Emergency Department Management of Sickle Cell Disease: Barriers and Solutions

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

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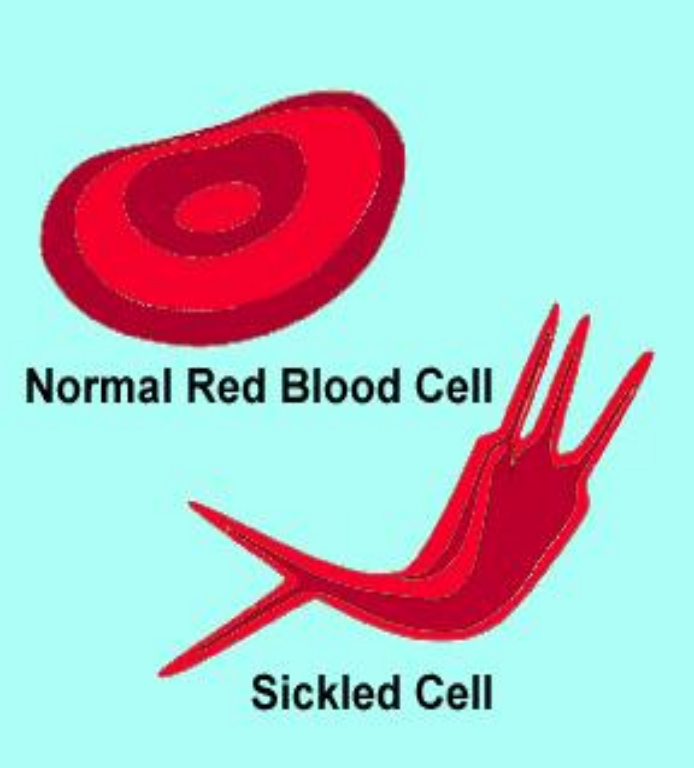
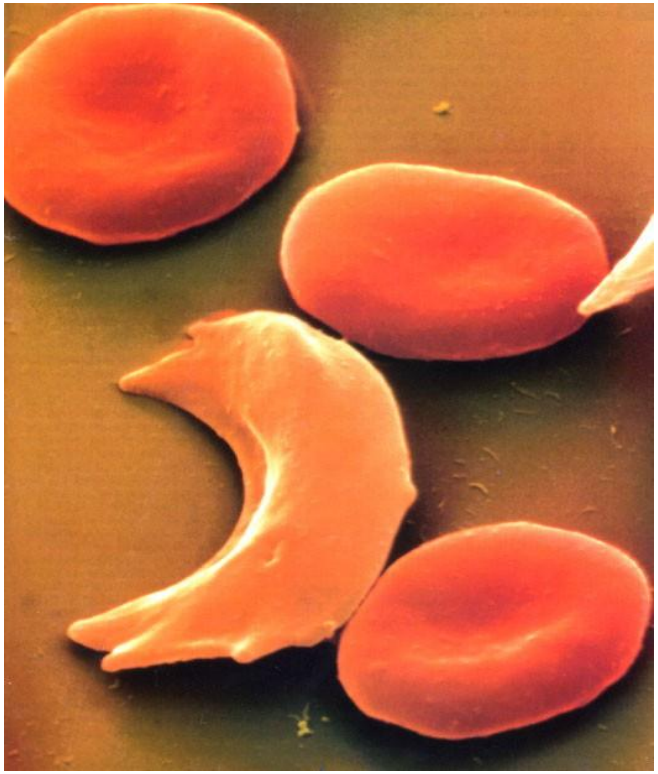
Divisions of Hematology and Emergency Medicine
Duke University, Durham NC

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

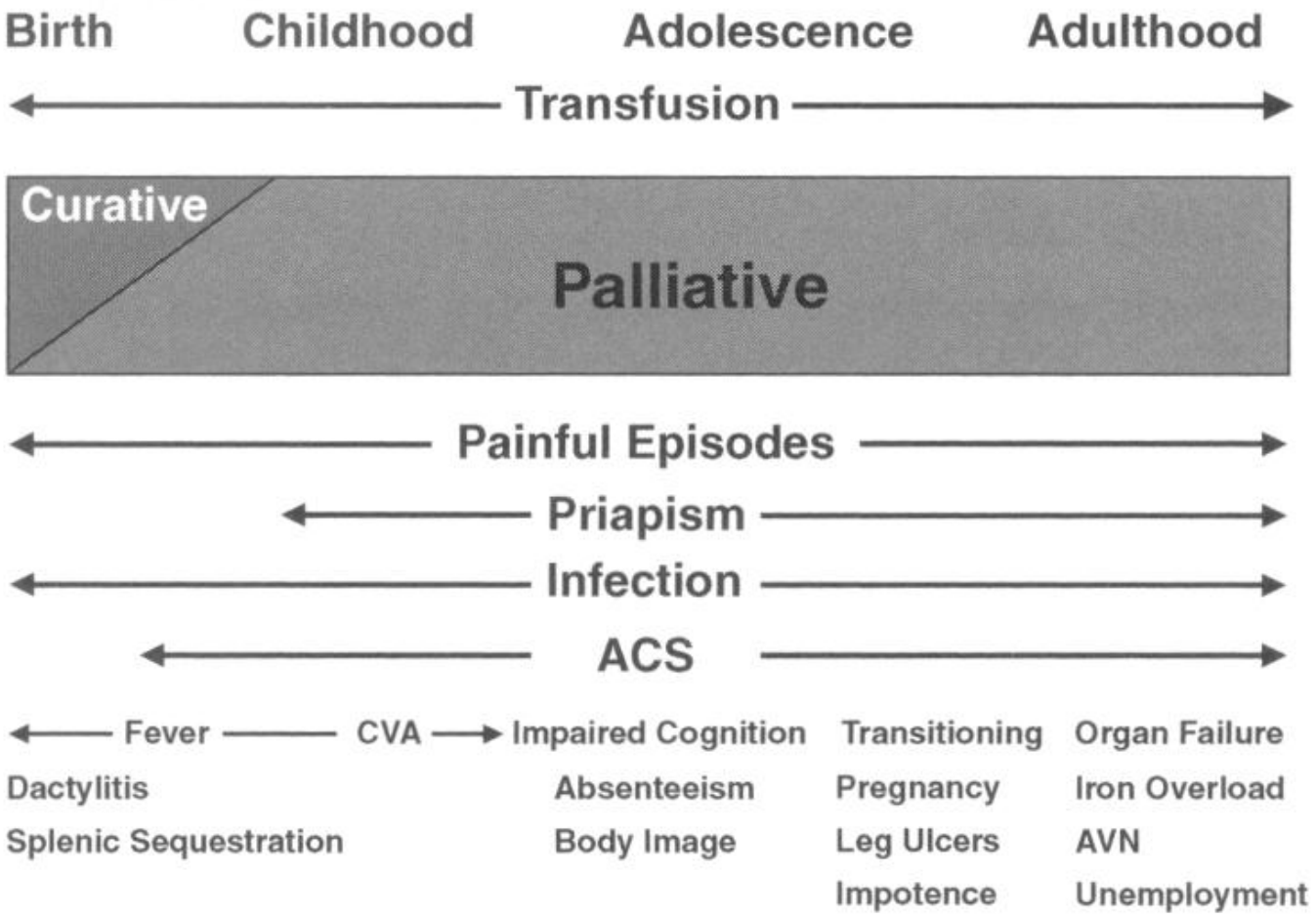
Why do patients with sickle cell disease have pain?





