referring hospital CMOs, Wisconsin Surgical Society president, Wisconsin Chapter - American College of Emergency Physicians president, and our current EGS stakeholder group. Our goal is to inform and reach as many referring providers so that we can gather their preferred contact information. We will describe our procedures for administering the Qualtrics survey and provide contact information for questions, feedback, or concerns. After each transfer, we will invite the involved providers to participate in the study by utilizing a recruitment email with a link to complete the survey. At that time, we will obtain electronic consent for each survey. The first page of Qualtrics survey will be the consent page for the survey. The AP's will receive a pre-survey form asking them about their preferred contact information and texting preferences. At the end of this pre-survey form, we will ask their consent to listen to their transfer call recordings. For RPs, we will add consent language for listening to transfer call recordings at the end of the Qualtrics survey. We will only listen to call recordings where both providers consented to listening to calls. If both providers do not consent to the recording portion, we will review the Access Center notes instead. For intervention training, study staff will explain study procedures and obtain consent. Participants will be given a consent form. Participation will be voluntary.

Interviews, Focus Groups, Surveys, Questionnaires

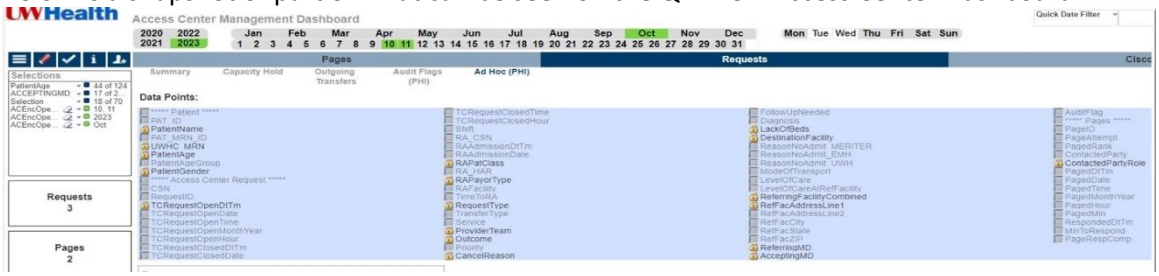
Tool Description: Pre-Intervention Survey and Post-Intervention Survey. This study has a pre and post intervention phase. Within 48 hours of each qualified transfer, we will email the UW (accepting) provider and referring provider who executed the transfer an approximately three-minute, personalized Qualtrics survey, to be completed at their convenience within three days. The survey will contain questions depending on the participant’s role and if it is being sent during the pre- or post-intervention period. We will have similar questions to the pre-intervention survey in the post-intervention and may be adapted if needed after we gather pre-intervention and training information.

Tool Description: AP pre-survey form. With this form, we will request their preferred contact information/texting preferences and their demographics. We will also request consent to listen to AP transfer call recordings at this time.

Standard Operating Procedure for Identifying Transfer Calls in the Access Center QlikView

This standard operating procedure outlines our procedures for selecting eligible transfer calls, identifying contact information for referring and accepting providers, and recording patient, transfer, and survey information. We used a combination of websites/applications to achieve these tasks including the UW Health – UnityPoint Meriter Access Center QlikView Dashboard, HealthLink (the electronic medical record), RocketReach, a phone validator website (www.phonevalidator.com), websites commonly available on Google, REDCap, and Qualtrics.

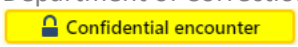
Below is a snapshot of part of what can be seen on the QlikView Access Center Dashboard.



