Proposals to Improve the Stroke Discharge Process

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Patient Dashboard
At the University of Colorado Hospital Stroke center, patients receive a folder of information upon discharge to address the many questions that may arise after discharge. While medication education is accurate and relevant, patient readiness was identified as needing improvement through provider and patient interviews. The lack of patient readiness was further supported by analysis of HCAHPS scores, which showed that communication about medications had the lowest average composite score over twelve consecutive quarters.

Based on the provider and patient interviews and HCAHPS analysis, we decided to target medication education for improvement. To tailor our intervention, we consulted with the Neuroscience floor pharmacist to assess current practices of patient education.

Current State
Patients receive a packet of written information regarding stroke and verbal instructions about medications. Verbal education is typically delivered in a concentrated form on the day of discharge. Verbal education of the patient was inconsistently administered by the floor nurse, pharmacist, or physician.

Recommendations and Tools for Immediate Use
To address communication about medications and increase patient readiness, we designed new medication education sheets to be distributed to each patient. Based on input from the Neuroscience pharmacist, we created four sheets that address the most common classes of medications prescribed to a stroke patient, which include:

- Statins
- Antiplatelets
- Antihypertensives
- Anticoagulants

Using Micromedex CareNotes, we created the medication education sheets to be customizable to the patient and easy-to-read. The medication education sheets were also designed to be interactive with a designated space for patient questions.
Medication Education Patient Sheets

Support for Use
Subsequent to initial feedback from the Neuroscience pharmacist, the medication education sheets were further reviewed by nurses, patients, and another pharmacist. Surveys confirmed that the content was highly readable and pertinent to stroke care. With the medication education sheets ready for initial deployment, we recommend that the sheets be incorporated into the stroke nurses’ workflow, the stroke floor “brain box,” and new stroke educational materials currently in production. We further recommend that patient medication education be distributed over the course of the patient’s stay on the stroke floor. The goal of this staggered distribution is to decrease the amount of information a patient is given at a time, allowing for greater comprehension and opportunities to seek clarification. After admission to the stroke floor, we recommend the following schedule of distribution for the medication education forms as applicable to individual patients: Day 2 Statins, Day 3 Antiplatelets, Day 4 Antihypertensive, Day 5 Anticoagulants [A1.3].

Future Metrics
To measure the usefulness of the medication education forms, we recommend revisiting future HCAHPS scores to determine if patients feel more confident in the communication delivered to them concerning medications. We also recommend an informal survey of patient educators, including nurses, pharmacists, and physicians, on the perceived usability and availability of the medication education sheets.
Pathway to Home

Current state
At the University of Colorado Hospital Stroke Center, patients receive little information about their stroke care and discharge plan. They interact with a multitude of providers including physicians, physical and occupational therapists, pharmacists, nurses, social workers, case managers, and a variety of consulting departments all of whom conduct a series of tests and procedures. The process, when combined with physical and cognitive impairment, can prove confusing and overwhelming to patients and their families.

Areas to Address
Based on provider interviews, we decided to focus our efforts on patient readiness by increasing patient knowledge concerning stroke care and discharge plan. Patients are often unable to reconcile their providers by name or duty given the large number involved in the care of stroke patients. Another area of concern was patients not knowing what steps need to be completed to allow for a successful discharge. Finally, patients have few opportunities to be active in their discharge process and do not have a designated place to record questions as they arise and goals as they are established.

Recommendations and Tools for Immediate Use
The Patient Pathway [A2.1] is designed as a visual communication tool for patients to better understand where they are in the process of their hospital stay. We designed this as a patient owned document with the goal of empowering patients and giving them a sense of control over their hospital stay. At the top of the Pathway, there is a target discharge date and a patient goal to be established via communication with a care provider. As providers meet with the patient, they will fill in their names on the Pathway. When they complete the tasks listed, they will check off the associated boxes - once all boxes are checked, they place a sticker to build the pathway to home. Please note that the medication education sheets and depression screen we created are each separately listed on this pathway. When all check boxes are completed, the patients will have a pathway with stones leading them to home – a visual representation of their progress through their hospital stay [A2.2].

Future Metrics
To measure the usefulness of the Patient Pathway, we recommend revisiting future HCAHPS scores to determine if patients feel more confident in the communication delivered to them from physicians and nurses. We further recommend that patients be surveyed to assess the daily use of the pathway.
Structured Clinical Pathway for Post-Stroke Depression

Post stroke depression (PSD) affects over 30% of stroke patients, leading to increased morbidity, mortality, and lengths of stay. Due to the prevalence of PSD, and its overall impact on patient outcomes, several staff members at UCH cited the lack of follow-up on mental health screening as a point of improvement.