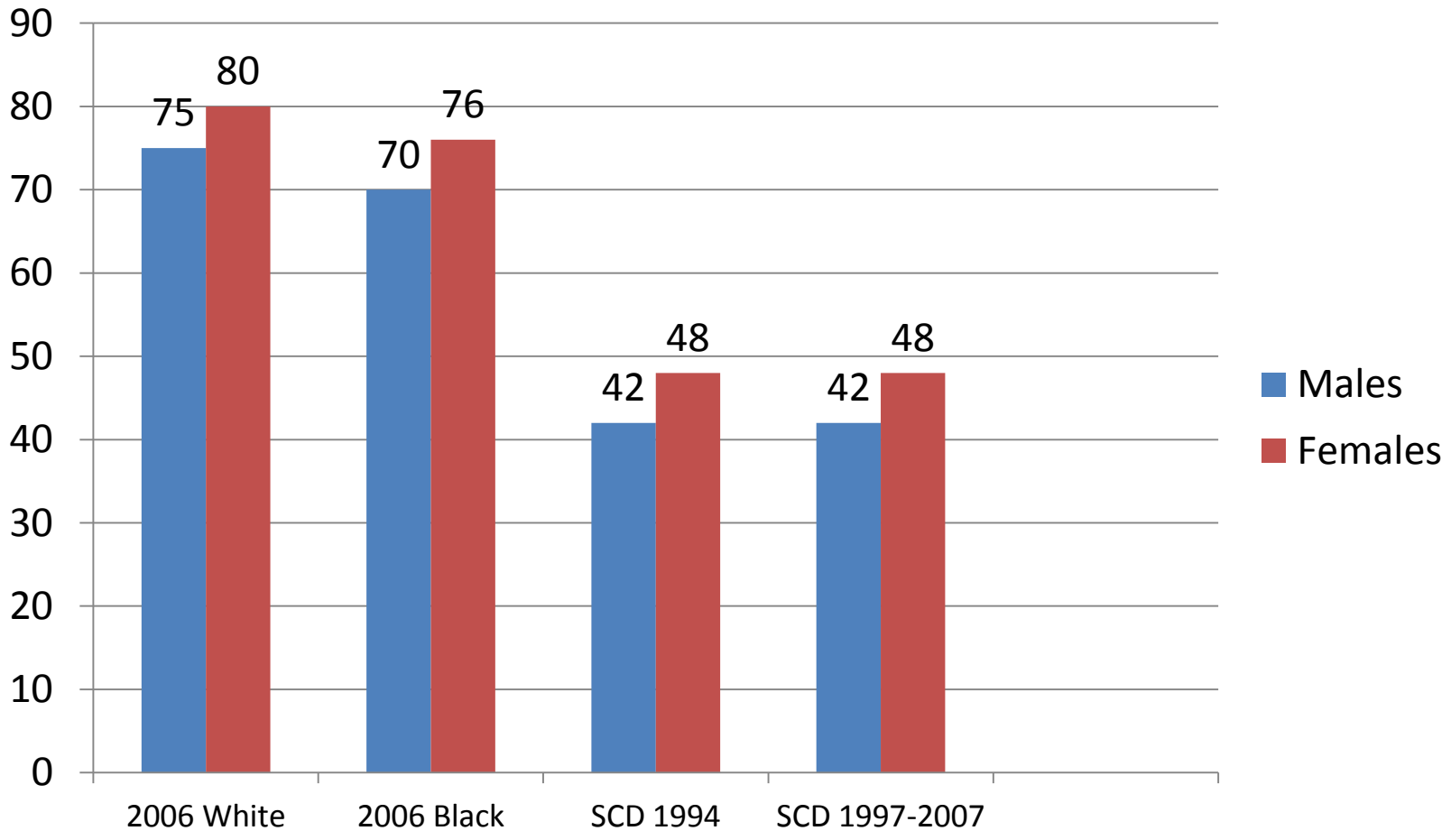

Hz. NAZAIR

Lifespan of Complications of SCD



Ballas: Heme/Onc Clinics of N. America, Volume 19(5). October 2005. 785-802

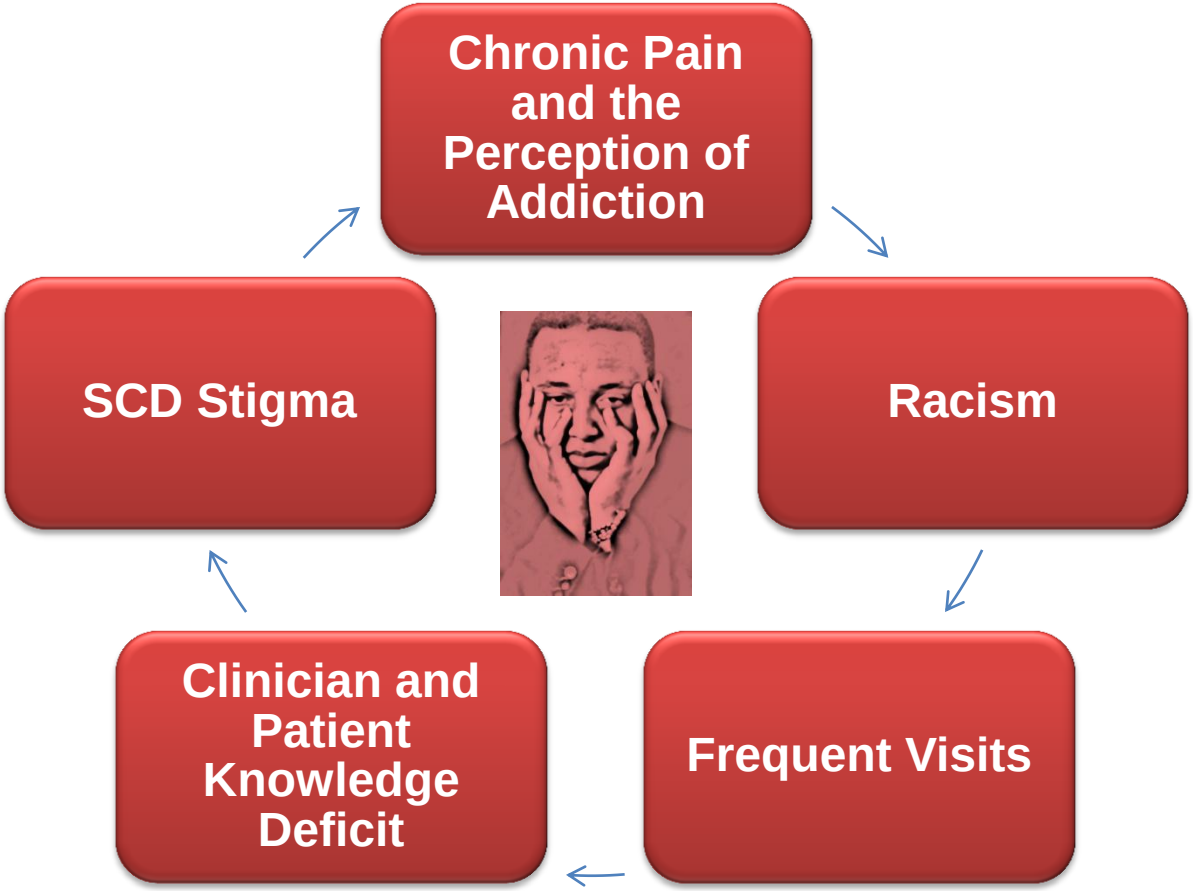
Life Expectancy US Population vs. SCD



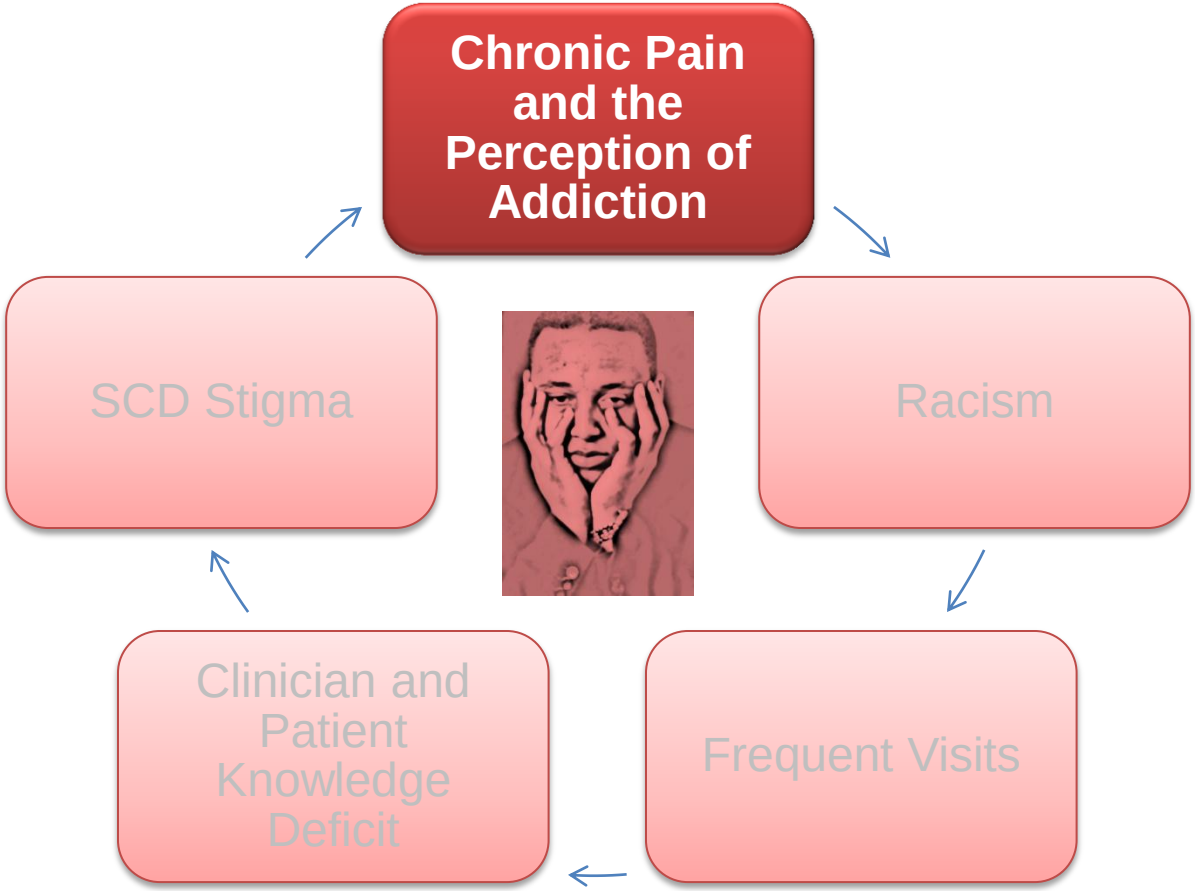
Changes in Life Expectancy