Section1: Screening QlikView for transfer discussions that meet study criteria

1. Screen based on "Accepting MD"
    a. Apply "Accepting MD" bookmark and lock it
    b. Click the year, month, and date at the top of the page to select the day prior to the day that you are scanning for eligible calls
        i. There are eligible patients if the date is white.
    c. If the patient **does** have an EGS condition (Supplemental File 1) listed in the "Diagnosis" column, go to Step 3.
2. Screen based on "Provider Team"
    a. Apply "Provider Team" bookmark and lock it
    b. Click the year, month, and date at the top of the page to select the day prior to the day that you are scanning for eligible calls
        i. There are eligible patients if the date is white.
    c. If the patient **does** have an EGS condition (Supplemental File 1) listed in the "Diagnosis" column, go to Step 3.
3. Look the patient up in HealthLink by MRN to see if they are a prisoner and to get info from HealthLink.
    a. Type the MRN from QlikView into HealthLink → Chart (from the fields at the top)
    b. Confirm that the name of the patient is the same as the patient in QlikView
    c. Prisoners will have a Confidential encounter banner in their Storyboard. If you click on the banner, the Private Encounter Flag states "SC – Security Patient."
        i. Notes from Clinical Research Program Specialists regarding prisoners:

    "Here is a picture of what it looks like in the Storyboard for a patient who is admitted and has a patient type of Department of Corrections:

    It will appear in the Storyboard below the patient's code status and above the Advance Directives, see screenshot for test patient Storyboard below for general location. The exact location may vary depending on if the patient has banners for other purposes in the same section.

    Please note, if you're accessing a patient chart without opening an encounter, please be aware this is not an obvious notation of patient type of Department of Corrections. If you are in the Patient Station tab, the encounters will show a similar image but there is nothing in the Storyboard:

    d. If patient **IS** a prisoner, stop.
    e. If patient is **NOT** a prisoner, proceed to enter transfer information into secure REDCap form.
4. Review AC note for additional details of the call
5. Go to Section 2 and complete the steps for this patient.
6. Repeat previous steps as needed for additional calls.

Section 2: Entering information into **REDCap** for eligible transfer calls and sending initial invitation

RedCap tips: Go to Add/Edit Records to access new or existing REDCap record

1. Enter relevant information from HealthLink into REDCap
2. Enter relevant information from Qlikview into REDCap
3. Identify contact information for providers and enter into REDCap and Excel sheets.
    a. If "New Provider" is listed in QlikView, go into EPIC to find the referring provider information.
    b. Go to the X-drive and search for provider contact information
    c. AP contact information: Visit AP tab and paste email and phone into REDCap
    d. RP contact information:
        i. See if provider is in wisc directory
        ii. If the RP is from Meriter, click on "Meriter RP contact" tab. If provider is not listed there, email [deleted for privacy] for contact information.
        iii. Check "Qualtrics RP Contact" tab to see if RP have submitted their own email and/or phone
        iv. If not, check "RP Contact" tab to see if there is contact info for this RP that was provided by the physician liaisons or our past searches
            1. If provided by physician liaisons or our past searches, still do external search (item vi. below)
        v. If not, check "CMOs Contact" tab to see if the RP is in the CMO list
        vi. If no contact information is found in the X-drive, go to google and RocketReach to try to find the provider's information.
            1. RocketReach login info:
                a. Username: egstransferstudy@surgery.wisc.edu
                b. Password: [deleted for privacy]
            2. In a second tab, open Google and to find the person's LinkedIn account webpage. Copy and paste that link to RocketReach's search bar.
                a. Look in LinkedIn under contact information for email and phone number
                b. If it does not indicate if it is mobile or landline, run it through www.phonevalidator.com to check that is a mobile.
            3. If there is no LinkedIn account, try using RocketReach's search bar with the person's name and last name.
                a. If an extensive list of names appears, try using filters for location, company, and occupation to narrow down the search.
                b. Can also search for the person's company and then select "Search employees" on the right to look for person there.
                    i. Note that a provider could be considered to be associated with more than one company.
            4. If no luck using RocketReach, go back to Google and search for the person's name again and skim through company/facility websites (e.g., Doximity, NPI look ups) to find an email address or a mobile phone.
                a. If you find a phone number, run it through www.phonevalidator.com to check that is a mobile.
            5. If we have a name and know their company/facility name, search the facility in RocketReach to find other people who work there and use company's email logic to guess the email address.
            6. Whether or not you find email and/or phone numbers through RocketReach and/or Google, add them (and their info) to the "RP Contact" tab and add notes for where you found or searched for their contact info.
                a. For phone: record the personal or mobile number
                b. For email: record all emails you sent outreach email to. If any emails bounced back, gray out the email that bounced back.

