Emergency Department Management of Sickle Cell Disease: Barriers and Solutions

Sickle Cell Disease: Breaking Down the Myths and Barriers
November 1, 2012

Paula Tanabe, PhD, MPH, MSN, RN, FAEN, FAAN
Associate Professor, Schools of Nursing and Medicine
Divisions of Hematology and Emergency Medicine
Duke University, Durham NC
Why Sickle Cell?

• Nurse for almost 30 years
• Nurse scientist for over 15 years
• Emergency Department Nurse
• Research program has focused on improving pain management in the emergency department
• Strong focus on improving pain management for adults with sickle cell disease
• Today…
  – Myths and Barriers
  – Solutions
Why do patients with sickle cell disease have pain?
Lifespan of Complications of SCD

Life Expectancy US Population vs. SCD

- 2006 White: 75, 80
- 2006 Black: 70, 76
- SCD 1994: 42, 48
- SCD 1997-2007: 42, 48

- Blue bars represent Males
- Red bars represent Females
Changes in Life Expectancy

• National Center for Health Statistics (CDC)
• Largest declines in ages 0-4
• Smaller but significant declines up to age 19
• No differences in the 20-24 age group
• Increase in death rate ages: 45-54, 55-65, and 65-75
Barriers to Care

Chronic Pain and the Perception of Addiction

- SCD Stigma
- Racism
- Clinician and Patient Knowledge Deficit
- Frequent Visits
Barriers to Care

Chronic Pain and the Perception of Addiction

- SCD Stigma
- Racism
- Clinician and Patient Knowledge Deficit
- Frequent Visits
Multi-site survey data of ED physicians and nurses
(Tanabe et al, in development)

QUESTION: What proportion of XXX patients do you believe are addicted to opioids or seeking opioids for recreation purposes vs. pain management?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>10%</td>
</tr>
<tr>
<td>ED patients</td>
<td>20%</td>
</tr>
<tr>
<td>SCD patients</td>
<td>50%</td>
</tr>
</tbody>
</table>
Adult Emergency Department Patients with Sickle Cell Pain Crisis: A Learning Collaborative Model to Improve Analgesic Management

Paula Tanabe, PhD, MPH, Nicole Artz, MD, D. Mark Courtney, MD, Zoran Martinovich, PhD, Kevin B. Weiss, MD, MPH, Elena Zvirbulis, MS, and John W. Hafner, MD, MPH

- Described baseline time to receive pain medicines
- Three emergency departments in Illinois
- Patients waited an average of 62-150 minutes before receiving 1st pain medicine at the sites
- Some patients waited up to 5 hours
  - Academic Emergency Medicine, 2010.
Barriers to Care

Chronic Pain and the Perception of Addiction

SCD Stigma

Racism

Clinician and Patient Knowledge Deficit

Frequent Visits
“The Impact of Race and Disease on Sickle Cell Patient Wait Times in the Emergency Department”

Haywood, Tanabe, Naik, Beal, Lanzkron. (Under review)

- National Hospital Ambulatory Medical Care Survey from 2003-2008
- Despite SCD patients experiencing higher pain and triage scores.
- SCD patients experienced wait times 25% longer than the General Patient Sample (66 vs. 53 minutes)
- SCD patients waited 50% longer than did patients with long bone fracture, even after accounting for race and assigned triage priority. (66 vs. 42 minutes)
- The African-American race of the SCD patients and their status as having SCD itself both appear to contribute to longer wait times for these patients.
- Despite…SCD patients having higher pain scores and higher triage priority scores
Video Acknowledgement

- tinyurl.com/sicklecellrespect
- Johns Hopkins University
  - Mary Catherine Beach, MD
  - Sophie Lanzkron, MD
  - Carlton Haywood, PhD
Barriers to Care

Chronic Pain and the Perception of Addiction

SCD Stigma

Racism

Clinician and Patient Knowledge Deficit

Frequent Visits
Adult Emergency Department Patients With Sickle Cell Pain Crisis: Results From a Quality Improvement Learning Collaborative Model to Improve Analgesic Management

Paula Tanabe, PhD, RN, MSN, MPH, John W. Hañer, MD, MPH, Zoran Martinovich, PhD, and Nicole Artz, MD

<table>
<thead>
<tr>
<th>Time period 2 years</th>
<th>Number of patients</th>
<th>Number of ED visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1</td>
<td>99</td>
<td>959</td>
</tr>
<tr>
<td>Site 2</td>
<td>31</td>
<td>807</td>
</tr>
<tr>
<td>Site 3</td>
<td>212</td>
<td>1169</td>
</tr>
</tbody>
</table>
Barriers to Care

Chronic Pain and the Perception of Addiction

SCD Stigma
Racism

Clinician and Patient Knowledge Deficit
Frequent Visits
Evaluation of a Train-the-Trainer Workshop on Sickle Cell Disease for ED Providers