- National Center for Health Statistics (CDC)
- Compared 1999-2007 with 1979-1998
- 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



Barriers to Care



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?

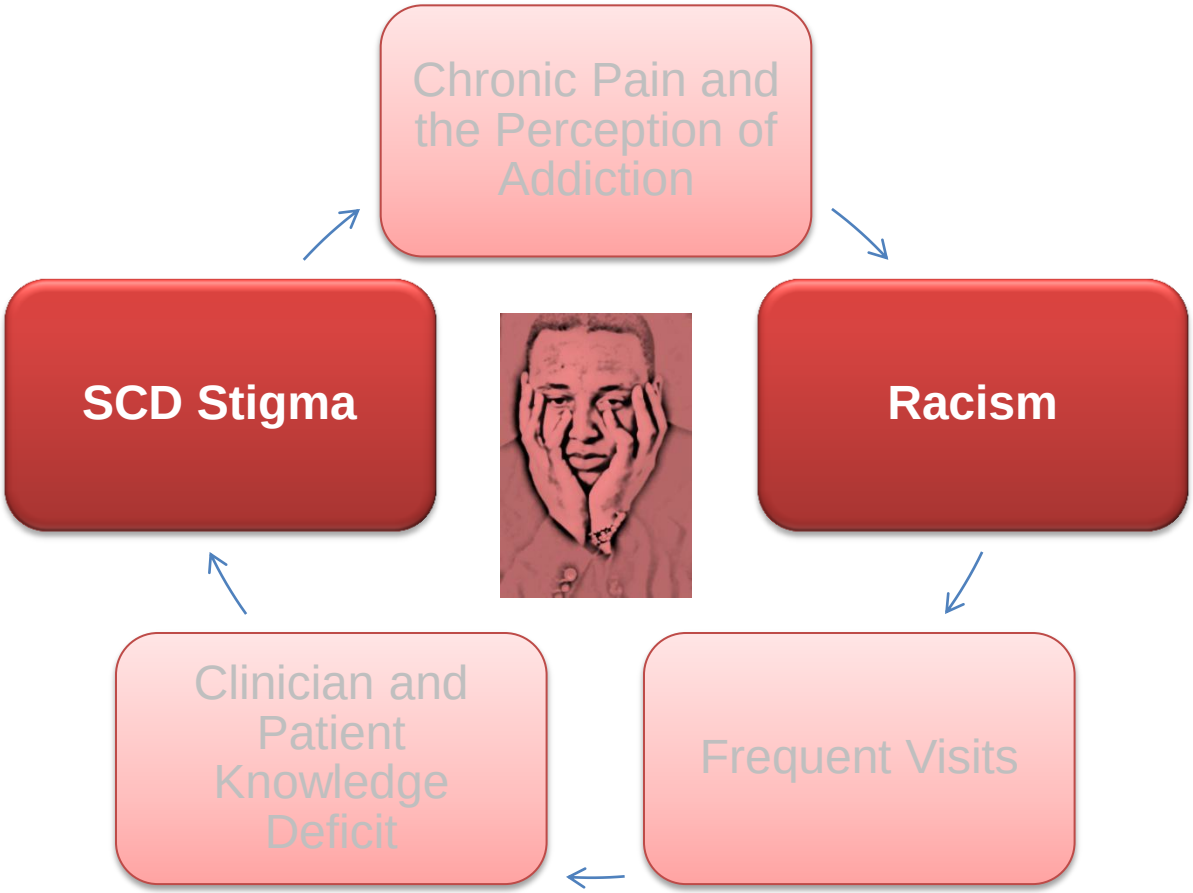
General population	10%
ED patients	20%
SCD patients	50%