Section 3: Sending surveys

1. Use the online version of the EGS Study email account to send email to each provider. Make sure the SITe signature is used and marked high priority.
    a. FYI: text is taken from Aim2GEMSSTAR_EmailScript_InvitationToSurvey_PreInt 12.14.23 No PHI (Supplemental File 2.)
    b. New mail → Apps → My Templates → Select "Initial email" template and update:
        i. Due dates
        ii. Provider's name
        iii. Transfer call details: date/time of call, age and sex of patient, diagnosis, providers involved, and call outcome.
        iv. Unique ID assigned to each provider.
            1. The Unique ID is the REDCap Transfer ID (top of form)
    c. Mark email as high priority and send.
    d. Pending immediate email response, update RedCap field "current study status" accordingly if the following apply:
        i. Provider unreachable – no contact info found
        ii. Provider unreachable – email bounced
            1. Move email to appropriate folder and update spreadsheet to indicate invalid email (make email gray)
        iii. Vacation response – do not change study status and leave email in Inbox
2. Send initial text right after sending the initial email
    a. Open "RP-AP-CMO contact information" in X-Drive.
    b. Find providers' phone by looking through each of the individual sheets
        i. AP: send text to all <u>except</u> [selected APs list, deleted for privacy].
        ii. RP: Use phone number found from search above (you will have already searched for the provider in the excel sheet above)
    c. Copy/paste script to text:

        If we have an email:
        Hi Dr. [Name] – We just emailed you a 3-minute survey about a recent transfer call. Please complete it by [due day of week]. Thank you!
        [Your name] from the SITe Study team (egstransferstudy@surgery.wisc.edu)

        If we only have a phone number:
        Hi Dr. [name] – Dr. Angela Ingraham at the University of Wisconsin invites you to participate in a research study about a recent transfer call. Please share your email address so we can send a brief survey to be completed by [DATE]. Thank you!
        [Your name] from the SITe Study team (egstransferstudy@surgery.wisc.edu)

        Template for Angie
        If we only have a phone number:
        Hi [name] – I am Dr. Angela Ingraham at the University of Wisconsin. I invite you to participate in a research study about a recent transfer call. Please share your email address so we can send a brief survey to be completed by [DAY, DATE]. Thank you!
        [Your name] from the SITe Study team (egstransferstudy@surgery.wisc.edu)

    d. Update names and due date
    e. Send text
3. Add details about email and text sent to REDCap form (i.e., date sent, contact notes).
4. Hit SUBMIT.

Section 4: Conducting follow up to initial invitation request and final completion of the survey

1. Look in **"Provider and Transfer Outcome Follow Up" report in RedCap** (on the left hand side)
    a. Open record that has "reminder due" on current date
        i. For each provider, look in Qualtrics to see if the survey is fully complete and update "current study status" in RedCap. (Data and Analysis section in Qualtrics)
        ii. If started survey and didn't hit submit, then considered partial response
        iii. If survey not complete and only sent initial invitation:
            1. Look in study email for bounce back or opt out communication → if so, update spreadsheet and study status
            2. If no bounce back or opt out and it's two days after initial email sent:
                a. Go to Sent folder and forward initial email with reminder to complete study
                i. FYI: text is taken from Aim2GEMSSTAR_SITe survey reminder email_preint (Supplemental File 3.)
                ii. Apps → My Templates → Select "Reminder email" template and update:
                1. Provider's name
                2. Due dates
                3. Unique ID assigned to each provider.
                a. The Unique ID is the REDCap Transfer ID (top of form)
                4. UW accepting surgeon/referring provider
                5. Transfer call summary
                b. Send text with reminder to complete study using script:
                Hi! This is a reminder to please complete our 3-minute survey by tomorrow at midnight. The survey link is in your email. Thank you for supporting our research to improve interhospital transfers.
                [Your name] from the SITe Study team (egstransferstudy@surgery.wisc.edu)
                i. Send to all except [deleted for privacy].
            3. Update RedCap with appropriate information about reminders
    b. Open records for surveys that are past the due date
        i. Look in Qualtrics to see if the survey is complete and update "current study status" in RedCap
            1. Partial completion = only got part way through the study not that they skipped questions
        ii. Look in study email for bounce back or opt out communication → if so, update spreadsheet and study status
        iii. If no survey completion, bounce backs, or opt out → mark study status as passive decline if email was verified through RocketReach or came from definitive source (e.g., spreadsheet, LinkedIn, website, etc.) OR mark study status as "provider unreachable – no email found" if email address was an educated guess
            1. If vacation response, mark "passive decline-vacation response" and move email to folder
    c. Look in RedCap at all pending transfer outcomes
        i. Go into QlikView and find transfer call record
        ii. Update:
            1. Patient Class of the Related Admission
            2. Payor
            3. Transfer type
            4. Transfer outcome
            5. Destination facility

