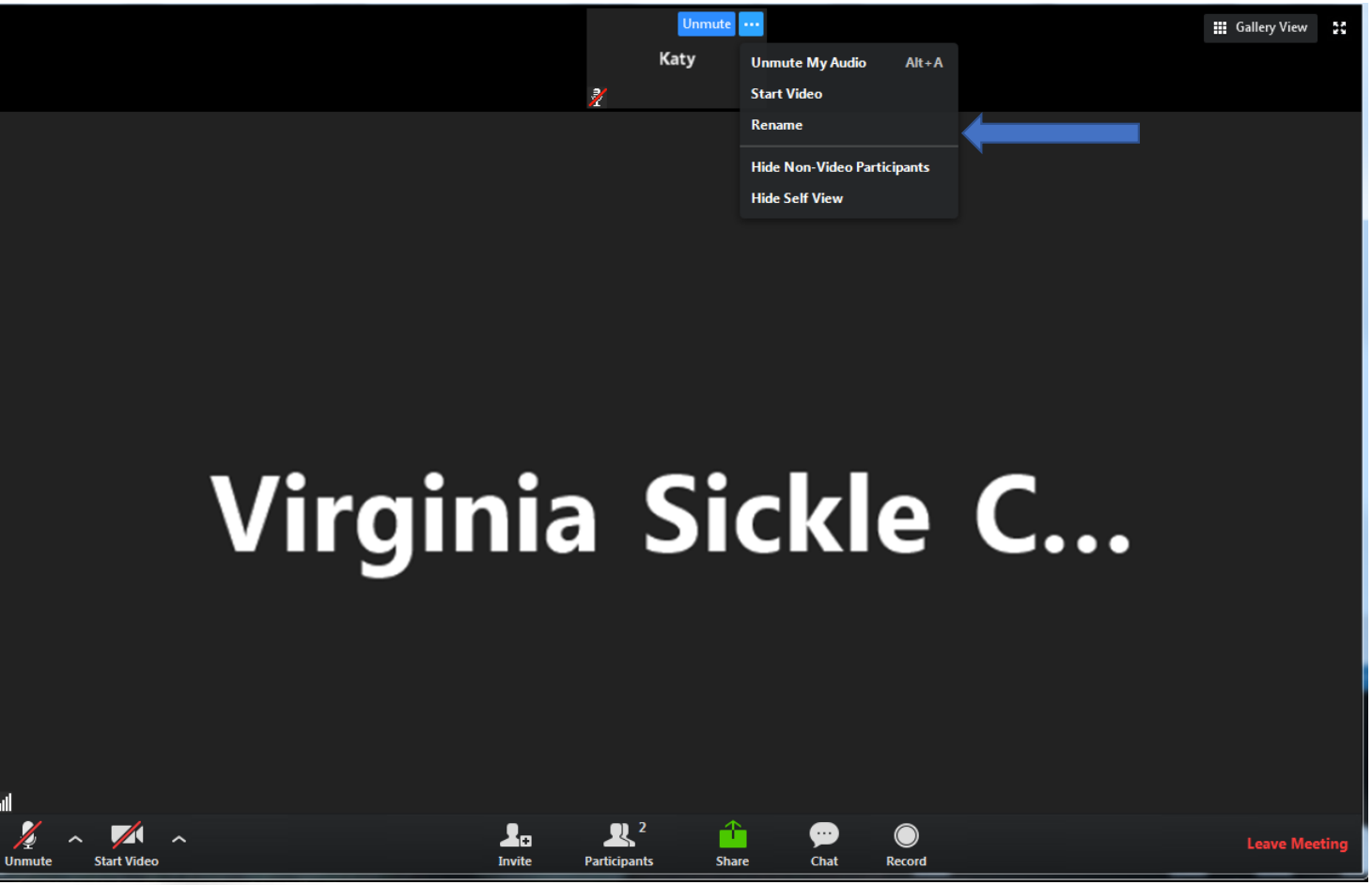
Virginia Sickle Cell Disease ECHO* Clinic

May 8th, 2019

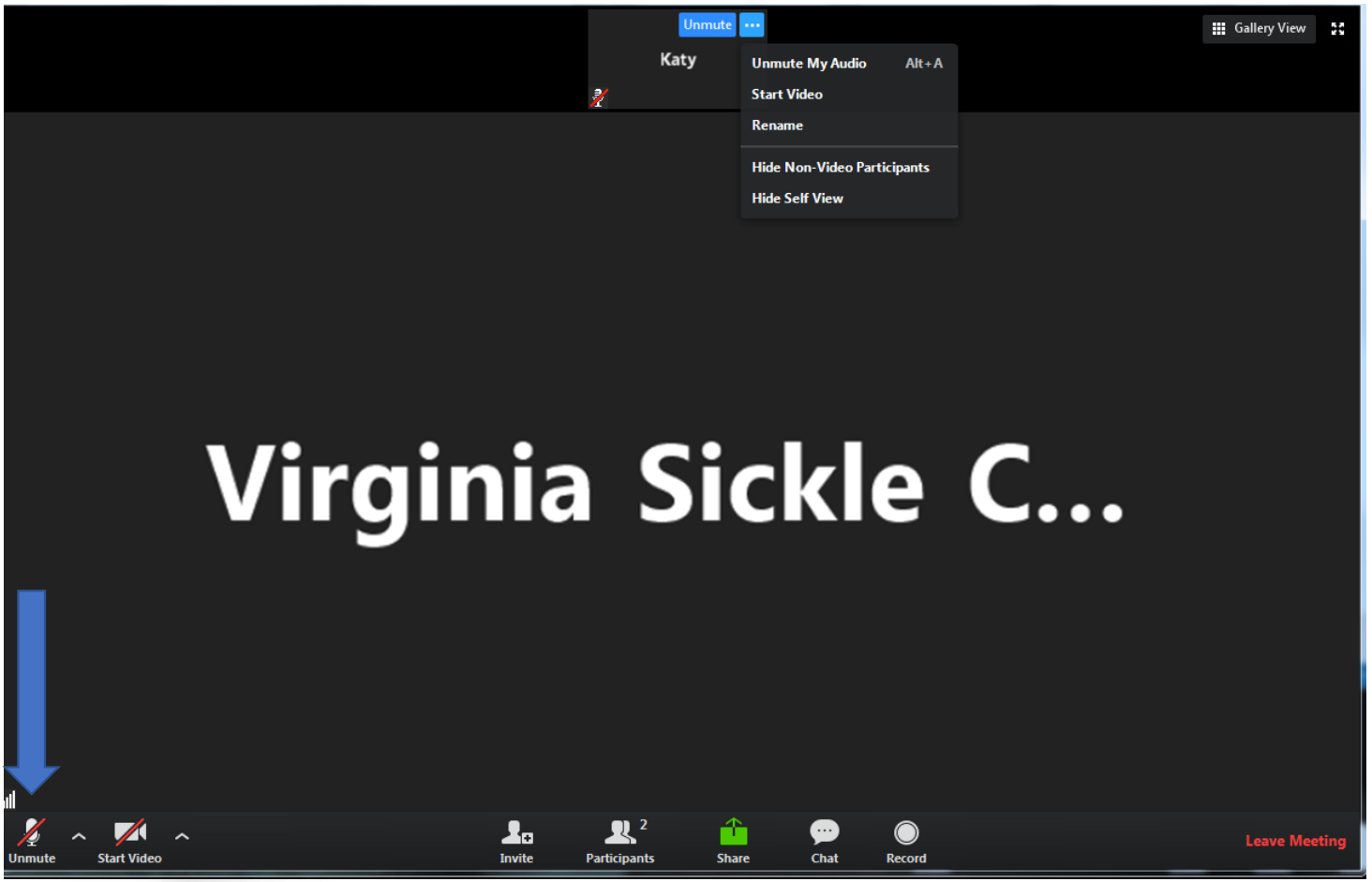
*ECHO: Extension of Community Healthcare Outcomes

Helpful Reminders



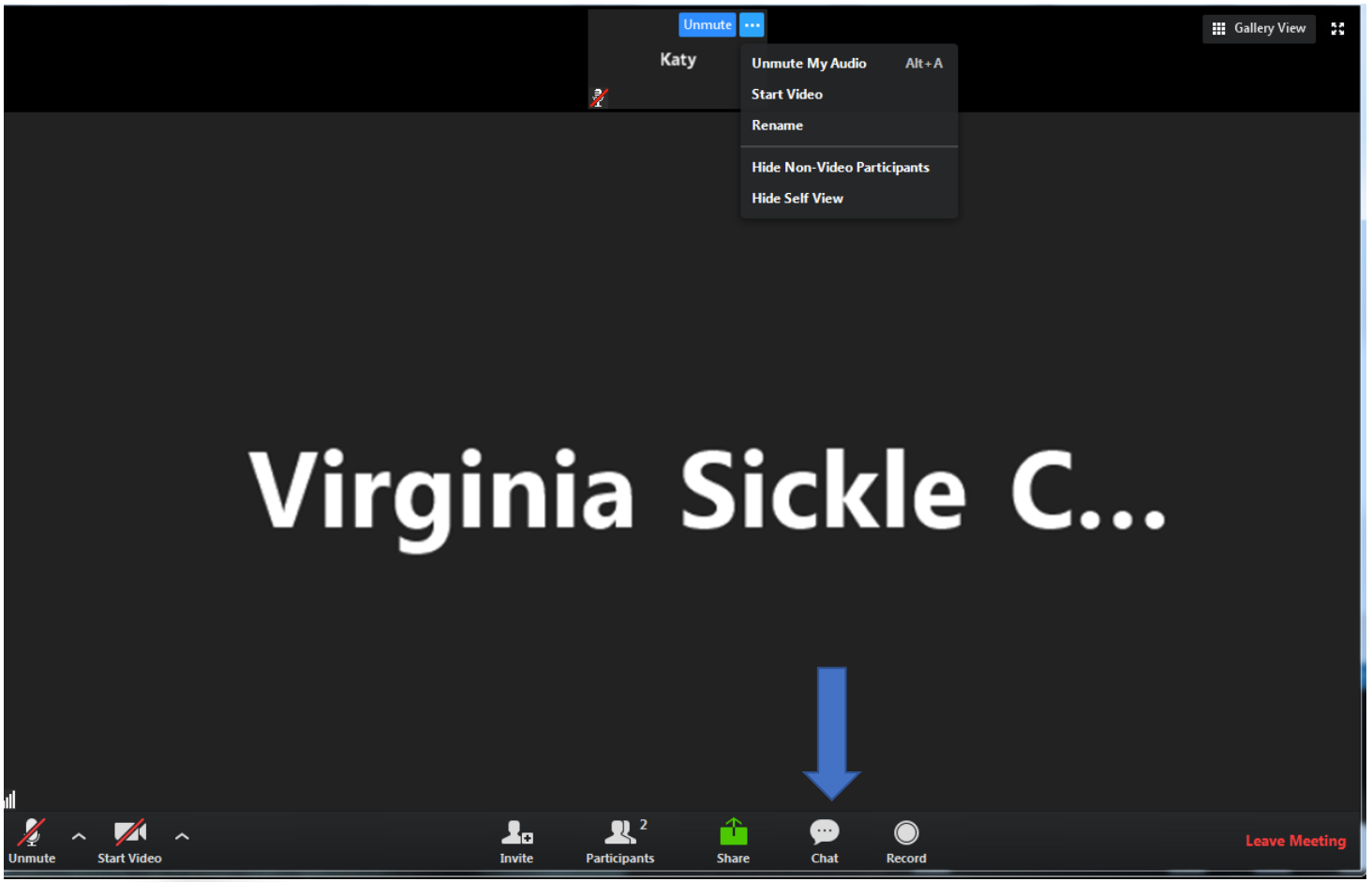
- Rename your Zoom screen, with your name and organization