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



"The Impact of Race and Disease on Sickle Cell Patient Wait Times in the Emergency Department"

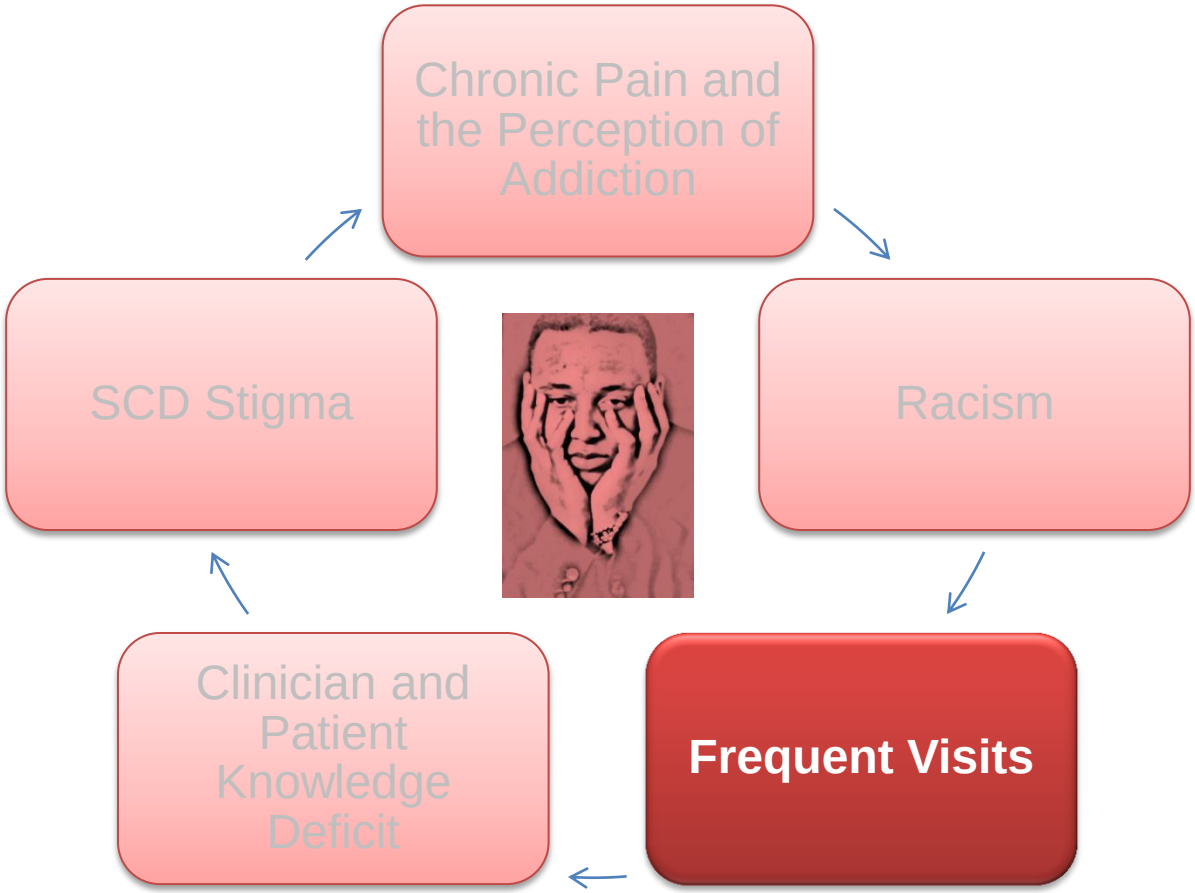
Haywood, Tanabe, Naik, Beal, Lanzkron. (Under review)

- 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



Academic Emergency Medicine
Official Journal of the Society for Academic Emergency Medicine

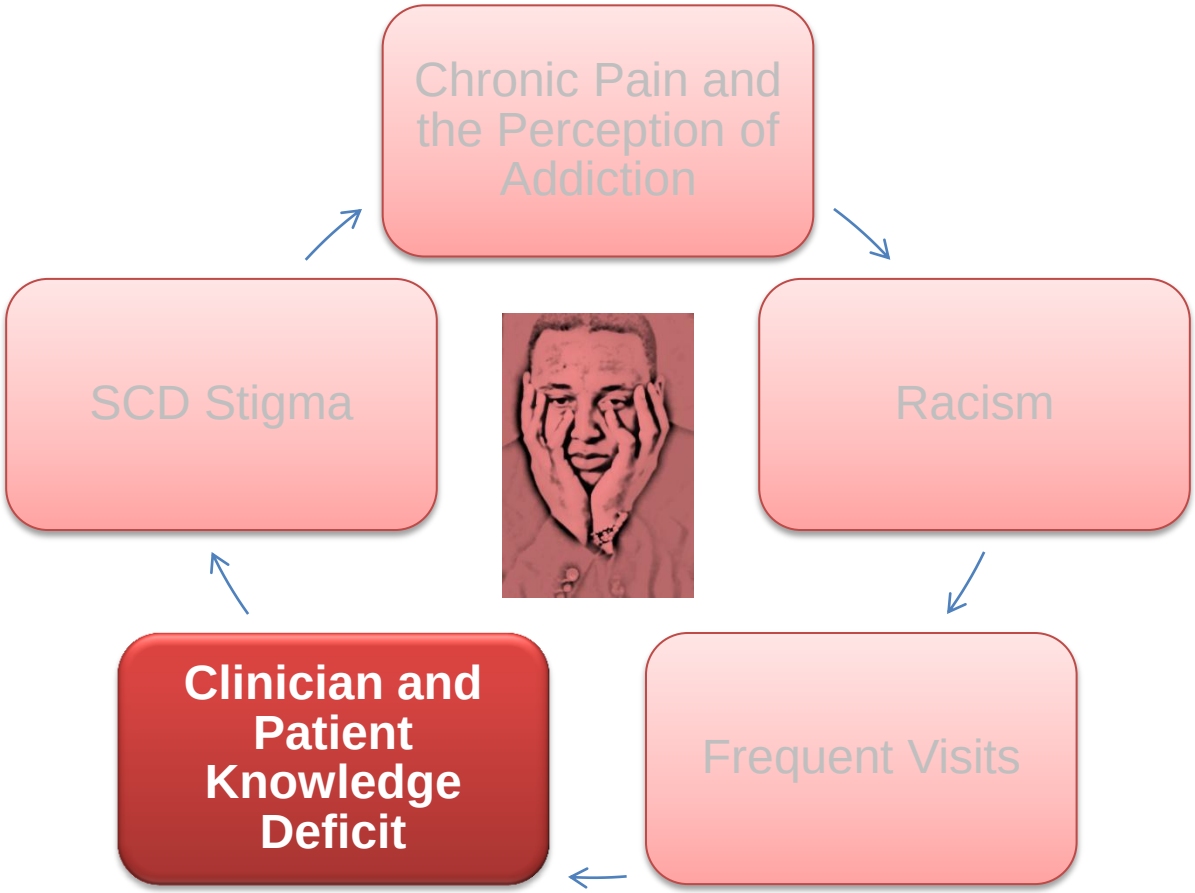
ORIGINAL RESEARCH CONTRIBUTION

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. Hafner, MD, MPH, Zoran Martinovich, PhD, and Nicole Artz, MD