Authors: Paula Tanabe, PhD, MPH, RN, Autumn Stevenson, BS, Laura DeCastro, MD, Linda Drawhorn, MS, RN, Sophie Lanzkron, MD, Robert E. Molokie, MD, and Nicole Artz, MD, Durham, NC, Chicago and Maywood, IL, and Baltimore, MD

- Train the trainer workshop with 55 emergency nurses, physician, and social workers
- Measured knowledge of SCD pre and post workshop
- Mean pre-test score was 13 (65% Maximum score = 20)
- Low scores on knowledge of medical complications (33-53%)
- Scores improved to 80% correct after the workshop

Barriers to Care

Chronic Pain and the Perception of Addiction

SCD Stigma

Racism

Clinician and Patient Knowledge Deficit

Frequent Visits
2007: Knowledge Translation in Emergency Medicine

Emergency Department Sickle Cell Assessment of Needs and Strengths (ED-SCANS), a Focus Group and Decision Support Tool Development Project

Paula Tanabe, PhD, MPH, CDR, Christopher Reddin, MSN, RN, CEN, Victoria L. Thornton, MD, MBA, Knox H. Todd, MD, MPH, Ted Wun, MD, and John S. Lyons, PhD

• Academic Emergency Medicine (2010)
ED-SCANS: OVERALL DECISION SUPPORT ALGORITHM
(Copyright 2012, Duke University, Paula Tanabe)

Decision 1: Triage
Decision 2: Analgesic Management

Is This Strictly a Pain Episode?
Yes → Decision 7: Referrals
No → Decision 3: Diagnostic Evaluation

Decision 4: High Risk / High User

Decision 5: Disposition
Is Patient Discharged home?
Yes → Decision 6: Analgesic Prescriptions
No → Decision 7: Referrals
Using the ED-SCANS to guide interventions to improve ED care in a multi-site study

• Funded by the Agency for Healthcare Research and Quality
• Improving outcomes:
  – in the triage process
  – in pain management
  – in identification of patients with high utilization or at high risk
  – by increasing the number of referrals for patients with medical, social, or behavioral health needs.
Core Research and QI Team Members

**QI Team**
- Laura De Castro
- Carlton Rutherford
- Ranitha Dep
- Scott Evans
- Frank DeMarco
- Jontue’ Hinant
- Susan Randolph
- Ann White
- Kraig DeLana
- Daryl Smith
- ED Pharmacist
- Others

**Research Team**
- Paula Tanabe - PI
- Caroline Freiermuth, Co-I
- Susan Silva (Co-I, Stats)
- Dori Sullivan, Co-I
- David Cline – Co-I Wake Forest
- Jess Houlihan (PC)
- Weiying Drake (RA, ED)
- Carolyn Whiting (Data analyst)
QI Team Initiatives

- Formal FMECA conducted in Oct-Nov 2011 to examine processes and assign risk levels to guide QI team
- Revised PCA flowsheet, implemented June 1
- Efforts to improve use of the sub-cutaneous analgesic protocol in the waiting room
- Working with Carlton Rutherford and his team to develop mechanisms to identify patients with psychosocial needs and make referrals
- Working with this team to develop individualized protocols for high utilizers
- Improve the use of the CEU to avoid admissions
- Education (Nov 1 workshop and SCD Champion Program)
- Others
Methods

• QI team meets monthly to report on initiatives
• Research: patient interviews and MRR quarterly (n=10/site/quarter)
• Analgesic efficiency measures
• 10 interviews for satisfaction with patients
• Clinician attitude survey - yearly
• Utilization data for ED visits, hospitalizations, CEU admits and Day hospitalizations)
Abnormal vital signs:
- T>100.5F (38C), RR>22,
- SaO2<93%, HR<50 or >100

Chief complaints:
- shortness of breath
- atypical pain (new location or generalized pain)
- neurological headache
- confusion
- neurological deficits
- seizures
- chest or abdominal pain
- priapism
- pregnancy

ED-SCANS DECISION 1
RN: Triage or Initial Nursing Assessment
(Copyright 2012, Duke University, Paula Tanabe)

Are vital signs abnormal?
High-risk chief complaint identified?
Clinical impression of a high-risk patient?

No

Pain ≥ 7

No

Assign lower priority level
Facilitate placement when possible

Yes

Assign very high triage priority level
Facilitate rapid placement
Notify physician
Begin analgesic management
Facilitate diagnostic evaluation as ordered

No

Facilitate rapid placement
Notify physician
Begin analgesic management
Facilitate diagnostic evaluation as ordered

Assign high triage priority level
Facilitate rapid placement
Facilitate analgesic management
Waiting Room Analgesia

• Improving the use of an order set
• Administer sub-cutaneous opioids in the waiting room when delays are long
• Working to identify other solutions to more immediate bed placement
Does the patient have an individualized ED analgesic management plan?