Helpful Reminders



- You are all on mute please unmute to talk
- If joining by telephone audio only, *6 to mute and unmute

Helpful Reminders



- Please type your full name and organization into the chat box
- Use the chat function to speak with IT or ask questions

VCU Sickle Cell Disease ECHO Clinics

- Monthly 2 hours tele-ECHO Clinics
- Every tele-ECHO clinic includes 2 case presentations and a didactic presentation
- Didactic presentations are developed and delivered by inter-professional experts in Sickle Cell Disease care and management

Website Link: http://vcuhealth.org/sicklecellecho

Hub Introductions

VCU Team	
Clinical Director	Wally R Smith, MD
Administrative Medical Director ECHO Hub and Principal Investigator	Wally R Smith, MD
Clinical Expert	India Y Sisler, MD Thokozeni Lipato, MD Jennifer Newlin, PA Mica Ferlis, NP
Didactic Presentation	René Morrissey, MD & Mica Ferlis, NP
Program Manager	Shirley Johnson, LSW
IT Support	Daniel M Sop, M.Sc.Eng
Administrative Assistant	Donna Casey
Clinical Social Worker	Taylor Elliott, MSW
Patient Navigators	Marla Brannon, BSW Stefani Vaughan-Sams
Prior Authorization Specialist	Austin Hardy

Spoke/ Participant Introduction

- Name
- Organization

What to Expect

I. Case presentation #1 – Katherine Watson, MD
   i. Case summary
   ii. Clarifying questions
   iii. Recommendations
   iv. Recap

II. Didactic Presentation

Title: Building a Bridge Collaboration between Emergency Department care and the Adult Medical Home care of patients with Sickle Cell
Presenters: René Morrissey, MD & Mica Ferlis, NP

III. Case presentation #2 – Mica Ferlis, NP
   i. Case summary
   ii. Clarifying questions
   iii. Recommendations
   iv. Recap

IV. Closing and questions

Lets get started!
Case Presentation #1

Case Presentation #1

- 12:50PM to 1:15pm [25 min]
  - Presentation: (5 min)
  - Case summary: Clinical Hub Lead(5 min)
  - Clarifying questions- Spokes (participants) 4 min:
  - Clarifying questions – Hub (4 min):
  - Recommendations – Spokes (participants) 2 min:
  - Recommendations – Hub (2 min):
  - Recap Case /Recommendations- Hub (3 min):

Delayed Hemolytic Transfusion Reaction: Ex vivo Inhibition of Hemolysis with PIC1

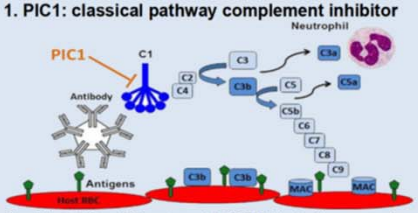
Katherine D. Watson MD, Timothy P. Heck MD, Pamela S. Hair, Kenji M. Cunnion MD, Jessica Price PharmD, Daniel T. Carr MD, William C. Owen MD

Department of Pediatrics, Children's Hospital of The King's Daughters, Norfolk, VA

Introduction

Delayed hemolytic transfusion reaction (DHTR) is a rare but life-threatening sequelae of blood transfusion. In patients with sickle cell disease, its clinical presentation can be confused with vaso-occlusive crises (VOC) thus delaying important interventions. A reduced hemoglobin compared to the pre-transfusion level one to two weeks post-transfusion is suspicious for DHTR. Mechanisms underlying DHTR remain poorly understood. The most commonly discussed theory is that DHTR occurs when one is previously sensitized to an erythrocyte antigen but has undetectable alloantibody levels at the time of transfusion. One to four weeks after transfusion with erythrocytes bearing this antigen, an immune response may occur and precipitate DHTR. The antibody-coated donor erythrocytes are believed to be primarily destroyed by extravascular hemolysis in the liver and spleen via Fc-mediated phagocytosis. The role of complement activation in DHTR, if any, remains unclear. PIC1 has been demonstrated to inhibit Ab-initiated complement mediated hemolysis in an *ex vivo* model of ABO incompatibility and an *in vivo* model of acute hemolytic transfusion reaction. Here we explored the potential ability of a complement inhibitor to moderate hemolysis *ex vivo* utilizing erythrocytes and plasma from a patient experiencing DHTR.

1. PIC1: classical pathway complement inhibitor



Peptide inhibitor of Complement 1 (PIC1) blocks the enzymatic activity of the first component of the cascade, C1.

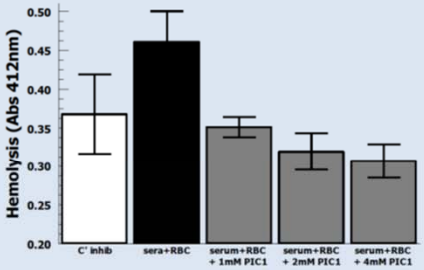
Case

- 14 year old female with hemoglobin SS disease and VOC of the lower extremities develops acute chest syndrome requiring 1 unit pRBCs with post-transfusion hemoglobin of 8.8 g/dL
- 7 days later, presents with bilateral thigh and back pain with hemoglobin of 7.6 g/dL, and reticulocyte count of 7.6% (compared to baseline 7.5-9.0%)
- Overnight develops increased O2 requirement, fever, hypertension, and hemoglobin of 5.0 g/dL requiring ICU transfer
- Platelets drop 274,000 to 116,000/μL, LDH 5317 U/L, normal ADAMTS13, negative DAT, hemoglobinuria, and Hg S level rose to 70.2% compared to 65.7% four days prior
- In the ICU hemoglobin and platelets reach nadirs of 4.1 g/dL and 50,000/μL, respectively, and LDH peaks at 30,425 U/L on ICU day 3
- Intervention included ceftriaxone, two pulses of IV methylprednisolone, two IVIG infusions, two eculizumab infusions, rituximab, tocilizumab, EPO alfa, IV ferric carboxymaltose, and prophylactic enoxaparin
- Due to worsening perfusion and maximal non-invasive ventilation settings, given four small volume pRBC transfusions
- On room air at discharge 10 days after admit with normal platelets, Hgb 7.9 g/dL, and LDH of 7,085 U/L
- Readmitted 10 days later with asymptomatic drop in Hgb to 5.2 g/dl, DAT neg; retreated with methylprednisolone, rituximab, and eculizumab; discharged on steroid taper with good results
- Doing well in clinic two days after discharge and in serial follow-ups hemoglobin baseline from 7.7-8.5 g/dL

Methods

- The Complement Hemolysis Utilizing Human Erythocytes (CHUHE) is an *ex vivo* CH-50 type hemolytic assay
- Patient's plasma from time of admission was co-incubated with RBC sample taken prior to initial transfusion
- Increasing concentrations of PIC1
- Free hemoglobin from lysed RBCs measured at 412 nm

2. Hemolysis by CHUHE assay



Patient's erythrocytes were incubated with her plasma in complement inhibitory buffer (C' inhib) or complement permissive buffer (sera+RBC). Increasing concentrations of PIC1 were added to the complement permissive reaction.

Results

- Patient's plasma caused increased hemolysis of her erythrocytes in complement permissive buffer vs. complement inhibitory buffer (P=0.016) **[2]**
- Addition of PIC1 showed a dose-dependent decrease of hemolysis at the 2mM (P=0.036) and 4mM (P=0.029) doses vs. hemolysis in complement permissive buffer without PIC1
- At higher doses PIC1 inhibited hemolysis to the background signal seen for complement inhibitory buffer (P>0.21).

Conclusion

For this patient with sickle cell disease and DHTR, complement-mediated hemolysis of her erythrocytes by her plasma was demonstrated *ex vivo* utilizing the CHUHE assay. The complement-mediated hemolysis was completely blocked with the classical complement pathway inhibitor, PIC1. This suggests that the antibody-initiated classical complement pathway can contribute to severe DHTR.

The precipitous decline in this patient's hemoglobin and clinical status are consistent with intravascular hemolysis contributing to her DHTR. These results raise the possibility that a classical complement pathway inhibitor could be used to moderate complement-mediated hemolysis in a patient experiencing severe DHTR. Given the high mortality associated with DHTR, future research efforts are imperative and should focus on exploring novel therapies.