Time period 2 years	Number of patients	Number of ED visits
Site 1	99	959
Site 2	31	807
Site 3	212	1169

Barriers to Care

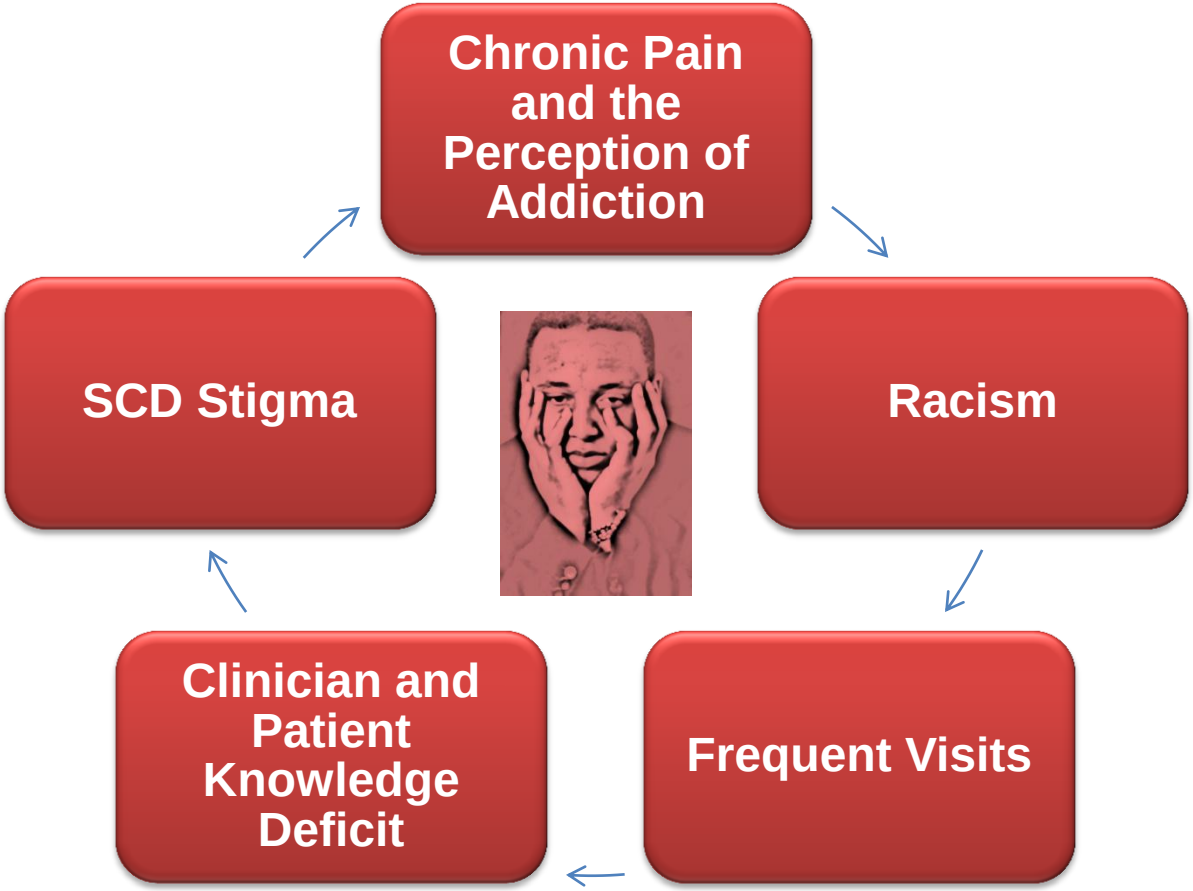


Evaluation of a Train-the-Trainer Workshop on Sickle Cell Disease for ED Providers

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
- 2011, Journal of Emergency Nursing. PMID: 21937097.

Barriers to Care



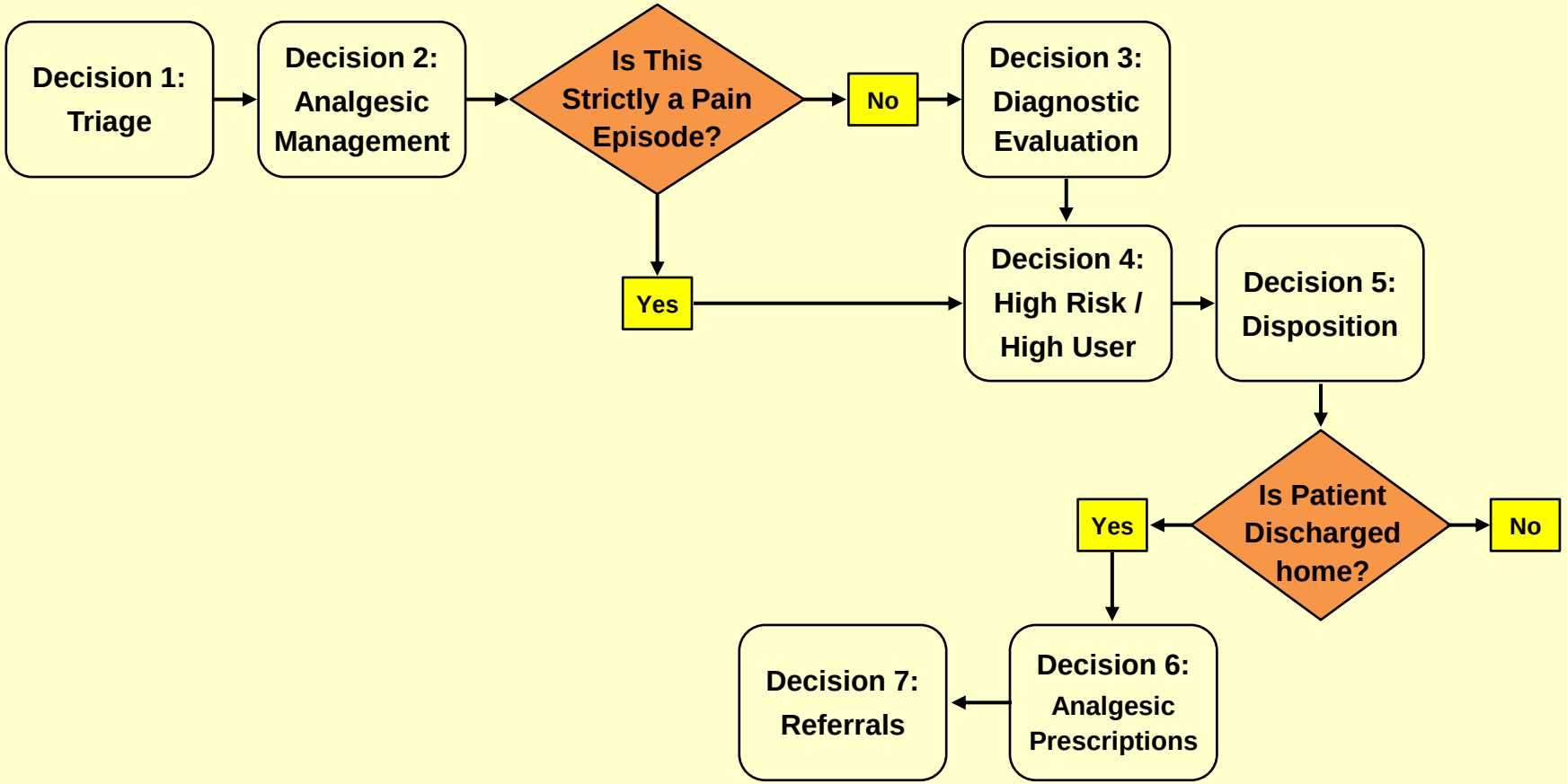
2007: Knowledge Translation in Emergency Medicine