Current State
All patients are routinely screened for suicidality upon admission. Many patients indicate that they feel down, depressed, or hopeless. However, unless the patient vocalizes having an actual plan to harm himself or others, little is done to address this problem.

Recommendations and Tools for Immediate Use
We designed a flowchart to guide depression screening [A3.1].

For those stroke patients deemed cognitively intact, the PHQ-2 should be administered 24-48 hours prior to discharge or by day four. Scores of 2 or greater indicate a need for further screening with the PHQ-9. Final scores then may be broken down into depression severity of mild, moderate, or severe.

For patients who are not cognitively intact, assessment may be accomplished via two tools: the BASDEC and the SADQ-H10. Screening scores above the respective cut-offs indicating a need for further evaluation by a specialist.

For patients rated as moderately - severely depressed, treatment with an antidepressant should be considered, if medically appropriate.

All patients should receive education about their risk for post-stroke depression, signs and symptoms of depression, and who to contact for help. Results of depression screening should be documented in Epic and discussed during Care Coordination Rounds. Follow-up depression screening should be repeated the Primary Care Provider at 4-6 weeks, 3 months, and 6 months.
Care Coordination Rounds

Current State
Stroke Discharge Rounds lack a sustainable method for discussing patient discharge plans. The discharge process is hindered by a lack of communication and coordination between care team members.

Areas to Address
Care Coordination Rounds (CCRs) are designed to facilitate efficient rounding among Neuroscience, Neurosurgery, and Neurology ICU teams. We hypothesize that if the stroke teams achieve the goals discussed below, they will:

- Decrease patient length of stay
- Increase patient satisfaction and education
- Decrease the amount of work experience per each Neurology personnel

CCRs are designed as a scripted conversation between Core Team providers regarding stroke patients through use of a facilitation tool. The Script [A4.1] and Dashboard [A4.2] will be implemented in various phases.

CCRs involve two standardized teams designated as the Core Team and Supporting Team [A4.3]. Based on feedback from the Stroke Leadership Council, we distinguished which team members are essential to making clinical discharge decisions (the Core Team) from those who provide the supporting data required to inform these decisions (the Support Team). We designed the Dashboard to allow for the “presence in absentia” of Support Team members. Information needed for CCR decision making will automatically be pulled from existing documentation into the centralized patient Dashboard rather than requiring face-to-face presence of Support Team members at rounds.

Immediate Phase
Standardize CCR Script and use Plan of Care Note as temporary dashboard

CCRs will occur at 9:00AM every Tuesday and Friday and include the Core Team. Support Team members will exchange their attendance at CCRs for time spent ensuring completion of dashboard information in the existing Plan of Care Note.

To aid in efficiently identifying all stroke patients to be discussed during CCRs, we propose that the representative physician will identify the stroke patients to the Stroke Coordinator. The Stroke Coordinator will then organize the patients into the Plan of Care Note.
Intermediate Phase

Use CCR script and initiate development of EMR interface

Due to the absence of the Epic liaison(s) for the Neurology floor and associated units, automation of the Dashboard must be delayed. Incorporation of the Dashboard into the EMR interface will begin once the Epic liaison(s) have returned to UCH.

The Long Term Phase of implementation should involve iterative evolution of the CCR Dashboard, based upon input from the established Care Coordinator and other users, into an EPIC based and centralized document. During this phase, Stroke CCRs will be expanded to include all Neuroscience and Neurosurgery patients. Additionally, CCRs will be extended to the Neurology ICU to allow the Care Coordinator to facilitate continuity of care between ICU and acute care wards.

Final Implementation Phase

Use of Care Coordination Script with Epic Patient Dashboard

The final phase of CCR implementation follows completion of an Epic based automated Patient Dashboard to be seamlessly integrated into the now well-developed CCRs. This automated Dashboard will pull information directly from existing Support Team documentation to avoid unnecessary double documentation. This provides for sustainability in multidisciplinary discharge rounds as it promotes interdisciplinary communication and thereby supports streamlined workflow for the entire patient care team.
Appendix of Projects

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### Statins

**My medication(s) is/are:**

---

**What is a statin?**
Statins lower your LDL (the “bad cholesterol”) and increase your HDL (the “good cholesterol”). The medication works best if you also follow a low fat, high fiber diet and control your weight. By taking this medicine, you can significantly reduce your risk of heart attack and stroke.