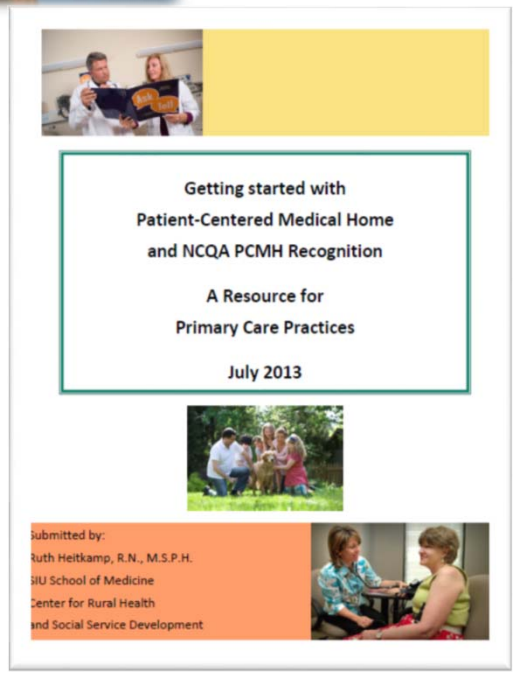
Didactic Presentation

Building a Bridge

Collaboration between Emergency Department care and the Adult Medical Home care of patients with Sickle Cell

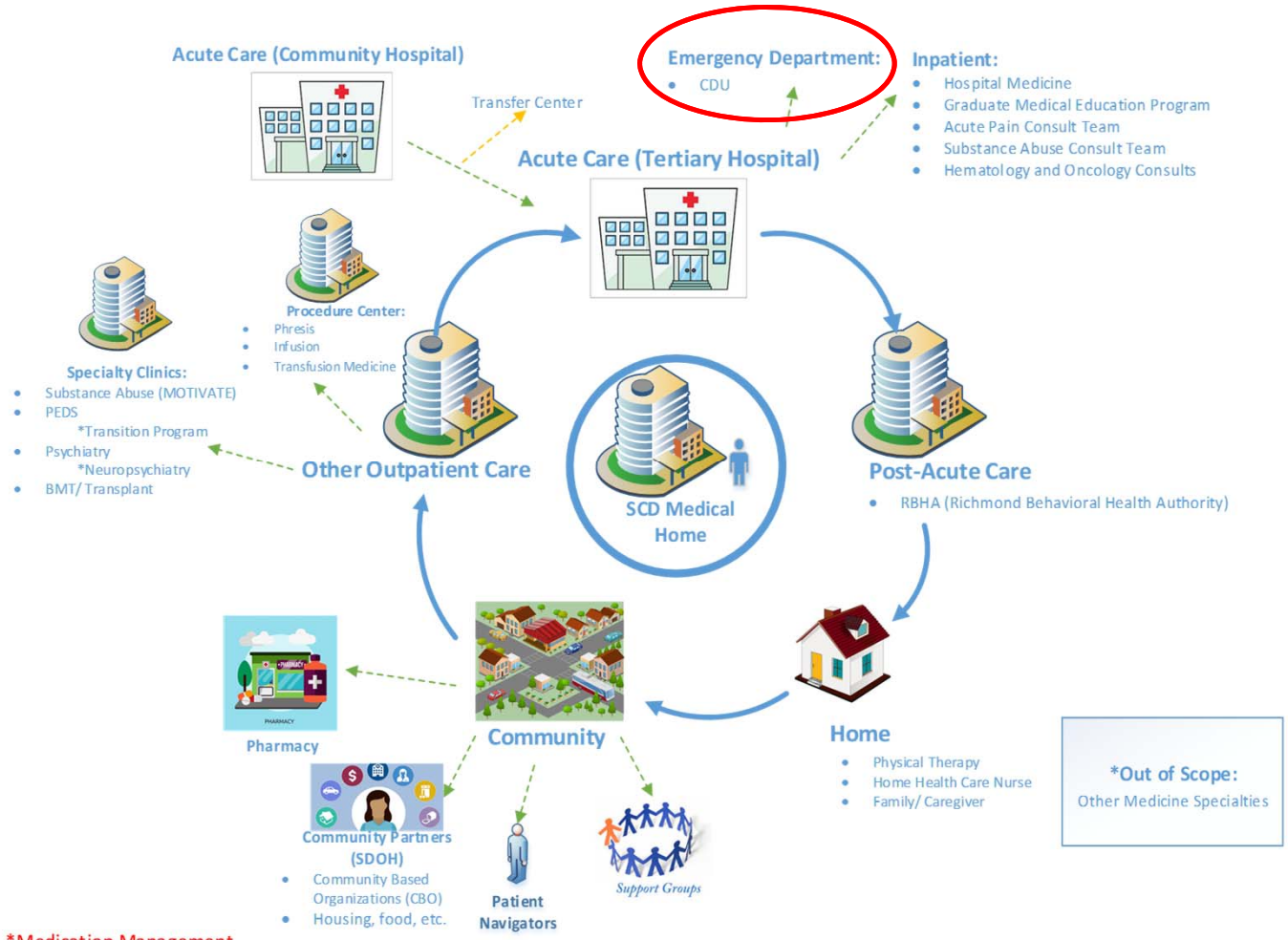
Rene Morrissey, MD, Assistant Professor in Emergency Medicine and Internal Medicine

Mica Ferlis, Acute Care Nurse Practitioner, Sickle Cell



http://www.safetynetmedicalhome.org/resources-tools/all-resources

Sickle Cell Disease Advanced Health Home Neighborhood



First: Focus on Define

Building of an ED Committee

ED Committee Champions

- Dr. Rene Morrissey, Assistant Professor in Emergency Medicine and Internal Medicine
- Dr. Peter Moffett, FACEP, Associate Program Director, Department of Emergency Medicine

Additional ED Providers

ED Pharmacy

ED Nursing Representatives

Inpatient Representatives

Medical Home Representatives

Quality and Safety Representatives

Ad hoc

- CDU representation

Physician burnout

Outdated treatment plans

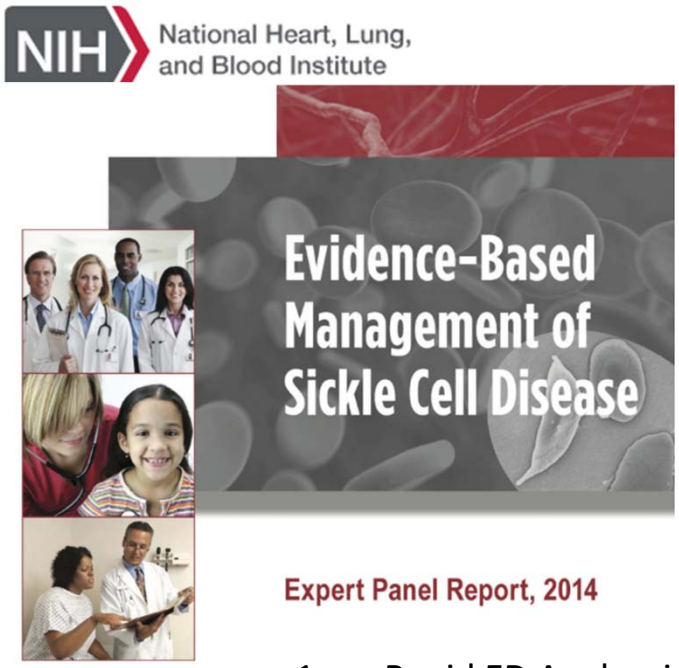
Lack of communication and coordination

Provider bias

Opioid prescriptions

VCU Health

Referencing Best Practices/ NIH Guidelines



- Published Expert Panel Report in 2014
- Published a book chapter in 2017
- Provides guidelines both inpatient and outpatient management
- Created with input from:
  - Family Medicine
  - General Internal Medicine
  - Adult and Pediatric Hematology
  - Psychiatry
  - Transfusion Medicine
  - Emergency Medicine

1. Rapid ED Analgesia
2. Rapid Titration
3. SCD patients should be triaged as ESI Level 2
4. Patients are able to communicate that their pain is not controlled

https://www.nhlbi.nih.gov/health-topics/evidence-based-management-sickle-cell-disease

Development of Initial ED Committee Objectives

1. Ensuring evidence based care for patients with SCD presenting to the ED
2. Understanding the ED process (embedding the Oversight Committee resources)
3. Expediting care for high risk patients
4. Identifying ED needs for individualized care plans
5. Defining use of CDU for SCD patients
6. Appropriate use of the ED by SCD patients
7. Considering triage instead of urgent clinic

VCU Health

Development of Project Overall Aims

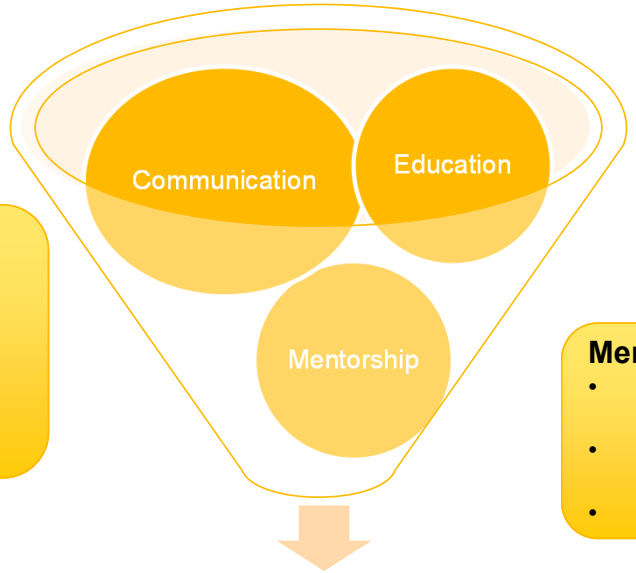
1. Reduce SCD readmissions
2. Reduce SCD average LOS
3. Improve costs
4. Improve compliance with VCU-derived inpatient SCD management and care
5. Improve the existing system to report quality, safety, and financial metrics related to SCD management.
6. Improve the patient experience of care as assessed by patient experience survey.

**Intervention patients = 50 highest cost and highest utilization patients*

First Steps:

To assist with tackling the barriers of physician burnout, outdated treatment plans, lack of communication and coordination, provider bias, and the uneasiness around prescribing/administering high doses of opioids, we made efforts to focus on:

Communication resources include:
- 24/7 Pager
- Inpatient NP
- SCD Clinical Providers
- Patient Navigators
- Clinical Social Worker



Education included:
- Attending ED Resident and Faculty conferences
- MMIs “Suffering in Silence: The Story of Sickle Cell”
- Utilization of individualized treatment plans and power plans

Mentorship included:
- Modeling what good looks like (1:1 feedback)
- Modeling the utilization of resources
- Helping break provider biases

Elements of Project Priorities

Next: Focused on 4 Main Outcomes

1. Development/update Individualized Treatment Plans

Process:

- Inpatient representative (in coordination with the Outpatient NP) began with the development of 20 treatment plans for high utilizers
- Inpatient NP has continued the development and revisions to the treatment plans (tracks new requests, high needs, etc.)