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



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

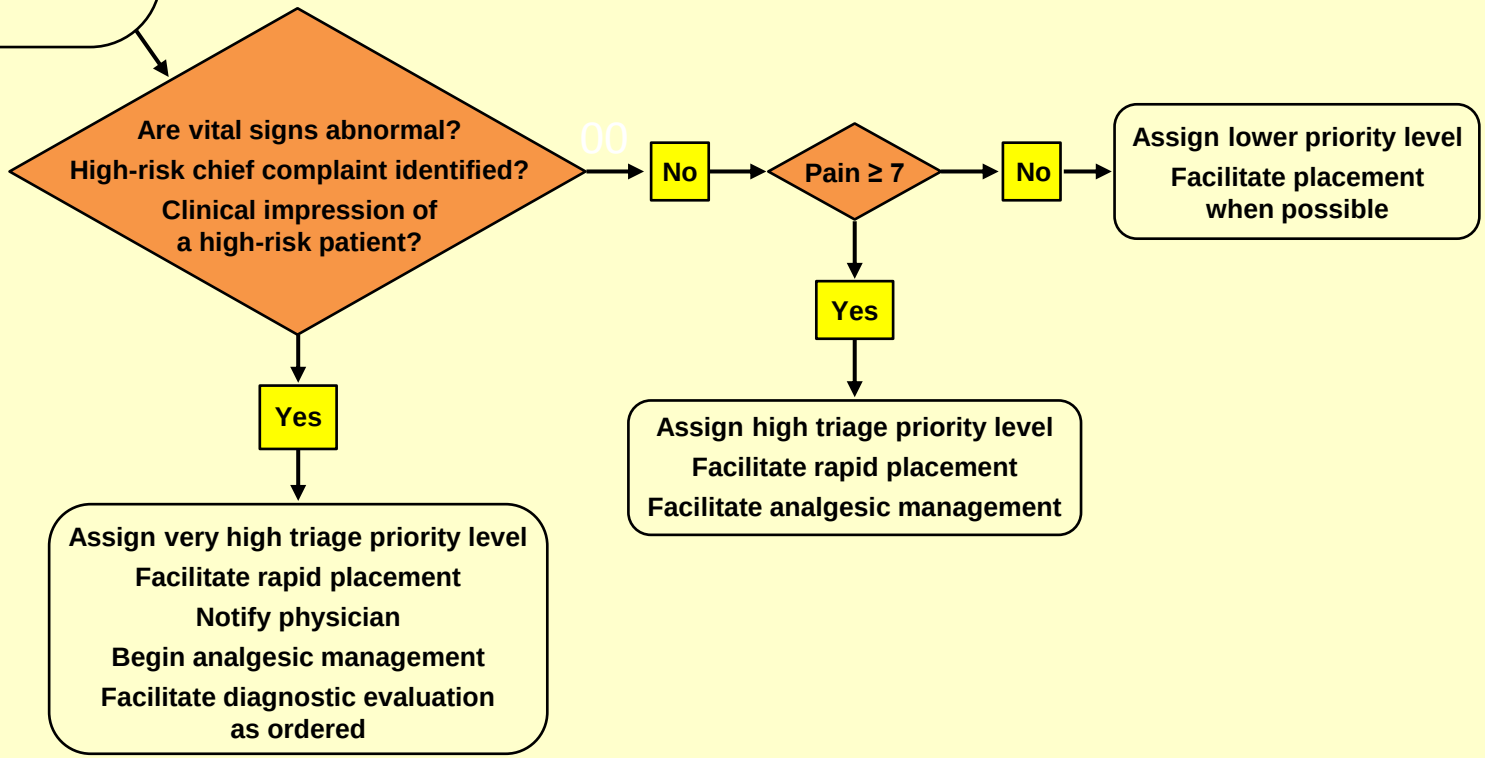
- QI team meets monthly to report on initiatives
- Research: patient interviews and MRR quarterly (n=10/site/quarter)
- Analgesic efficiency measures
- 10 interviews for satisfaction with patients
- Clinician attitude survey - yearly
- Utilization data for ED visits, hospitalizations, CEU admits and Day hospitalizations)

ED-SCANS DECISION 1
RN: Triage or Initial Nursing Assessment

Abnormal vital signs:
T>100.5F (38C), RR>22, SaO2<93%, HR<50 or >100

Chief complaints:

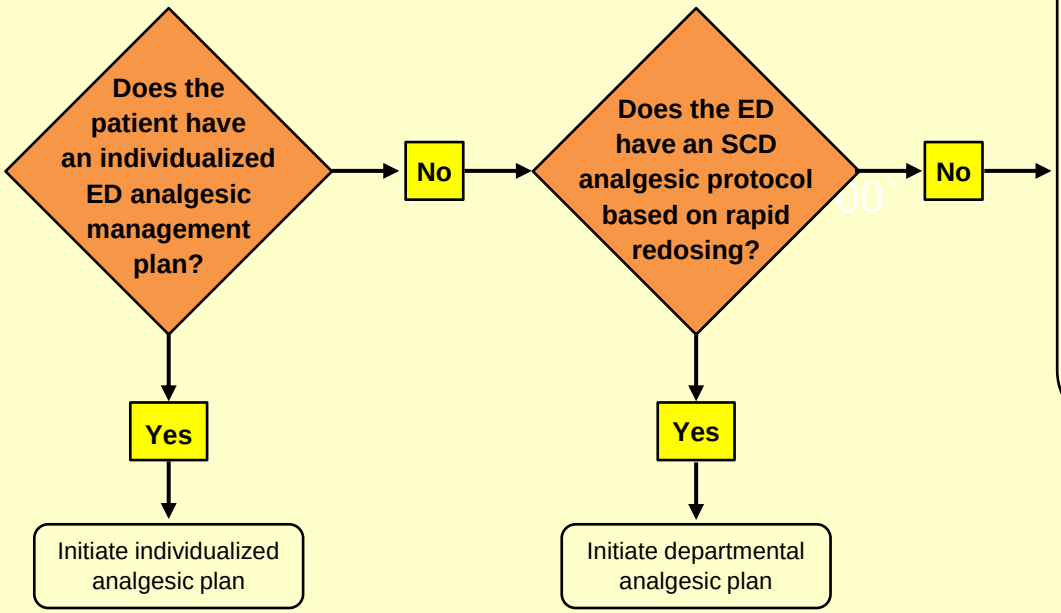
- shortness of breath
- atypical pain (new location or generalized pain)
- neurological headache
- confusion
- neurological deficits
- seizures
- chest or abdominal pain
- priapism
- pregnancy