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**Why am I taking a statin?**
This medication helps to decrease the cholesterol made by your liver. Follow your doctor’s instructions on how to take this medication.

Even after your cholesterol level improves significantly, you must stay on the medication unless your doctor tells you to stop. If you stop the medication, your cholesterol levels will go back to their previous levels.

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**What are the possible side effects?**
Side effects from these medications are rare but possible. Please contact your doctor if you have any concerns. Talk with your doctor if you have:

- Muscle aches, tenderness, or weakness
- Headaches or dizziness
- Stomach upset
- Diarrhea or constipation
- Abdominal cramps
- Skin rash
- Blurred vision
- Trouble sleeping

---

**What questions do you have?**
**A1.2: Medication Education Patient Sheets**

### Statins

**What is a statin?**
Statins lower your LDL (the "bad cholesterol") and increase your HDL (the "good cholesterol"). The medication works best if you also follow a low-fat, high-fiber diet and control your weight. By taking this medicine, you can significantly reduce your risk of heart attack and stroke.

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Side effects from these medications are rare but possible. Please contact your doctor if you have any concerns. Talk with your doctor if you have:
- Muscle aches, tenderness, or weakness
- Headaches or dizziness
- Stomach upset
- Diarrhea or constipation
- Abdominal cramps
- Skin rash
- Blurred vision
- Trouble sleeping

### Blood Pressure Medications

**What are blood pressure medications for?**
They are used to lower your high blood pressure. Lowered blood pressure will reduce the risk of stroke and heart attack.

**What should I be doing?**
- Take all medicine as your doctor prescribes them. Even though you may not feel the symptoms of high blood pressure, it is important that you take your blood pressure medications every day.
- Maintain a healthy weight.
- Eat foods that are low in salt and fat.
- Eat fruits and vegetables.
- Talk about exercise with your doctor.
- Know your blood pressure goal should be, check it regularly, and let your doctor know if you are often higher than your goal.

**What are the possible side effects?**
Call your doctor if you have any concerns. Call your doctor immediately if you have:
- An allergic reaction, including hives, itching, swollen face or hands, swelling in your mouth or throat, chest tightness, or trouble breathing
- Feelings of confusion, weakness, lightheadedness, dizziness, shortness of breath or if you have passed out
- Dark urine or pale stools
- Vision changes or blurry vision
- Nausea, vomiting, loss of appetite, severe stomach pain, or yellow skin or eyes
- Heartbeat that is slower or faster than normal, or if you feel like your heart is pounding

### Antiplatelets

**What are antiplatelets?**
Antiplatelets are medicines that help keep new blood clots from forming in your body and help keep existing blood clots from getting worse.

**Why am I taking antiplatelets?**
To keep blood clots from forming in your body. Blood clots can cause heart attack, stroke, damage to your lungs, or other serious conditions.

**What are the possible side effects?**
Tell your doctor if you have any concerns. Call your doctor immediately if you have:
- Seizures
- Pink or red urine
- Red, dark brown, or black stool
- A nosebleed that won’t stop
- A very bad headache or stomach pain that doesn’t go away
- Weakness, faintness, dizziness, or shortness of breath
- Yellow eyes or skin
- Unusual bruises or blood blisters
- Problems with vision, speech, or walking

### Anticoagulants

**What are anticoagulants?**
Anticoagulants (or "blood thinners") are medicines that help keep new blood clots from forming and help keep existing blood clots from getting worse.

**Why am I taking anticoagulants?**
To keep blood clots from forming in your body. Blood clots can cause heart attack, stroke, damage to your lungs, or other serious conditions.

**What are the possible side effects?**
Talk with your doctor if you have any concerns. Call your doctor immediately if:
- Your urine turns pink or red
- Your stool turns red, dark brown, or black
- Your period is heavier than normal
- Your gums bleed
- You have a very bad headache or stomach pain that doesn’t go away
- You get sick or feel weak, faint, or dizzy
- You think you are pregnant
- You often find bruises or blood blisters
- You have an accident of any kind

**What should I be doing?**
- Follow all your doctor’s instructions.
- Check with your doctor before taking other medications, including prescription and non-prescription medicines, vitamins, and herbal supplements.
- Discuss your diet with a healthcare professional.
- Tell any doctor or dentist that treats you that you are taking this medication.