Structure of treatment plans consist of:

- ED Pain Management Plan (needs to be able to find quickly)
- Outpatient Pain Regimen
- Inpatient Pain Management Recommendations
- Behavioral Health

*How to search and utilize these treatment plans based on your organizations' system

Sample Treatment Plan

Patient Name:

SCD genotype: Hgb SS

ED Pain Management Plan:
Administer IV hydromorphone 4mg w/ concurrent dose of oral oxycodone 90mg. Reassess pain after 30 minutes and titrate up IV doses by 25-50% if pain not improving (would use 5-6mg for subsequent doses).
Give max of 3-4 doses IV hydromorphone. Monitor for sedation.
Toradol 30mg IV every 6 hours
PO hydration only unless appears dehydrated or labs suggest dehydration

Opioid Conversions for IV hydromorphone 4mg
= 20 mg IV Morphine
= 200 mcg Fentanyl

Admit if:
Pain is uncontrolled and there are signs suggestive of sickling on lab work or imaging (see below)
Suspect infection is cause of pain crisis or patient appears acutely ill
Imaging suggestive of an acute complication related to SCD
Please contact Sickle Cell NP between 8a-4pm (M-F) if considering admission (page 9800)

Objective Signs of Sickling:
Hgb >2 g/dL below normal Hgb range
Retic Count outside of normal range (either high or low)
Increased WBC count
Many sickle and target cells on smear

Is this patient a part of the TOTP: YES

Highest demand dosing from recent admission: 2mg IV hydromorphone every 10 min
No clinician bolus

Outpatient Pain Regimen:
Oxycodone 90mg every 4 hours PRN
Oxycontin 40mg every 8 hours
Ibuprofen 600mg TID PRN

Adjuncts:
IV Toradol 30mg Q6H x48H followed by scheduled ibuprofen 600mg TID as long as renal fxn intact
Lidocaine patches
Capsaicin gel
Heating pads/warm compresses

Normal Lab Values:
Normal Hgb range: 7-8 g/dL
Transfusion criteria: <6 g/dL
Transfusion schedule: no
Normal Retic range: 4-8%
Normal WBC range: 14-18 10e9/L

General Guidelines for all Sickle Cell Patients:
Incentive Spirometry - 10 breaths every hour while awake
Avoid IV Benadryl. If patient cannot take PO, consider SC team consult for alternative recommendations
Avoid IVF unless the patient is dehydrated.

Page 9800 for any issues or concerns – STP

Inpatient Pain Management Recommendations:
Start PCA of IV hydromorphone at 1.5mg every 10 minutes. Recheck every 4 hours x 24 hours. Titrate by 20% until adequate analgesia achieved. Monitor for sedation.
No clinician bolus
Continue oxycontin 40mg Q8H as basal
Breakthrough dosing based on TOTP guidelines:
Phases 1-2
Moderate pain: oxycodone 90mg every 4 hours PRN
Severe pain: oxycodone 180mg every 4 hours PRN
Phases 3-5
Scheduled oxycodone 90mg every 4 hours
Moderate pain: oxycodone 45mg every 4 hours PRN
Severe pain: oxycodone 90mg every 4 hours PRN

2. Development of an Adult SCD Power Plan

VCU ED: Sickle Cell Disease (Adult)

Vital signs/Monitoring

- ☐ Vital signs
  to include temperature, HR, BP, RR, pulse ox
- ☐ Cardiac monitor
- ☐ Pulse oximetry: continuous
  Keep O2 saturations >92%. If O2 saturations >92% on room air, discontinue oxygen
- ☐ Notify provider
  If O2 saturations <92%, RR <8 breaths/min, or pt is unarousable.

Nursing

- ☐ Ice pack
- ☐ Warm compress

Diagnostics

- ☐ DXR: Chest PA + lateral xray
- ☐ EKG: 12 Lead
  Without Rhythm Strips, Location: Non-Heart Station

Laboratory

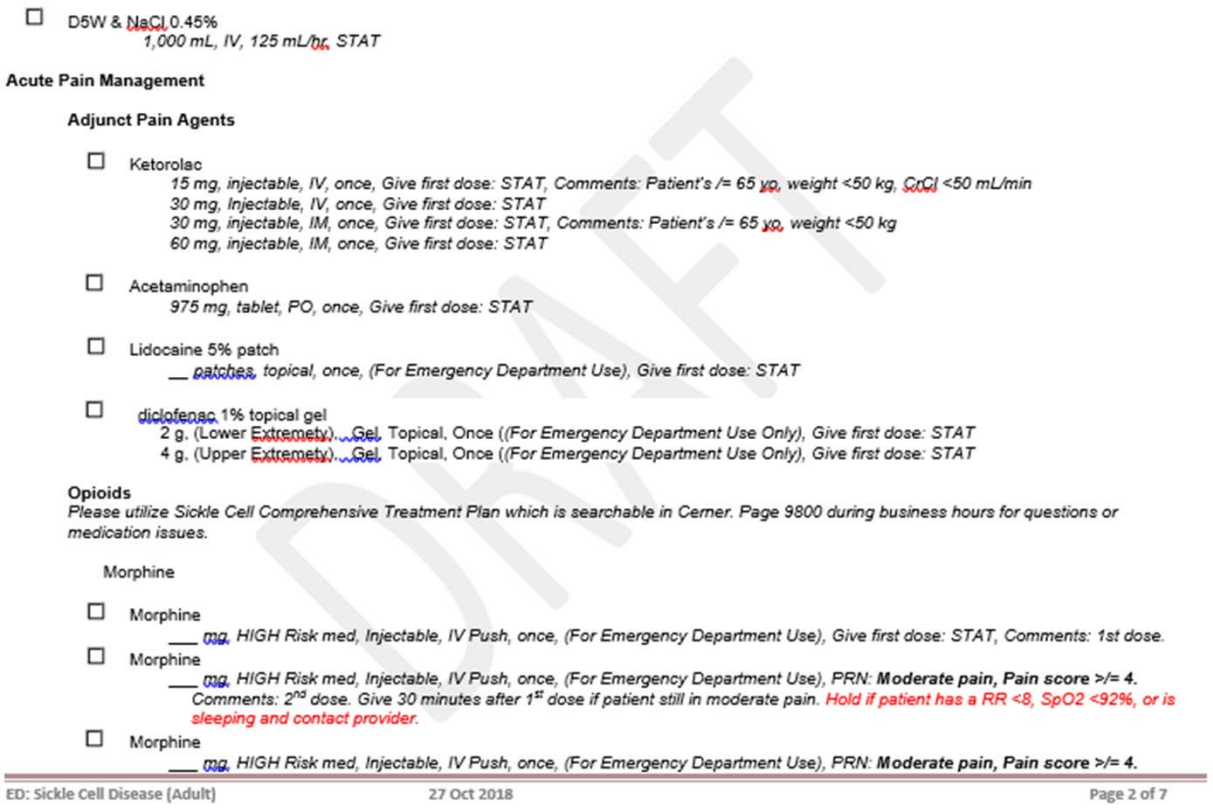
- ☐ ED Basic Met Stat
- ☐ ED CBC w 5Part diff Stat
- ☐ Reticulocyte count
- ☐ Pregnancy test: urine (POCT) (Urine Pregnancy Test (POCT))
  Once, Notify MD if: Positive, Order comments: For female of child bearing potential
- ☐ *UA Stat w mic on pos* (Specimen Type: Urine; Collection Priority: Stat; Request collection date/time: T;N; Lab Reporting Priority: Stat; Route label to desired printer: leave blank; Frequency:: none; Duration:1; Duration Units: Doses(times); ABN Status: None; Future Order: No)

Intravenous Fluids

IV fluids are NOT routinely indicated unless the patient is unable to tolerate PO intake and appears clinically dehydrated.

- ☐ Sodium Chloride 0.9% For BOLUS
  500 mL, Injectable, IV, once, Give first dose: STAT

Adult SCD Power Plan (continued)



☐ D5W & NaCl 0.45%
1,000 mL, IV, 125 mL/hr, STAT

Acute Pain Management

Adjunct Pain Agents

☐ Ketorolac
15 mg, injectable, IV, once, Give first dose: STAT, Comments: Patient's /= 65 yo, weight <50 kg, CrCl <50 mL/min
30 mg, Injectable, IV, once, Give first dose: STAT
30 mg, injectable, IM, once, Give first dose: STAT, Comments: Patient's /= 65 yo, weight <50 kg
60 mg, injectable, IM, once, Give first dose: STAT

☐ Acetaminophen
975 mg, tablet, PO, once, Give first dose: STAT

☐ Lidocaine 5% patch
__ patches, topical, once, (For Emergency Department Use), Give first dose: STAT

☐ diclofenac 1% topical gel
2 g. (Lower Extremety), Gel, Topical, Once ((For Emergency Department Use Only), Give first dose: STAT
4 g. (Upper Extremety), Gel, Topical, Once ((For Emergency Department Use Only), Give first dose: STAT

Opioids
Please utilize Sickle Cell Comprehensive Treatment Plan which is searchable in Cerner. Page 9800 during business hours for questions or medication issues.

Morphine

☐ Morphine
___ mg, HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), Give first dose: STAT, Comments: 1st dose.

☐ Morphine
___ mg, HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN: ***Moderate pain, Pain score >/= 4.***
Comments: 2nd dose. Give 30 minutes after 1st dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.

☐ Morphine
___ mg, HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN: ***Moderate pain, Pain score >/= 4.***

ED: Sickle Cell Disease (Adult) 27 Oct 2018 Page 2 of 7

Adult SCD Power Plan (continued)

Comments: 3rd dose. Give 30 minutes after 2nd dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.

Hydromorphone

- ☐ Hydromorphone
  ___ mg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), Give first dose: STAT, Comments: 1st dose.*
- ☐ Hydromorphone
  ___ mg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN:* **Moderate pain, Pain score >/= 4.**, *Comments: 2nd dose. Give 30 minutes after 1st dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.*
- ☐ Hydromorphone
  ___mg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN:* **Moderate pain, Pain score >/= 4**, *Comments: 3rd dose. Give 30 minutes after 2nd dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.*

Fentanyl

- ☐ Fentanyl
  ___ mcg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), Give first dose: STAT, Comments: 1st dose.*
- ☐ Fentanyl
  ___ mcg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN:* **Moderate pain, Pain score >/= 4.**, *Comments: 2nd dose. Give 30 minutes after 1st dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.*
- ☐ Fentanyl
  ___ mcg, *HIGH Risk med, Injectable, IV Push, once, (For Emergency Department Use), PRN:* **Moderate pain, Pain score >/= 4.**, *Comments: 3rd dose. Give 30 minutes after 2nd dose if patient still in moderate pain. Hold if patient has a RR <8, SpO2 <92%, or is sleeping and contact provider.*

Patient Controlled Analgesia (PCA)

- ☐ Morphine PCA 5 mg/mL
- ☐ Hydromorphone PCA 1 mg/mL
- ☐ Fentanyl PCA 50 mcg/mL