6. Cancel reason (if applicable)
    a. If cancel reason in QlikView doesn't match what is in the note, record what is in QlikView and then make a comment under the RP comments section.

2. Mark the form as complete if all fields are filled out for the record (i.e., final study status for each provider [can not be pending] and the associated fields with the transfer)

Supplemental Files

<u>Supplemental File 1:</u> EGS conditions

Common medical terms and abbreviations (if not found below): https://www.health.harvard.edu/a-through-c#A-terms

General terms

- Things seen on imaging
  - Pneumoperitoneum – air outside of the intestine but inside the abdomen
  - Pneumatosis – air in the wall of the intestine – may or may not require surgery; can be seen if the intestine is dilated or if there is ischemia (dead)
- Tubes
  - NG tube – nasogastric tube – tube that goes into the nose esophagus stomach; used for drainage when there is a perforation or blockage
  - Dobhoff tube – tube that goes into the nose esophagus stomach ; used for feeding
  - G-tube – gastrostomy tube – tube that goes through the abdominal wall into the stomach – can be used for drainage or feeding

    - ADAM A PEG is a type of G-tube
  - J-tube – jejunostomy tube – tube that goes through the abdominal wall into the intestines (jejunum) – used for feeding
  - G-J tube – a G-tube that has an extension that goes into the small intestine
- Hematoma – collection of blood
  - Rectus sheath hematoma – bleeding into the muscles of the abdominal wall
- Stricture – narrowing
- Fistula – connection between two things that shouldn't be connected
  - Arteriovenous fistula – connection between artery and vein
  - Colovesicular – connection between the colon and the bladder
- Terms related to timing of diseases
  - Acute (new issue)
  - Chronic (old issue)
  - Acute on chronic (flare up of a long-term problem)
- Omentum – layer of fat in the abdomen
- Tumors
  - Can be benign or malignant (cancer)
  - If malignant, can start in organs in the abdomen or start somewhere else and then go to organs in the abdomen

Miscellaneous diagnoses

- Sepsis/Septic shock/Systemic Inflammatory Response Syndrome (SIRS) – various terms to indicate that an infection is making a person sick beyond the infection itself
- Obstruction (blockage) – often referred to the intestine but could be other organs as well

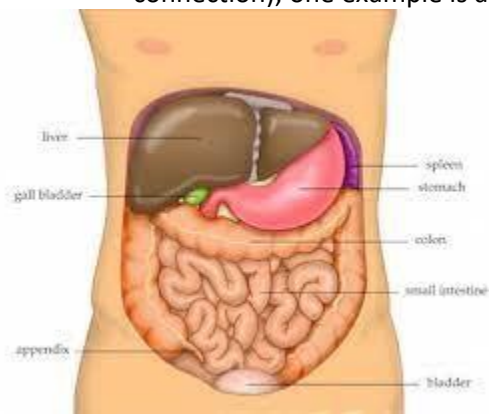
- Abscess – collection of infection; can be anywhere – skin or soft tissue (fat), solid organ (liver, spleen, pancreas), intra-abdominal (in the abdomen – typically after a surgical procedure or due to a perforation of the intestine)
    - Usually requires either drainage through an incision or by Interventional Radiology putting in a drain
- Peritonitis – the peritoneum is the lining of the inside of the abdomen – so when there is something wrong in the abdomen patients develop irritation of the peritoneum, called peritonitis