- If I have questions about anticoagulants, who can I ask?
  - University of Colorado Hospital Anticoagulation Clinic: 720-848-0577
  - Your Primary Care Practitioner

**Adapted from Micromedex Carremotes for the University of Colorado Hospital Anschutz Medical Campus**
A1.3: Medication Education Patient Sheets

Day 1
Statins

Day 2
Antiplatelets

Day 3
Blood Pressure

Day 4
Anticoagulants

Day of Discharge
My Pathway to Home

Throughout your hospital stay, your care team will help prepare you for discharge. Please ask your providers to help you check off the boxes and place the stones that build your path to home.

My name: _______________________
Target discharge date: __/___
My goals: _______________________

Doctor:
☐ condition education
☐ hospital plan
☐ anticipated discharge date

Nurse:
☐ cognitive/depression screen
☐ medication handouts
  ☐ Statin
  ☐ Antiplatelet
  ☐ Blood pressure
  ☐ Anticoagulant (if needed)
☐ daily plan
☐ discharge packet teaching

Speech and Language Pathologist:
☐ evaluation
☐ recommendations given

Physical Therapy:
☐ mobility evaluation
☐ recommendations given

Occupational Therapy:
☐ activities of daily living evaluation
☐ recommendations given

Case Management/Social Work:
☐ insurance evaluation
☐ discharge destination set

My family and I:
☐ questions about daily plan: _______________________
☐ questions about my disease: _______________________
☐ questions about my medications: _______________________
☐ questions about leaving the hospital: _______________________
My Pathway to Home

Throughout your hospital stay, your care team will help prepare you for discharge. Please ask your providers to help you check off the boxes and place the stones that build your path to home.

My name: Ira Ischemia
Target discharge date: 7/25
My goals: Go home with my family

Doctor: Ethan
✓ condition education
✓ hospital plan
✓ anticipated discharge date

Nurse: Jane
☐ cognitive/depression screen
✓ medication handouts
  ✔ Statin
  ✔ Antiplatelet
  ✔ blood pressure
  ☒ anticoagulant (if needed)
✓ daily plan
✓ discharge packet teaching

Speech and Language Pathologist: Molly
✓ evaluation
✓ recommendations given

Physical Therapy: Paul
✓ mobility evaluation
✓ recommendations given

Occupational Therapy: Betsy
✓ activities of daily living evaluation
✓ recommendations given

Case Management/Social Work: Fran
✓ insurance evaluation
✓ discharge destination set

My family and I:
✓ questions about daily plan:
  How much PT should I do each day?

✓ questions about my disease:
  What caused the stroke?

✓ questions about my medications:
  Why am I taking aspirin?

✓ questions about leaving the hospital:
  When will I be able to drive my car?
**A3.1: Structured Clinical Pathway for Post-Stroke Depression**

RNs administer and document depression screen for all pts before d/c

Administer PHQ-2

Cognitive status of pt

Not intact

Level of impairment

Mild to moderate

Administer BASDEC

Severe

Administer SADQ-H10

Scoring

< 2

Educate about PSD and continue routine surveillance

> 2

Administer PHQ-9

Scoring

< 7

< 10

None to mild depression: Educate about PSD and continue routine surveillance

10-19

Moderate depression: consider SSRI and refer to social work for follow-up

20-27

Severe depression: start SSRI (if appropriate) and refer to psych specialist

> 7

Educate about PSD and continue routine surveillance

Refer to specialist for further evaluation

Scoring

< 14

Educate about PSD and continue routine surveillance

14

Refer to specialist for further evaluation

---

**Key**

PHQ-2/9: Patient Health Questionnaire

BASDEC: Brief Assessment Schedule Depression Cards

SADQ-H10: Stroke Aphasic Depression Questionnaire
# A4.1: Coordinated Care Rounds

## Script for Coordinated Care Rounds (CCRs)

**Care Coordinator: 15 Seconds**
- Patient Room Number
- Patient Name
- Patient Target D/C Date

**MD Team: 30 Seconds**
- H&P One Liner
- Patient Care Updates

**Care Coordinator Reviews Dashboard: 90 Seconds**
- Dashboard

**Social Worker: 45 Seconds**
- Post D/C Care Coordination
- Patient and Family Goals
- Additional Care Arranged

**Case Management: 45 Seconds**
- Payor
- Status of Resource Applications
# A4.2: Patient Dashboard

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A4.3: CCR Team Designations

Core Team
- Physicians
  - Neuroscience
  - Neurosurgery
  - NeuroICU
- Care coordinator
- SW/CM

Support team
- PRL
- PT
- OT
- SLP
- Nutrition
- Floor Nurse
- PM&R
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The Hospitalist Group

University of Colorado Hospital
UCH Hospital Medicine Group
UCH Stroke Council
UCH Department of Process Improvement

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