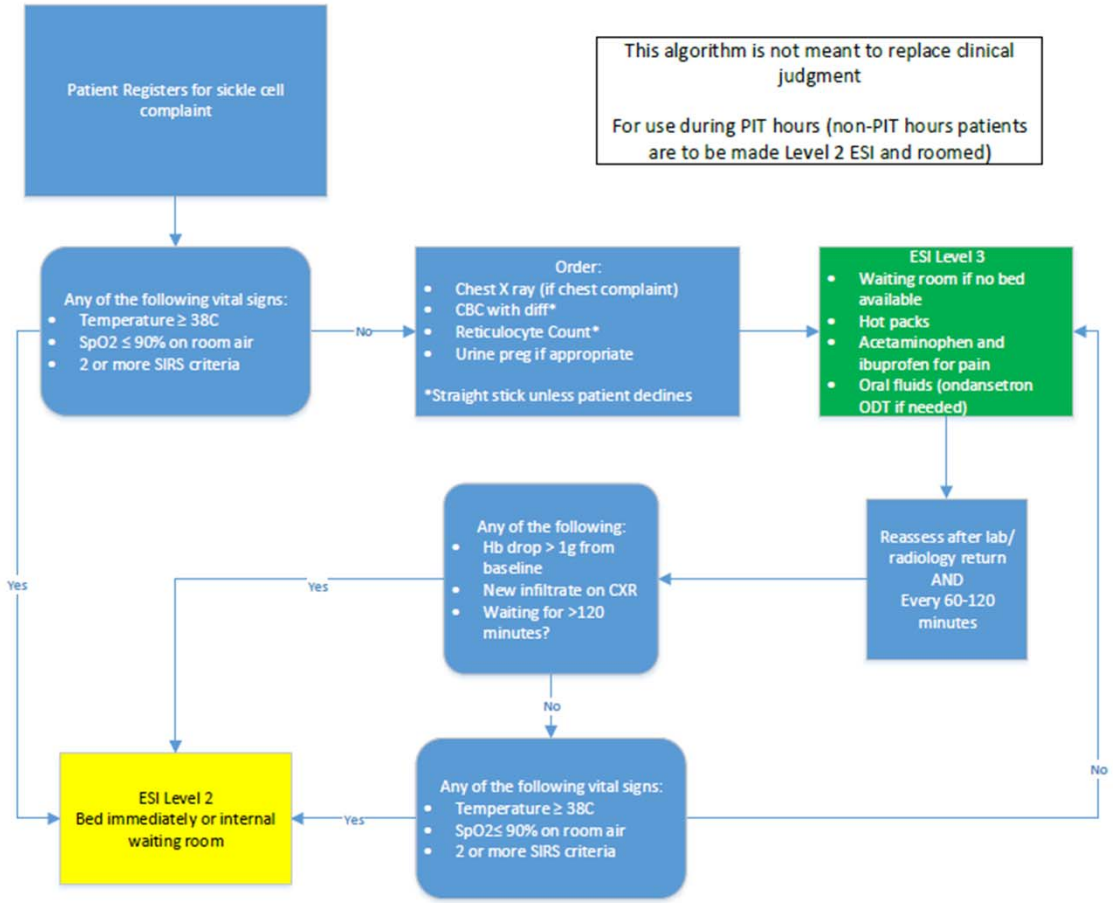
Adult SCD Power Plan (continued)

Approvals and Revisions:

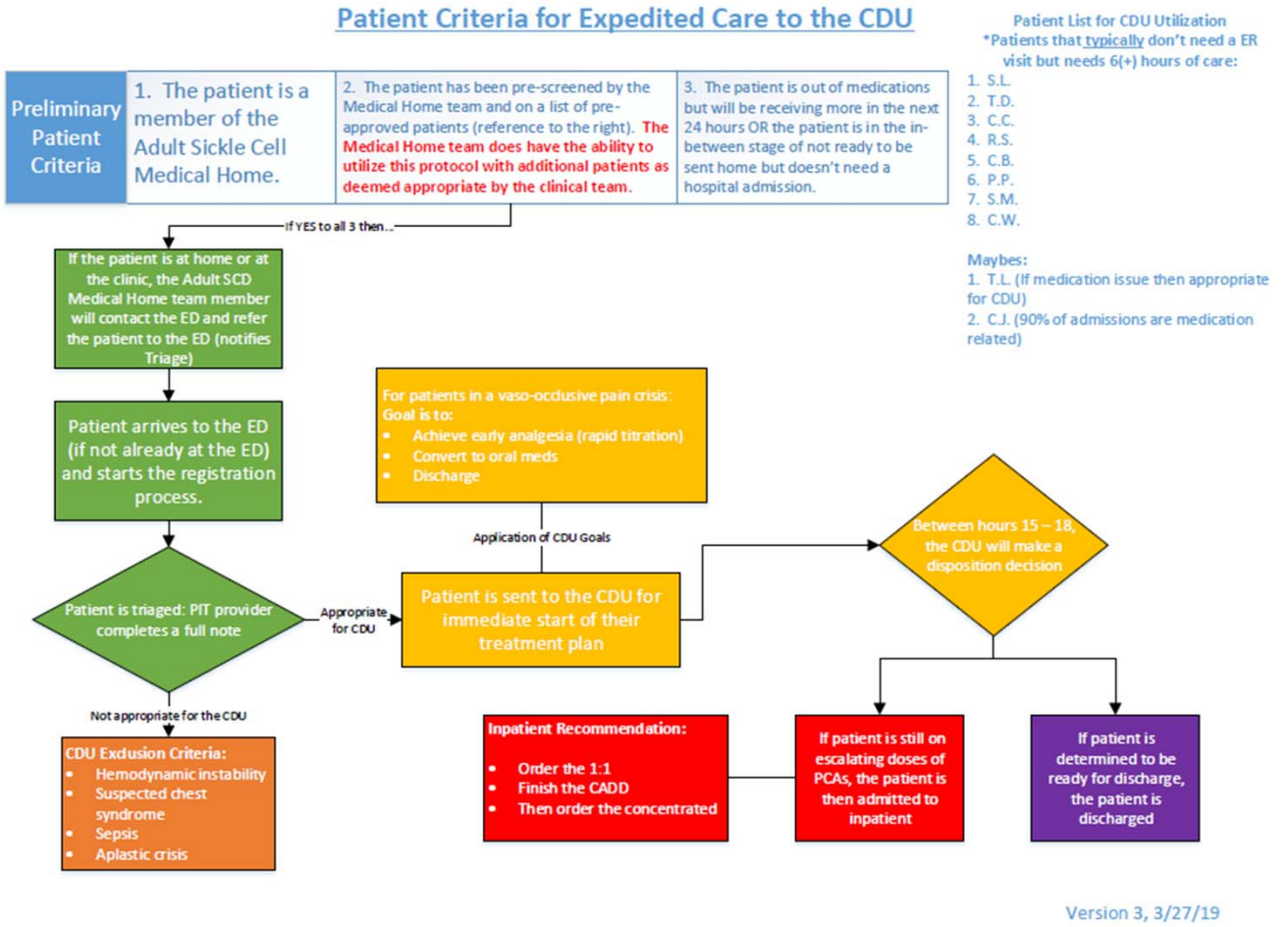
Approved:
Revised:
Periodic Review:

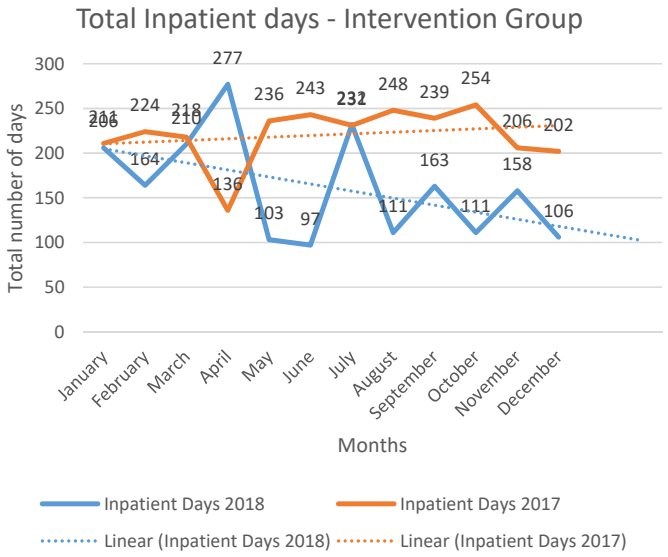
***Report Legend:**
IVS - This component is an IV Set
NOTE - This component is a note
SUB - This component is a sub phase