No

Does the ED have an SCD analgesic protocol based on rapid redosing?

No

Yes

Initiate individualized analgesic plan

Initiate departmental analgesic plan

• Administer initial doses as IVP, or SQ if IV access is unavailable; avoid lower extremities for IV placement.
• Adults < 50 kg: morphine 0.15 mg/kg or hydromorphone 0.02 mg/kg are preferred agents and starting doses.
• Adults ≥ 50 kg: MS 5-10 mg, hydromorphone 1.5 mg.
• Consider PCA, especially in the context of observation or short-stay admission. Consider basal infusion if patient takes chronic daily opioids.
• Re-assess and re-administer analgesics q15 minutes, consider dose escalation.
• Titrate to pain and sedation.
• Develop individual and ED SCD analgesic protocols.
• Develop individual plans based upon doses required to achieve good management.
Revision of PCA Standing Orders

- Patient specific or weight based
- Allows RN to administer initial dose
- Begin PCA and continuous
- Re-administer up to 3 boluses (q 30 minutes)
- Increase the PCA continuous and PCA dose if pain remains > 5
- Changes implemented June 2012
- WF: implementing standing opioid protocol
PCA Analgesic Protocol – Initial settings

• Loading dose (record on flowsheet as bolus)
• PCA dose
• PCA continuous infusion rate
• **Rescue doses** – administer every 20 minutes x 3 (record on flowsheet as bolus) (previously every 10 minutes, never done)
Adjusted Settings

• If pain is still $>5$ after loading and $3$ RN administered rescue doses,
• **Increase** the PCA dose
• **Increase** the continuous infusion rate
• Notify the physician
**MEDICATION ORDERS: USE INDIVIDUALIZED ANALGESIC PLAN WHEN AVAILABLE.** For painful episodes to be controlled in < 24 hours with PCA therapy, DO NOT DISCONTINUE LONG-ACTING OPIOID THERAPY including oral or patch route medications.

<table>
<thead>
<tr>
<th>INITIAL SETTINGS</th>
<th>Loading dose X 1 IVP (SC if IV access unavailable)</th>
<th>PCA dose</th>
<th>Lockout Interval</th>
<th>Continuous rate</th>
<th>Rescue doses (Titrate to patient desired pain score and RASS score 0 to -2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine HG 5 mg/ml (Contraindicated with ESRD)</td>
<td>____ mg Or (0.1 mg/kg LBW)</td>
<td>____ mg Or (0.02 mg/kg LBW)</td>
<td>8 minutes</td>
<td>____ mg / hr</td>
<td>____ mg every 20 minutes up to 3 doses within 90 minutes of starting PCA</td>
</tr>
<tr>
<td>Fentanyl HG 50 mcg/ml</td>
<td>____ mcg Or (1 mcg/kg LBW)</td>
<td>____ mcg Or (0.2 mcg/kg LBW)</td>
<td></td>
<td>____ mcg / hr</td>
<td>____ mcg every 20 minutes up to 3 doses within 90 minutes of starting PCA</td>
</tr>
<tr>
<td>Hydromorphone HG 1 mg/ml</td>
<td>____ mg Or (0.02 mg/kg LBW)</td>
<td>____ mg Or (0.004 mg/kg LBW)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADJUSTED SETTINGS</th>
<th>(Increase PCA DOSE if pain &gt; 5 after 3 rescue doses AND RASS Score = +4 to +1 AND NOTIFY Provider of need to increase)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Morphine HG 1.25 mg (1.25 X PCA dose) Fentanyl HG 1.25 mcg (1.25 X PCA dose) Hydromorphone HG 1.25 mg (1.25 X PCA dose)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTINUOUS INFUSION RATE</th>
<th>Increase continuous rate by 10% to 25% to ____ mg/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Monitoring</td>
<td>Assess and record pain score (0-10), respiratory rate and RASS score (+4 to -5) after each dose administered in the initial phase of pain management. After initial phase of pain management, assess and record pain score, respiratory rate, RASS score, and total opioid used at least every 2 hours for 24 hours on PCA flowsheet.</td>
</tr>
</tbody>
</table>

**CONTINUOUS PULSE OXIMETRY**

Notify responsible physician for inadequate analgesia (pain score > 5) or RASS score of -3 to -5. See back for scoring details.
ED-SCANS DECISION 4
RN/MD: High Risk of Severe Disease or High User
(Copyright 2012, Duke University, Paula Tanabe)

HIGH RISK:
No PCP
>3 painful episodes/year
>3 ED visits or hospitalizations/year
Difficulty getting appointments with PCP
Pregnant