Hepatobiliary diseases (Liver-bile duct diseases)

- Gallbladder
    - Cholecystitis – infection of the gallbladder; can be acute or chronic; can be due to gallstones or acalculous (without gallstones)
    - Cholelithiasis – stones in the gallbladder without infection
    - Biliary colic – symptomatic gallstones
- Liver
    - Usually related to infection (abscesses) or tumors (e.g., hemangiomas)
- Bile duct – connects the liver to the small intestine
    - Choledocholithiasis – stone in the bile duct
    - Cholangitis – infection in the bile duct usually because there is a stone blocking the bile duct
    - Cholangiocarcinoma – bile duct cancer

Hemorrhage (bleeding)

- Hemoperitoneum
    - Bleeding into the abdomen or retroperitoneum [back of the abdomen] but not into the lumen of the intestines
    - Can be due to solid organs (liver [hemangioma], spleen, pancreas) bleeding due to non-traumatic causes (usually tumors)
- Gastrointestinal (GI) bleed
    - Bleeding into the lumen of the intestines
    - Usually from a gastric or duodenal ulcer or from the colon (diverticulosis [outpouchings of the colon])
    - Rarer causes are arteriovenous (AV) malformations (where the artery-vein make an abnormal connection); one example is a Dieulafoy lesion



Necrotizing soft tissue infections

- Necrotizing fasciitis
- Gangrene
- Fournier's gangrene
- Before the infection gets this severe, it often starts as cellulitis

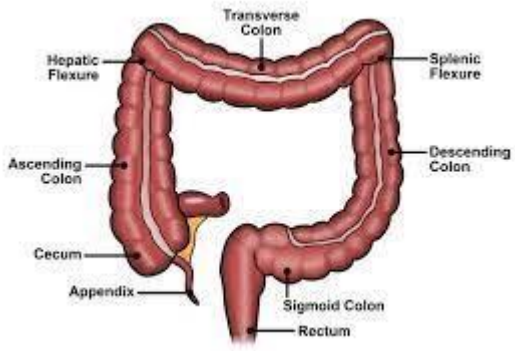
Hernia

- Inguinal
- Femoral
- Umbilical

- Ventral
- Incisional
- Parastomal (Intestines around an ostomy)
- Pancreas is behind the stomach
  Small intestines: duodenum, jejunum, ileum
  Diaphragmatic (stomach into the chest)

Motility disorders of the intestines (not due to a blockage)

- Ogilvie syndrome
  - Acute dilation of the colon seen in critically ill patients
  - Treatment: treat primary cause of illness; may need colonoscopy or rectal tube for decompression; may need surgery if it gets so big that the intestine dies or perforates
- Ileus
  - Common after surgery or when the patient has another disease process going on
  - Intestines don't work or contract (peristalsis) but there is no blockage
  - May require NGT; often improves on its own with fixing the primary problem



Appendix

- Appendicitis – infection of the appendix

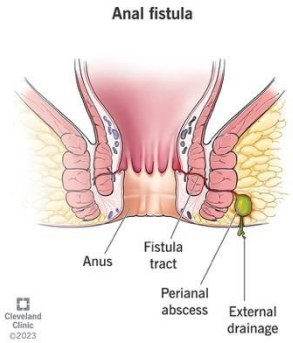
Blockages of the intestine

- Obstruction
  - Common causes: adhesions (scar tissue) from previous surgery, hernias, cancer
  - **Notes in Qlikview/healthlink may refer to SBO, small bowel obstruction**
- Volvulus (twisting)
  - Gastric (stomach)
  - Cecal (first part of the colon)
  - Sigmoid (second to last part of the colon)

Perforated viscus (hole in the intestine)

- Ulcer
  - Gastric (stomach)
  - Duodenal (first part of small intestine)
  - Parts of the colon
    Gastrojejunal (patient has had previous surgery [often gastric bypass] so now stomach (gastro) is sewn to small bowel (jejunum)
- Obstruction (blockage)
- Tumor
  - GIST (gastrointestinal stromal tumor)
  - Cancers

Enteritis (infection or death of the intestines) or colitis (of the colon)