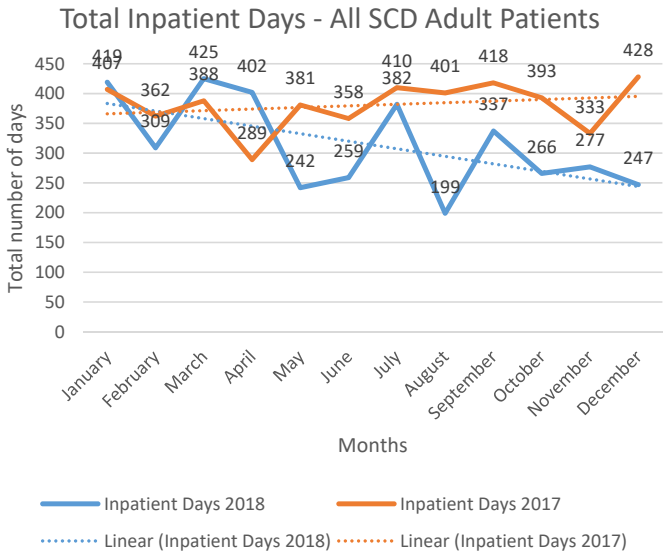
3. Refining the Triage Process

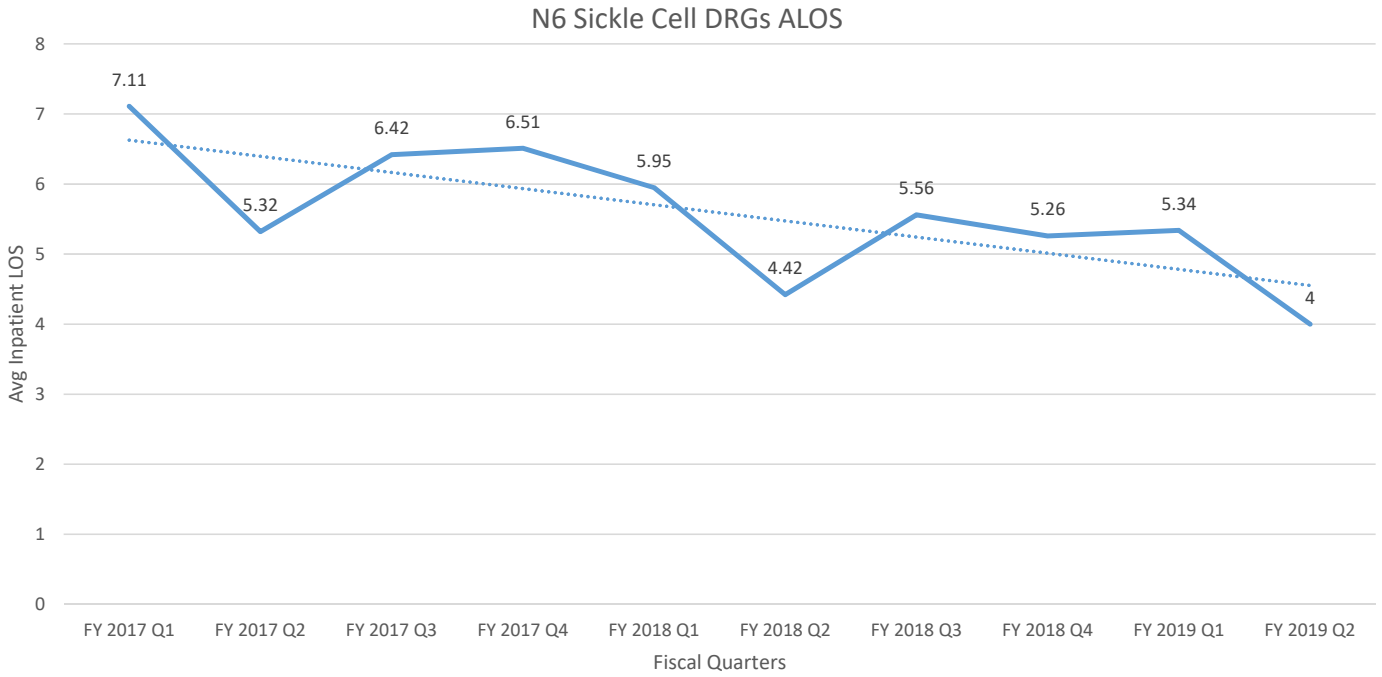


4. Utilization of the CDU (Protocol Pilot)



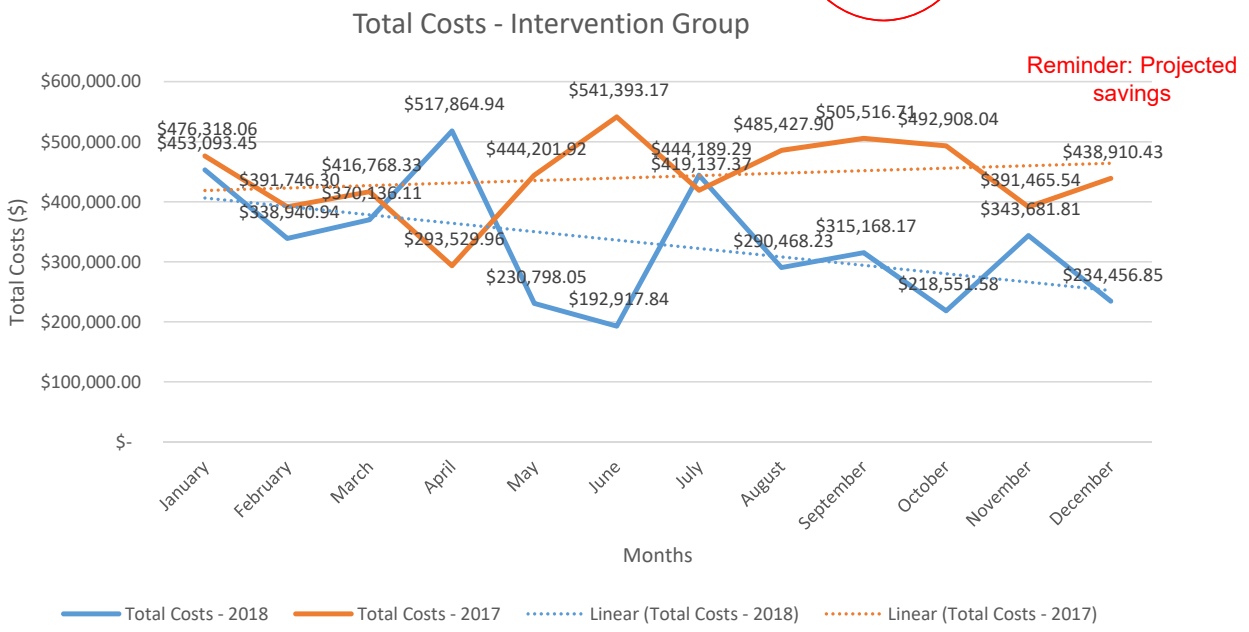

Total Inpatient days - Intervention Group
Total number of days
300
250
200
150
100
50
0
277
236
243
248
239
254
224
218
206
202
164
136
103
97
111
163
111
158
106
January
February
March
April
May
June
July
August
September
October
November
December
Months
Inpatient Days 2018
Inpatient Days 2017
Linear (Inpatient Days 2018)
Linear (Inpatient Days 2017)


Total Inpatient Days - All SCD Adult Patients
Total number of days
450
400
350
300
250
200
150
100
50
0
425
402
381
410
401
418
393
428
362
388
309
289
242
358
259
382
199
337
266
333
277
247
January
February
March
April
May
June
July
August
September
October
November
December
Months
Inpatient Days 2018
Inpatient Days 2017
Linear (Inpatient Days 2018)
Linear (Inpatient Days 2017)


N6 Sickle Cell DRGs ALOS
Avg Inpatient LOS
8
7
6
5
4
3
2
1
0
7.11
5.32
6.42
6.51
5.95
4.42
5.56
5.26
5.34
4
FY 2017 Q1
FY 2017 Q2
FY 2017 Q3
FY 2017 Q4
FY 2018 Q1
FY 2018 Q2
FY 2018 Q3
FY 2018 Q4
FY 2019 Q1
FY 2019 Q2
Fiscal Quarters

Baseline (CY 2017)	Target 6 Months	Actual 6 Months	Target (CY 2018) 12 Months	Actual 12 Months	Baseline – Actual 12 Months
$5,297,323.72	$4,767,591.35	$2,103,751.33	$4,502,725.16 (↓15%)	$3,950,267.26 (↓25.43%)	$1,347,056.47

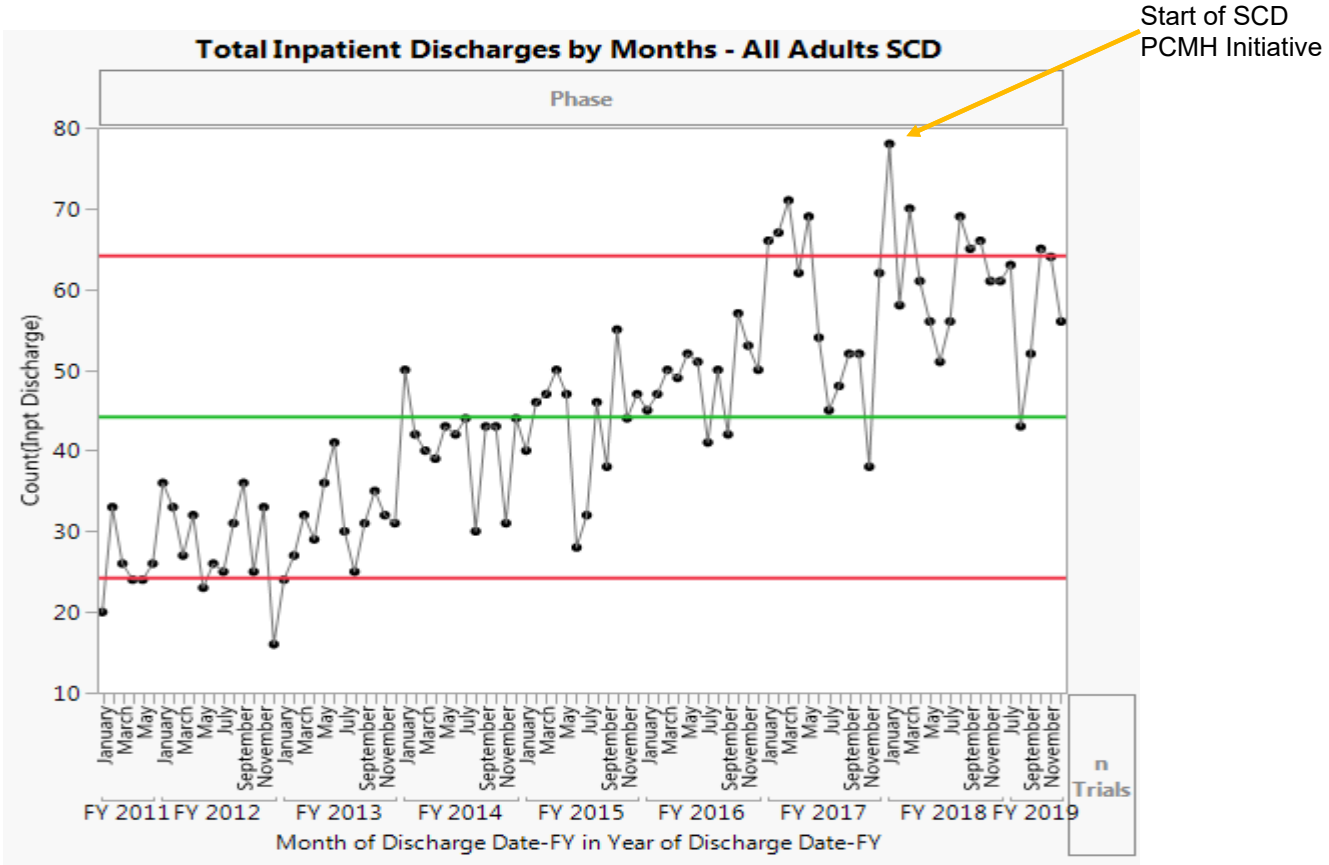
Savings
$846,614.08
$739,969.01
$1,586,583.09



*Intervention patients = 50 highest cost and highest utilization patients

Adult Sickle Cell Disease Inpatient Discharges by Months

FY January 2011 – FY November 2019



- Having specific, clinical focused/ treatment plan development meetings (smaller groups)
- Identifying complicated patients (strategic planning)
- Still planning on having monthly large team meetings in coordination with additional strategic planning in small groups
- Very important to continue to provide education, communication, and mentoring around our project priorities
  - Continual and consistent education of all incoming learners

Case Presentation #2

- 1:40- 2:00pm [25 min]
  - Presentation: (5 min)
  - Case summary: Clinical Hub Lead(5 min)
  - Clarifying questions- Spokes (participants) 4 min:
  - Clarifying questions – Hub (4 min):
  - Recommendations – Spokes (participants) 2 min:
  - Recommendations – Hub (2 min):
  - Recap Case /Recommendations- Hub (3 min):

Confidential

Sickle Cell Disease Case Presentation Form

Virginia Sickle Cell Disease ECHO: De- Identified Case Study Submission

Thank you for submitting a case study!

