

Measuring Improvement in Pediatric Pain: Modification of a Pediatric Pain Measure to Capture Pain Reduction

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PROJECT PURPOSE & AIMS

P Achieving relief of acute pain for hospitalized children between ages of 3-19 years of age
I Modify, then test the quality measure to determine its feasibility to demonstrate nurses' success in relieving acute pediatric pain
C Comparisons will be longitudinal, looking at repeated pain scores of same children over a 24 hour period of time
O 1) A revised measure for ongoing comparison of nursing quality related to pediatric pain intervention; 2) Ascertain whether children do actually have documented relief of pain

CAPSTONE PROJECT PURPOSE

To Determine a Method for Demonstrating Pain Reduction for Hospitalized Children, Using a Framework for Quality Improvement

PROJECT AIMS

Aim 1. To modify, then test the usability of a current quality measure of pediatric pain care, and to assemble data regarding the pain assessment-intervention-reassessment (AIR) cycle, to quantify improvement in pain status.
Aim 2. To determine whether, using this process measure, children had documented reductions

METHODS

- 1) Modified pediatric pain relief assessment-intervention-reassessment (AIR) process measure originated by Susan Lacey et al
- 2) Modifications added pain scale scores and time intervals in two sequential pain AIR cycles
- 3) Recruited hospitals with goal of acquiring data from a minimum of two units per each children's hospital
- 4) Nurses used 24-hour retrospective chart review
- 5) Data collected between April and August, 2010 from 12 clinical units in 4 children's hospitals
- 6) Data included gender, age of child in years and months, unit type
- 7) Data also included information for 2 sequential pain AIR cycles, including pain scales used to assess each child, pain scale scores, type of pain recorded, intervention used for pain relief, and times of each pain assessment and reassessment
- 8) Data analysis evaluated missing data and illogical responses
- 9) Data was analyzed using exploratory descriptive statistics, including frequencies, comparisons of means, cross tabs and non-parametric tests
- 10) Percent reductions in pain were calculated on all pain scores >0 and for pain scores >3