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

ED-SCANS DECISION 2
RN/MD: Analgesic Management



- 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

M2559
Rev. 5/12

Duke University Hospital
DUKE UNIVERSITY HEALTH SYSTEM

PATIENT CONTROLLED ANALGESIA (PCA) PROVIDER ORDERS FOR ADULT SICKLE CELL PATIENT

Addressograph

Name
History number (inpatient)
Birthdate (clinics and PDC)

Adverse Food or Drug Reactions (including Latex): _____

Patient's Weight: _____kg Height: _____inches Lean Body Weight (LBW): _____kg

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.

		Morphine HG 5 mg/ml **(Contraindicated with ESRD)**	Fentanyl HG 50 mcg/ml	Hydromorphone HG 1 mg/ml
INITIAL SETTINGS	Loading dose X 1 IVP (SC if IV access unavailable)	_____mg Or (0.1 mg/kg LBW)	_____mcg Or (1 mcg/kg LBW)	_____mg Or (0.02 mg/kg LBW)
	PCA dose	_____mg Or (0.02 mg/kg LBW)	_____mcg Or (0.2 mcg/kg LBW)	_____mg Or (0.004 mg/kg LBW)
	Lockout Interval	8 minutes	6 minutes	8 minutes
	Continuous rate	_____mg / hr	_____mcg / hr	_____mg / hr
	Rescue doses (Titrate to patient desired pain score and RASS score 0 to -2)	____mg every 20 minutes up to 3 doses within 90 minutes of starting PCA	____mcg every 20 minutes up to 3 doses within 90 minutes of starting PCA	____mg every 20 minutes up to 3 doses within 90 minutes of starting PCA
ADJUSTED SETTINGS / INADEQUATE ANALGESIA	(Increase **PCA DOSE** if pain > 5 after 3 rescue doses AND RASS Score = +4 to -1 AND NOTIFY Provider of need to increase)	_____mg (1.25 X PCA dose)	_____mcg (1.25 X PCA dose)	_____mg (1.25 X PCA dose)
	CONTINUOUS INFUSION RATE	Increase continuous rate by 10% to 25% to_____mg/h	Increase continuous rate by 10% to 25% to_____mcg/h	Increase continuous rate by 10% to 25% to_____mg/h
	Patient Monitoring	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. ☑ CONTINUOUS PULSE OXIMETRY		
	Notify responsible physician for inadequate analgesia (pain score > 5) or RASS score of -3 to -5. See back for scoring details.			
	Adjunct Analgesics	☐ Ibuprofen 600 mg po every 6 hrs (CONTRAINDICATED WITH NSAID ALLERGY, DEHYDRATION OR RENAL DISEASE) or ☐ Ketorolac 30 mg IVP every 6 hrs to a maximum of 3 doses (CONTRAINDICATED WITH NSAID ALLERGY, DEHYDRATION OR RENAL DISEASE)		
	Pruritis AVOID IV DIPHENHYDRAMINE	☐ Concentrated naloxone IV infusion (2 mg in 250 mL NS). Infuse at 1 mcg/kg/hr or ☐ Diphenhydramine (25 mg po every 6 hrs) or ☐ Diphenhydramine (50 mg po every 6 hrs)		
	Nausea/Vomiting AVOID IV/IM PROMETHAZINE	☐ Ondansetron 4 mg IVP every 8 hrs as needed ☐ Promethazine 25 mg po every 6 hrs		

Signature: _____ Title: _____ Pager #: _____ Date: _____ Time: _____

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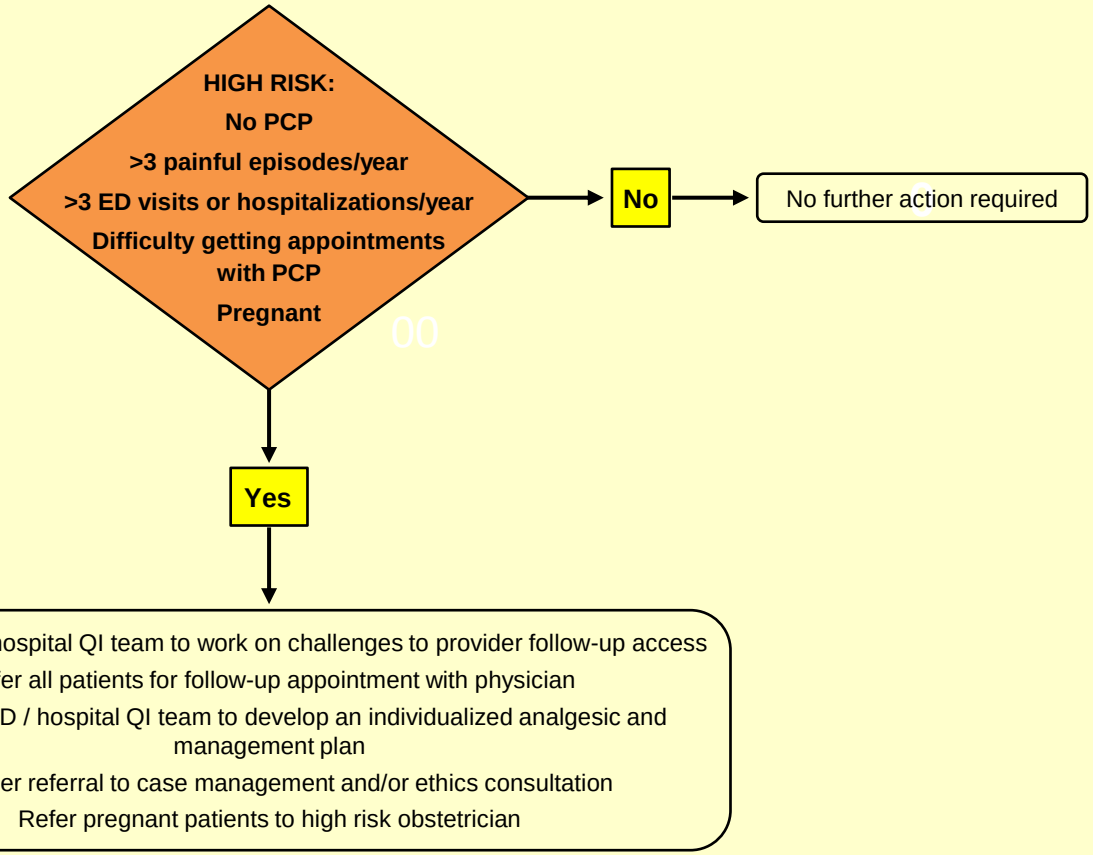
ED-SCANS DECISION 4
RN/MD: High Risk of Severe Disease or High User