Some benefits to submitting and presenting are...

-You will recieve valuable feedback regarding your case from our participating experts during the ECHO clinic

-A list of suggestions provided during the ECHO clinic will be sent to you as a reference after the clinic

-Your organization will be able to utilize suggestions and improve patient care!

- You will receive $200 per case presented

- Phyiscans, APPs, social workers and any other staff working with patients can submit a case presentation.

DO NOT provide any patient specific information nor include any Protected Health Information.

Please complete the survey below.

Thank you!

Response was added on 05/07/2019 11:41am.

Case Presenter First name	Mica
Case presenter last name	Ferlis
Presenter Email:	mica.ferlis@vcuhealth.org

Save The Date
Funded Training for Staff

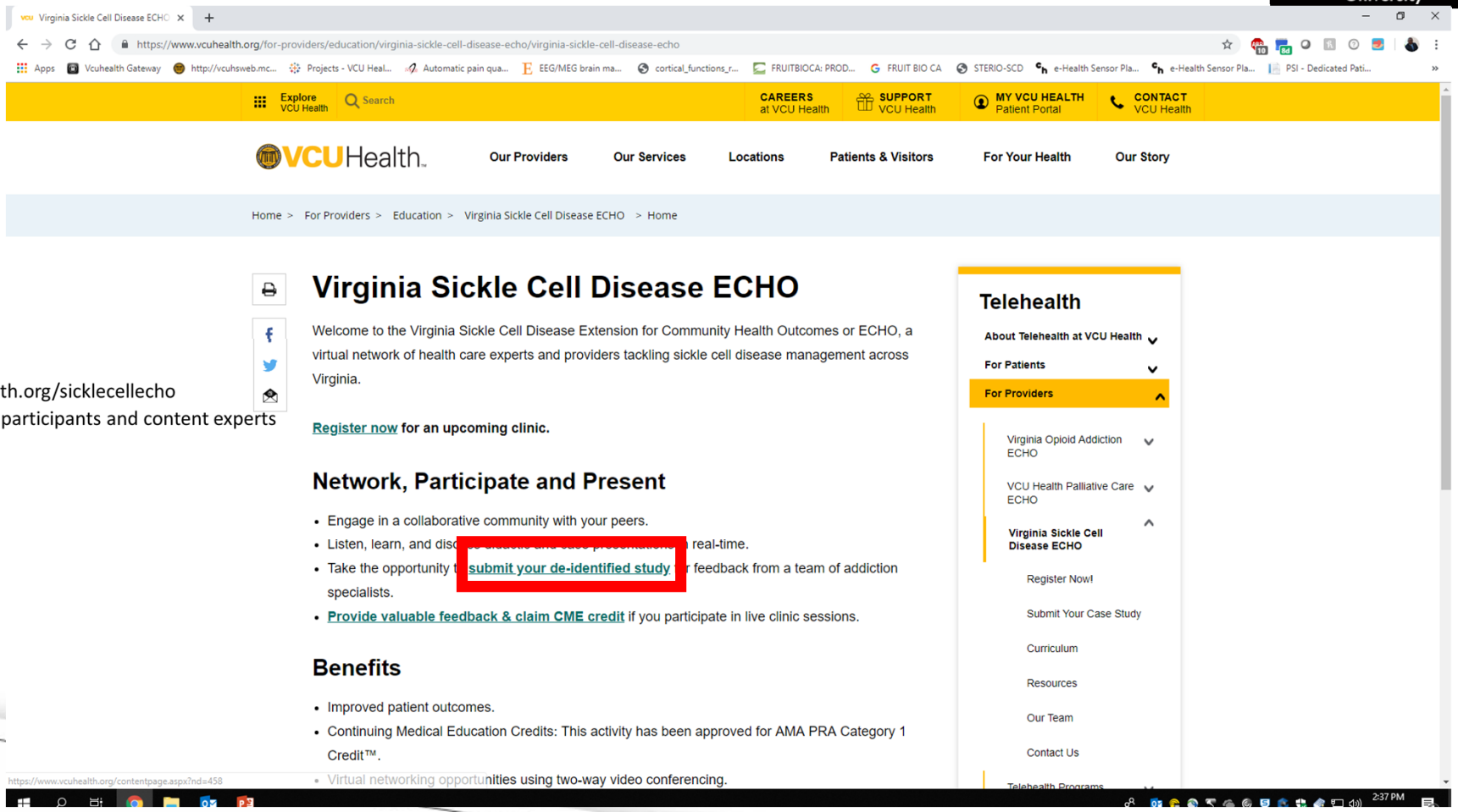
- VCU has obtained funding from GBT to host the inaugural training session for all CHW's/ Patient Navigators, Nurses, social workers and heath educators.
  - APP's and MD's are also welcomed
- Dates are *September 17-19th, 2019*
  - 75 total participants can attend this training
- Following the 3 day training, there will be an additional day on *September 20th* for a *train the trainer workshop*.
  - We can have 20 participants for this session.
  - You will need to attend from September 17th- 19th to be eligible for the September 20th event

Training Agenda and Costs

- Three day session will include evidence-based training on key concepts of the role of a health coach(CHW,PN,SW.etc) and key concepts of the role they play in improving health
  - Itinerary to follow shortly
- There is no cost to the participant to attend the training sessions
  - Breakfast and lunch will be included each training day session
  - Participants will be responsible for accommodations, travel to/from and any meals not covered by the training.
  - To have early registration opportunity, e-mail Donna.Casey@vcuhealth.org for early registration news blasts

Case Studies

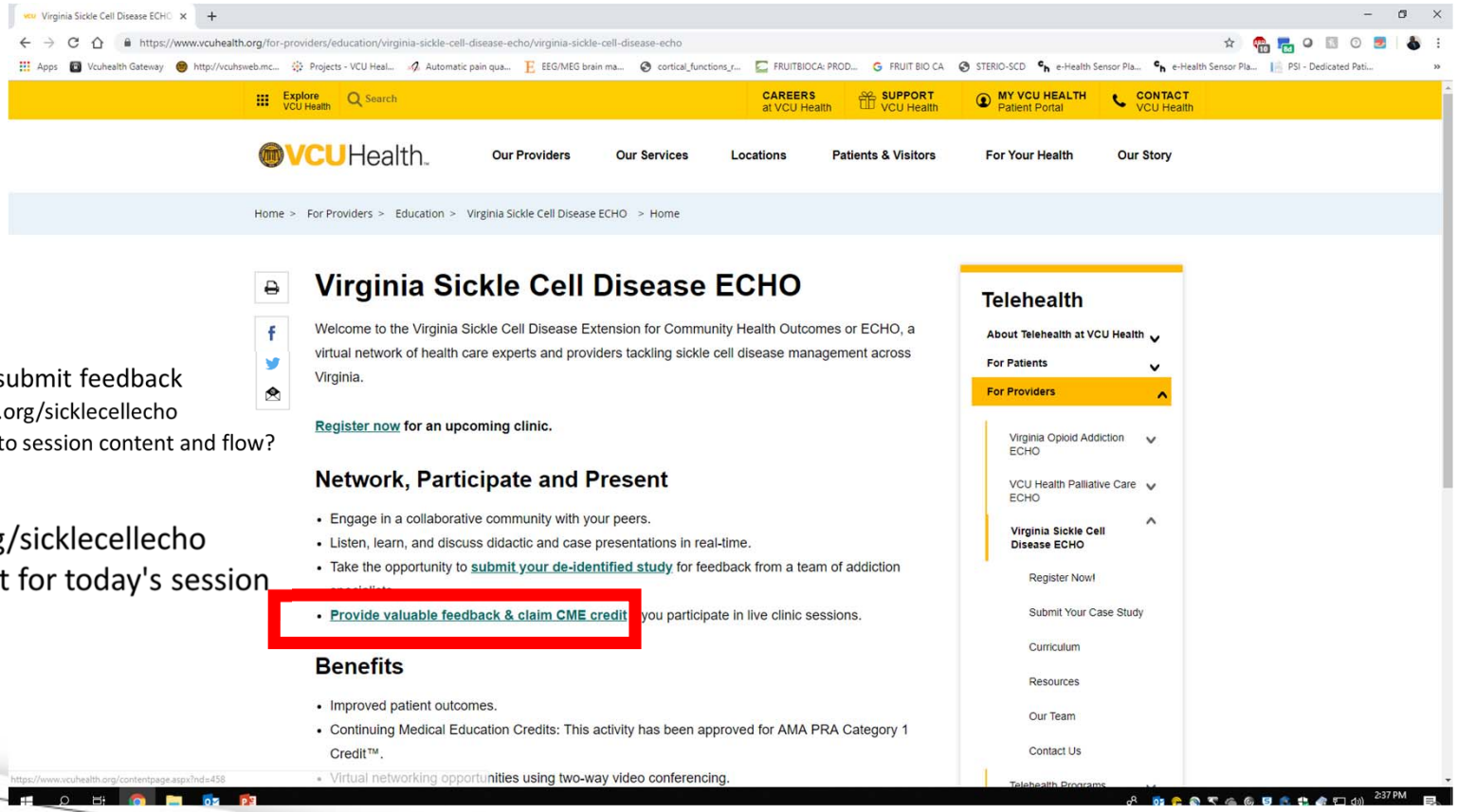
- Case studies
  - Submit: http://vcuhealth.org/sicklecellecho
  - Receive feedback from participants and content experts