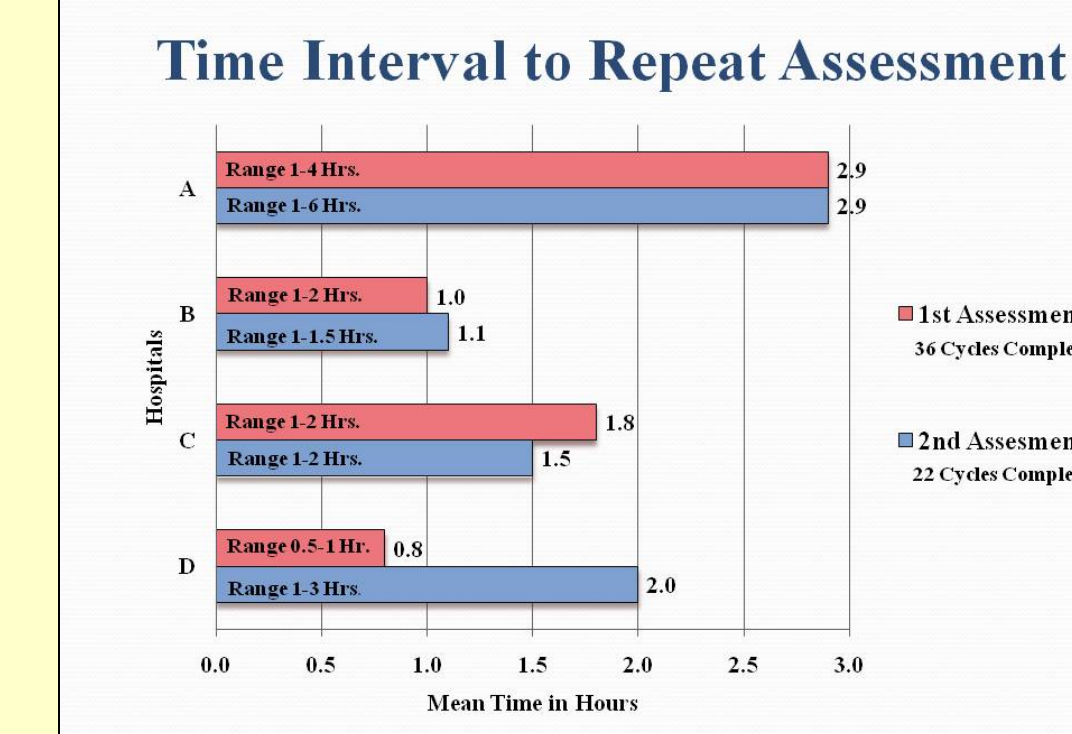
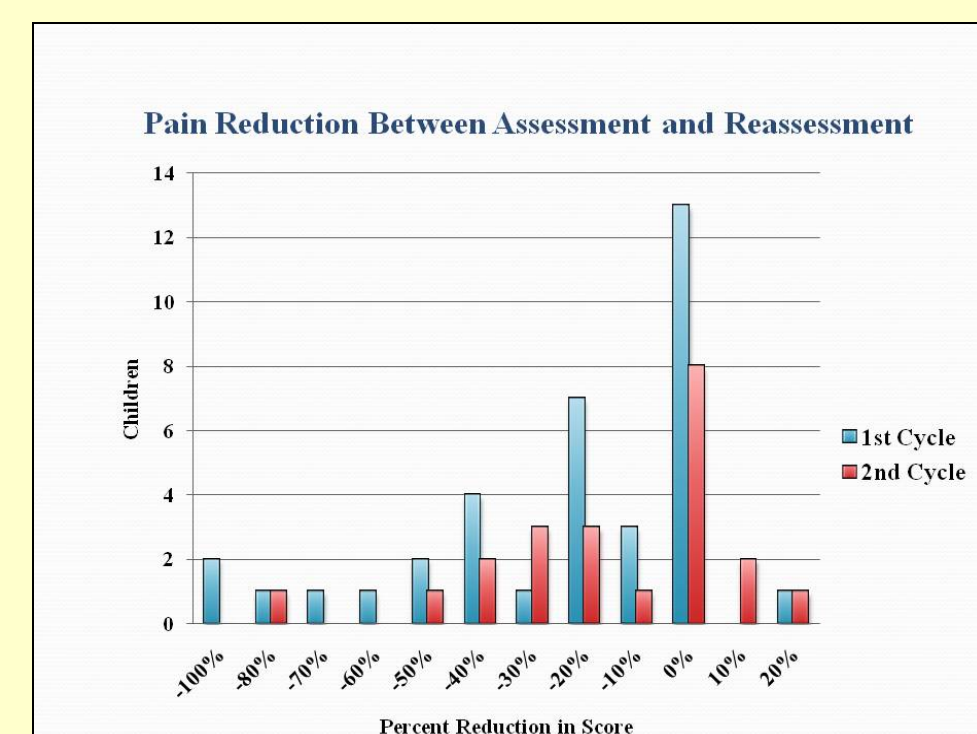