- Inflammatory bowel disease
  - Crohn's disease – can occur throughout any part of the intestine; often causes strictures or fistulas
  - Ulcerative colitis – always starts at the rectum (last part of the large intestine and then moves up)
- Ischemic (dead or not enough blood supply)
  - Vascular blockage or insufficiency (celiac artery, SMA [superior mesenteric artery], IMA [inferior mesenteric artery])
  - Low flow state due to patient being hypotensive (blood pressure low)
- Infectious
  - C. diff (Clostridium difficile) – if severe can be called toxic megacolon
  - 

  - Diverticulitis
    - Typically of the colon
    - Can be limited to the colon itself or there can be an associated abscess or a "free" perforation (if contained, limited to the area around the colon; if "free" perforation, there is lots of air and gas outside the colon and often surgery is needed)
    - Meckel's diverticulitis – diverticulum (outpouching) of the small intestine that can become infected and/or perforate

Anorectal problems

- Abscess
- Anal fissure – tear in the tissue that lines the anus
- Fistula

Pancreatitis (inflammation of the pancreas that may or may not become infected)

- Common causes: alcohol, gallstones, medications
- Depending on how the pancreas heals, it can go on to develop the following:
  - Pancreatic necrosis – part of the pancreas dies
  - Pancreatic pseudocyst – it heals such that a fluid fill cyst replaces part of the pancreas; depending on where it is and how big sometimes it can cause obstructions of the stomach (gastric outlet obstruction) or intestine

Compartment syndrome

- Extremity
  - When there is so much pressure built up in the extremities (usually the leg but sometimes the butt), that the muscle has nowhere to go and could die
  - Treatment is fasciotomy (open the fascia surrounding the muscle)
- Abdominal
  - When there is so much pressure built up in the abdomen (often due to pancreatitis or dead gut), that patients become horribly ill because blood cannot return to the abdomen and there is so much pressure that they often cannot expand their lungs fully
  - Treatment is exploratory laparotomy (open the belly)

Supplemental File 2: Aim2GEMSSTAR_EmailScript_InvitationToSurvey_PreInt 12.14.23 No PHI

Subject: Tell us about your recent transfer call – Respond by **[DATE]** - SITe research study

Dear [*insert provider name*],

In the last 48 hours, you were involved in a call through the UW Health-Meriter Access Center about transferring an older (≥60 year old) emergency general surgery (EGS) patient. We invite you to participate in a study to **Support Interhospital Transfer Decisions (SITe)**, which focuses on communication about transfers for older EGS patients.

Participation involves taking a **3-minute online survey** about your experience communicating with the other provider during the call. Your information and responses will be kept confidential.

Below is a brief summary of the call:

- RP summary: A [age] year old [sex] with a diagnosis of [diagnosis] was discussed with Dr. [AP Last name]. The transfer [was/is] [accepted/denied/pending].
- AP summary: Dr. [RP last name] requested transfer for a [age] year old [sex] with a diagnosis of [diagnosis]. You [accepted/denied] the transfer.

To participate, please click *https://go.wisc.edu/site* and enter [*unique ID*] in the first question. Please complete the survey by [DATE].

Please note that we might ask you to complete the same survey about other transfers in the future. This study is led by Dr. Angie Ingraham at the University of Wisconsin-Madison and is funded by the National Institute on Aging.

We are sincerely grateful for your time since your role is critical in the transfer process. Please contact egstransferstudy@surgery.wisc.edu with any questions.

Supplemental File 3: Aim2GEMSSTAR_SITe survey reminder email_preint

Mark as high priority

Subject: **Reminder:** Tell us about your recent transfer call – Respond by **[DATE]** – SITe Research Study

Dear [Provider name],

This is a friendly reminder to complete the SITe survey **by midnight tomorrow [DATE]**. To participate, please click https://go.wisc.edu/site and enter ***[unique ID]*** in the first question.

This 3-minute survey asks about your experience communicating with the [UW accepting surgeon/referring provider] in a recent transfer call. For your reference, here is a summary of the recent transfer call:

[insert summary from original email]

Thank you for your time and support of this important initiative.

Respectfully yours,
[Your name]

[Insert study email signature]