No
No further action required

Yes

Establish ED / hospital QI team to work on challenges to provider follow-up access
Refer all patients for follow-up appointment with physician
Work with ED / hospital QI team to develop an individualized analgesic and management plan
Consider referral to case management and/or ethics consultation
Refer pregnant patients to high risk obstetrician
Identification of Health Service Needs

- Working with SCD program (Carlton Rutherford) and ED Social Work team to identify high risk, or patients with unmet social or behavioral health needs
- Soon to pilot consult by SW for each SCD patient visit
- WF: developing individual care plans for patients
ED-SCANS DECISION 7
MD/RN: Referrals
(Patients discharged home from ED only)
Copyright 2012, Duke University, Paula Tanabe

PCP or SCD Expert

1. Does the patient have an SCD expert physician for referral?
   - Yes: Refer for follow-up with PCP within 3-4 days of ED visit
   - No: Does the hospital have a physician for referral for SCD patients?
     - Yes: Refer for follow-up with physician identified by hospital within 3-4 days of ED visit
     - No: Work with hospital to identify referral physician for SCD patients

Psychosocial Services

2. Did the patient report anxiety, depression, illicit drug use, or other complicating psychiatric conditions?
   - Yes: Refer to psychiatric services. If currently treated, encourage care coordination.
   - No: Did the patient report any of the following: lack of health insurance, unstable living or residential situation (family; gangs; lack of heat, electricity or water; homeless), lack of social support, unemployed, not in school, or other complicating factors?
     - Yes: Refer to social services
     - No: No referral required
Sickle Cell Disease Workshop: 
Breaking Down Myths and Barriers

Target Audience: All Duke University Health System healthcare providers (Nurses, Social Workers, Therapists, Pharmacists, Physician Assistants, Physicians, and others) and students (Duke University School of Nursing and Duke University School of Medicine) interested in learning more about working effectively with Sickle Cell Disease (SCD) and patients and families affected by SCD.

Purpose: This conference is designed to dispel myths and provide knowledge about the common medical and psychosocial complications associated with SCD, while providing healthcare providers with an opportunity to discuss life and healthcare experiences with those actually living with SCD.

Topics include:
- Epidemiology, Genetics, & Pathophysiology
- Pediatric Complications & Treatment
- Adult Complications & Treatment
- Pain Syndromes & Pharmacology
- CHHS & Research (NHHS)
- Emergency Department
- Social Behavior & Health Needs
- State and Local Resources
- Client and Panel Advocacy

Presented by:
- Wendell Ross, MD
- Courtney Thorburn, MD, MS
- Laura De Castro, MD
- Virginia Thornton, MD, MBA
- Edward Donnell Ivy, MD, MPH
- Paula Tanabe, PhD, MPH, RN
- Carlton Rutherford, MD, MSW, LSW
- Elaine Whitworth, MSW, NPA
- Craigie Sanders, MPA, ACF, Esq.

Date
Thursday, November 1, 2012

Sign In:
7:30 am — 8:00 am
Workshop:
8:00 AM — 4:15 PM

Location
Duke University School of Nursing
307 Trent Drive
Pearson Building Auditorium 1014
Durham, NC 27710

Parking
If you are a Duke employee and not work on Duke Campus, please park in your assigned parking space and walk or take campus transportation to Duke School of Nursing. If you do not work on Duke Campus and do not have assigned parking, parking for the conference will be available for the day for $6.00 in the parking garage on Trent Drive, across from the Duke School of Nursing.

REGISTER TODAY through Duke Office of Continuing Medical Education 
(Use the CME Tracker link below)
http://coctracker.net/duke/login?formName=RegLogicLive&EventId=46573

PLEASE NOTE: No charge for this workshop. Seating is limited. Registration will close when seating capacity is reached. The auditorium may be cool, so please dress accordingly and bring a wrap or jacket for your comfort.

Sponsored by
The Duke University School of Medicine, the Duke University School of Nursing, and Duke University Health System Clinical Education & Professional Development.

ACME Credit Designation
This activity has been approved for AMA PRA Category 1 credit™

JACET CEU Credit Designation
Duke University Health System Clinical Education & Professional Development is authorized by JACET to award 0.7 CEUs to participants who meet all criteria for successful completion of authorized educational activities. Successful completion is defined as but may not be limited to 100% attendance, full participation and satisfactory completion of all related activities, and completion and return of evaluation at conclusion of the educational activity. Partial credit is not awarded.
Education

• Wake Forest: approved mandatory web-based modules for all ED nurses
• Wake Forest: providing individual physician and nurse feedback when there is a delay to analgesic administration
• Duke:
  – Resident/faculty education April 2012
  – Nov 15-17 role modeling sessions with RN’s
  – Roving inservices in November (Ann White, MS students)