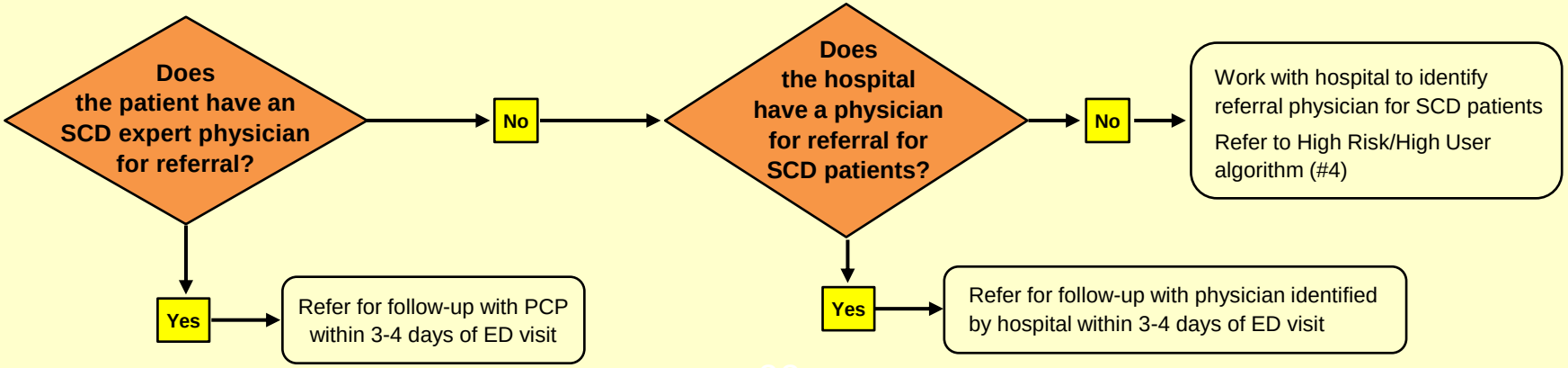


Identification of Health Service Needs

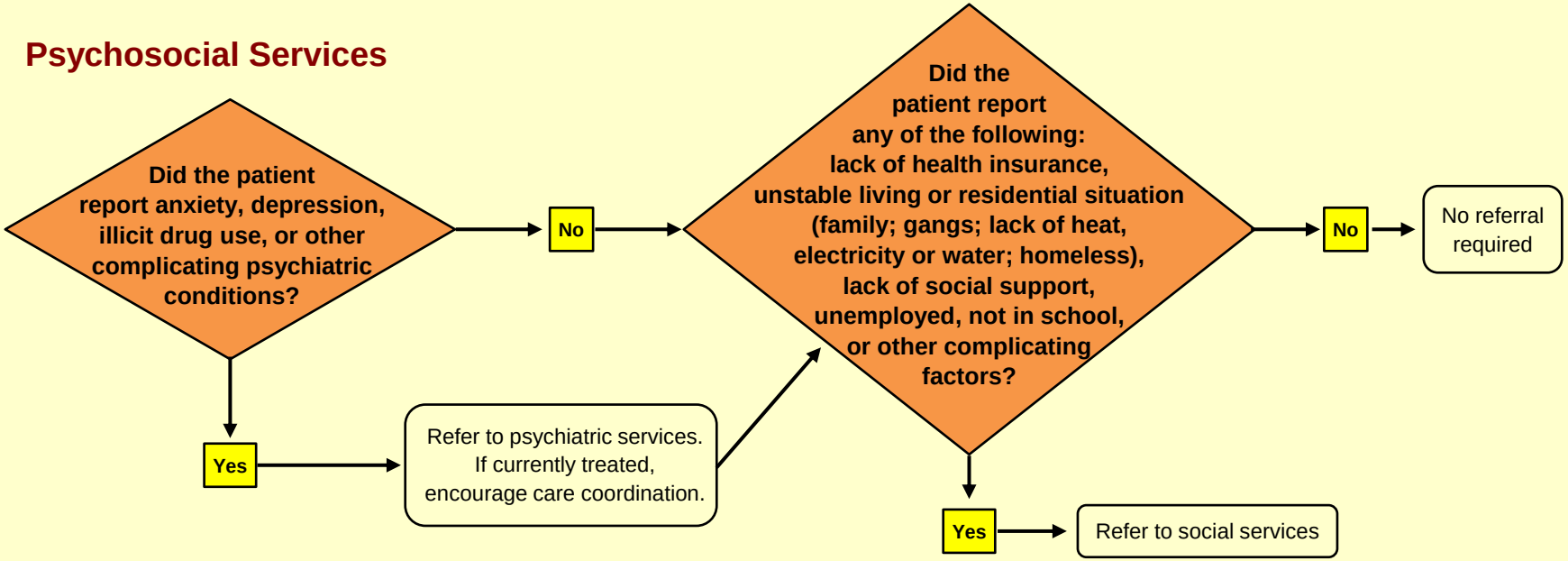
- Working with SCD program (Carlton Rutherford) and ED Social Work team to identify high risk, or patients with unmet social or behavioral health needs
- Soon to pilot consult by SW for each SCD patient visit
- WF: developing individual care plans for patients

ED-SCANS DECISION 7
MD/RN: Referrals
(Patients discharged home from ED only)

PCP or SCD Expert



Psychosocial Services



DukeMedicine

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:	Presented by:
"Epidemiology, Genetics, & Pathophysiology"	Wendell Rosse, MD
"Pediatric Complications &Treatment"	Courtney Thornburg, MD, MS
"Adult Complications & Treatment"	Laura De Castro, MD
"Pain Syndromes & Pharmacology"	Victoria Thornton, MD, MBA
"DHHS & Research (NHLBI)"	Edward Donnell Ivy, MD, MPH
"Emergency Department"	Paula Tanabe, PhD, MPH, RN
"Social Behavior & Health Needs"	Carlton Rutherford, MDiv, MSW, LCSW
"State and Local Resources"	Elaine Whitworth, MSW, MPA
"Client and Panel Advocacy"	Craigie Sanders, MPA, AICP, Esq.

REGISTER TODAY through Duke Office of Continuing Medical Education (Use the CME Tracker link below)

http://cmetracker.net/DUKE/login?FormName=RegLoginLive&Eventid=46673

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.

ACCME Credit Designation

This activity has been approved for *AMA PRA Category 1 credit.*™

IACET CEU Credit Designation

Duke University Health System Clinical Education & Professional Development is authorized by IACET to award **0.7 CEU's** 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.

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 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.

Duke University School of Nursing

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)

DRAFT

EXPERT PANEL REPORT ON THE MANAGEMENT OF SICKLE CELL DISEASE

August 3, 2012

DRAFT—NOT FOR DISTRIBUTION

Note to users of screen readers and assistive technologies: The draft guidelines are formatted with line numbering, therefore a number will be read at the end of each line of text. If you have trouble accessing any of the information on these guidelines, please use the following link to request an alternate format: gb25x@nih.gov.