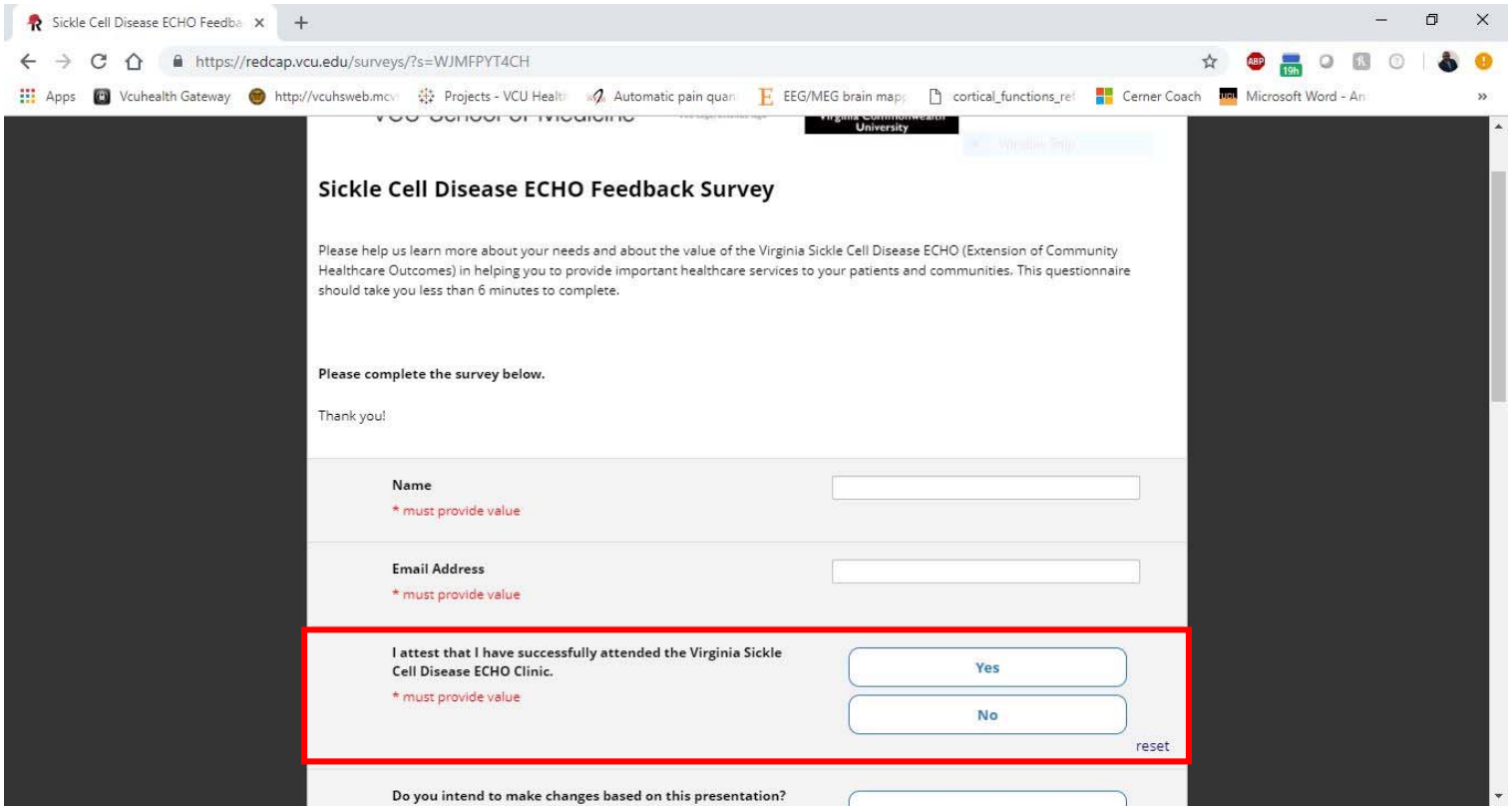
Feedback & CME's

- Opportunity to formally submit feedback
  - Survey: http://vcuhealth.org/sicklecellecho
  - Overall feedback related to session content and flow?
  - Ideas for guest speakers?

- http://vcuhealth.org/sicklecellecho
  - To claim CME credit for today's session



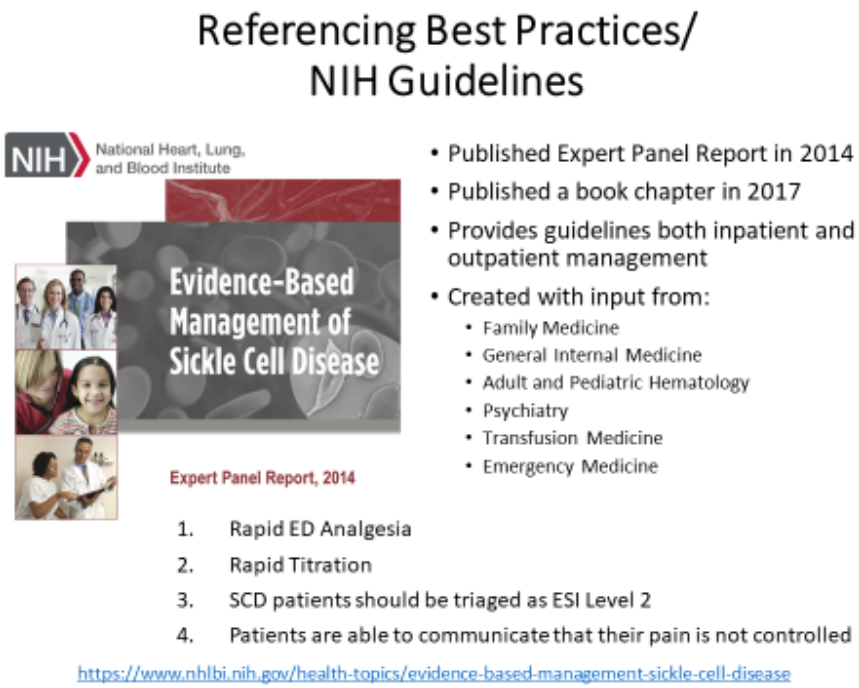
Access Your Evaluation and Claim Your CME



THANK YOU!

SCD ECHO Resources – 05 08 2019

References

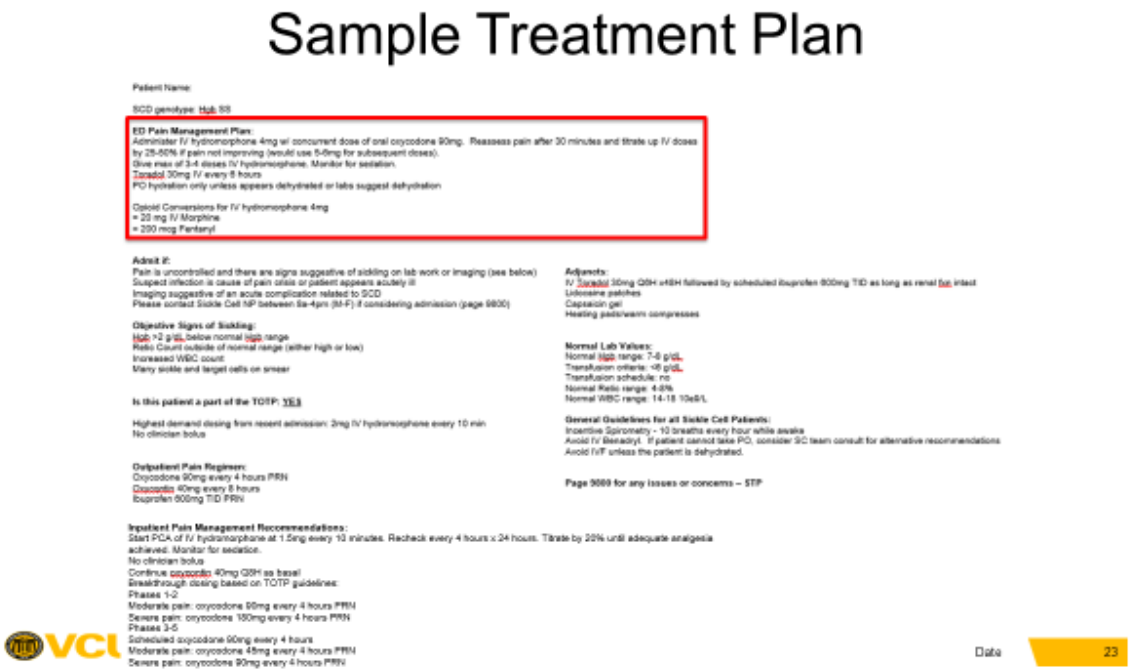


- https://www.nhlbi.nih.gov/health-topics/evidence-based-management-sickle-cell-disease

Resources

- **http://www.safetynetmedicalhome.org/resources-tools/all-resources**

- https://www.nhlbi.nih.gov/health-topics/evidence-based-management-sickle-cell-disease



Sample Treatment Plan

Patient Name:

SCD genotype: Hgb SS

ED Pain Management Plan:
Administer IV hydromorphone 4mg w/ concurrent dose of oral oxycodone 90mg. Reassess pain after 30 minutes and titrate up IV doses by 25-50% if pain not improving (would use 5-6mg for subsequent doses).
Give max of 3-4 doses IV hydromorphone. Monitor for sedation.
Toradol 30mg IV every 8 hours
PO hydration only unless appears dehydrated or labs suggest dehydration

Opioid Conversions for IV hydromorphone 4mg
= 20 mg IV Morphine
= 200 mcg Fentanyl

Admit if:
Pain is uncontrolled and there are signs suggestive of sickling on lab work or imaging (see below)
Suspect infection is cause of pain crisis or patient appears acutely ill
Imaging suggestive of an acute complication related to SCD
Please contact Sickle Cell NP between 8a-4pm (M-F) if considering admission (page 9800)

Objective Signs of Sickling:
Hgb >2 g/dL below normal Hgb range
Retic Count outside of normal range (either high or low)
Increased WBC count
Many sickle and target cells on smear

Is this patient a part of the TOTP: YES

Highest demand dosing from recent admission: 2mg IV hydromorphone every 10 min
No clinician bolus

Outpatient Pain Regimen:
Oxycodone 90mg every 4 hours PRN
Oxycontin 40mg every 8 hours
Ibuprofen 600mg TID PRN

Adjuncts:
IV Toradol 30mg Q8H x48H followed by scheduled ibuprofen 600mg TID as long as renal fxn intact
Lidocaine patches
Capsaicin gel
Heating pads/warm compresses

Normal Lab Values:
Normal Hgb range: 7-8 g/dL
Transfusion criteria: <6 g/dL
Transfusion schedule: no
Normal Retic range: 4-8%
Normal WBC range: 14-18 10e9/L

General Guidelines for all Sickle Cell Patients:
Incentive Spirometry - 10 breaths every hour while awake
Avoid IV Benadryl. If patient cannot take PO, consider SC team consult for alternative recommendations
Avoid IVF unless the patient is dehydrated.

Page 9000 for any issues or concerns – STP

Inpatient Pain Management Recommendations:
Start PCA of IV hydromorphone at 1.5mg every 10 minutes. Recheck every 4 hours x 24 hours. Titrate by 20% until adequate analgesia achieved. Monitor for sedation.
No clinician bolus
Continue oxycontin 40mg Q8H as basal
Breakthrough dosing based on TOTP guidelines:
Phases 1-2
Moderate pain: oxycodone 90mg every 4 hours PRN
Severe pain: oxycodone 150mg every 4 hours PRN
Phases 3-5
Scheduled oxycodone 90mg every 4 hours
Moderate pain: oxycodone 45mg every 4 hours PRN
Severe pain: oxycodone 90mg every 4 hours PRN

VCU

Date

23

-