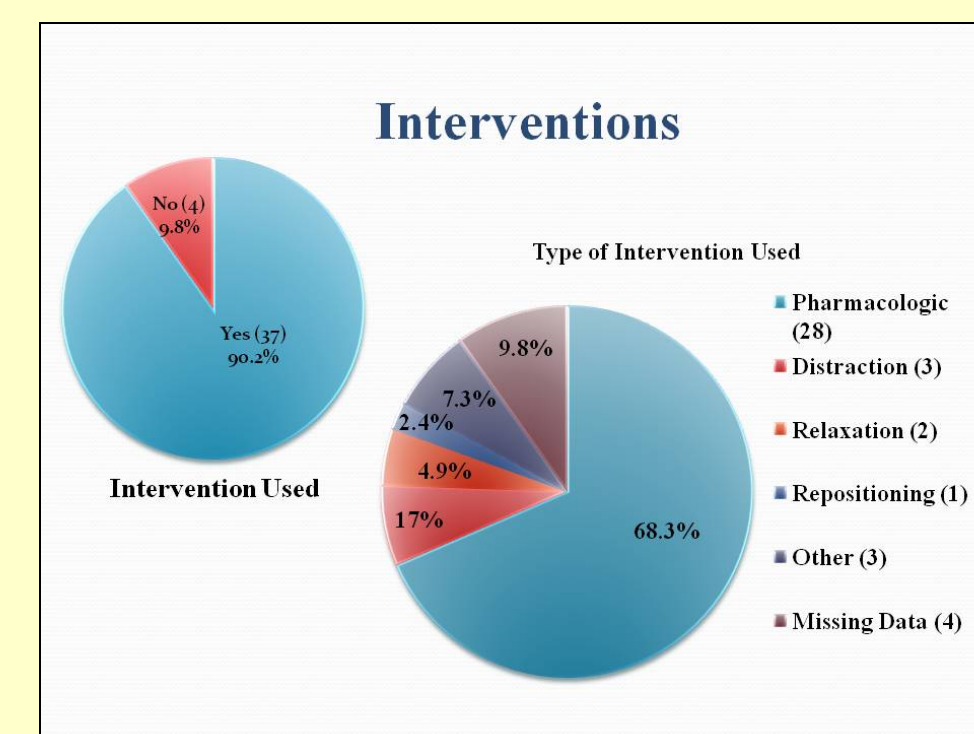
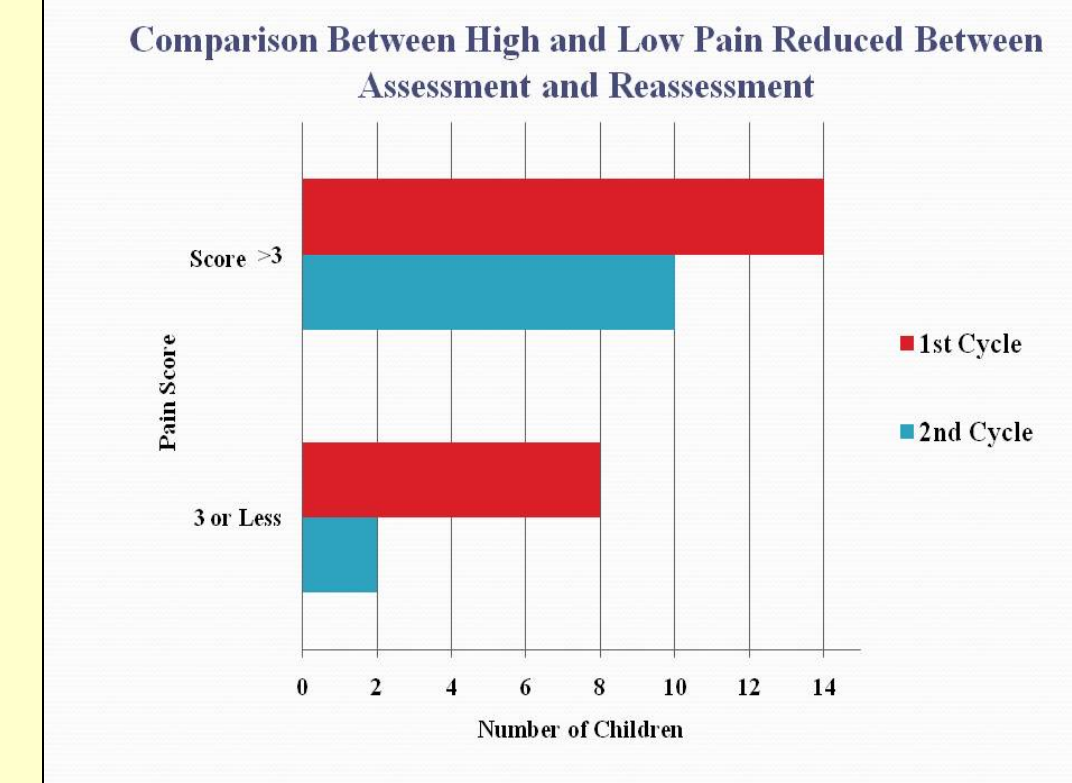
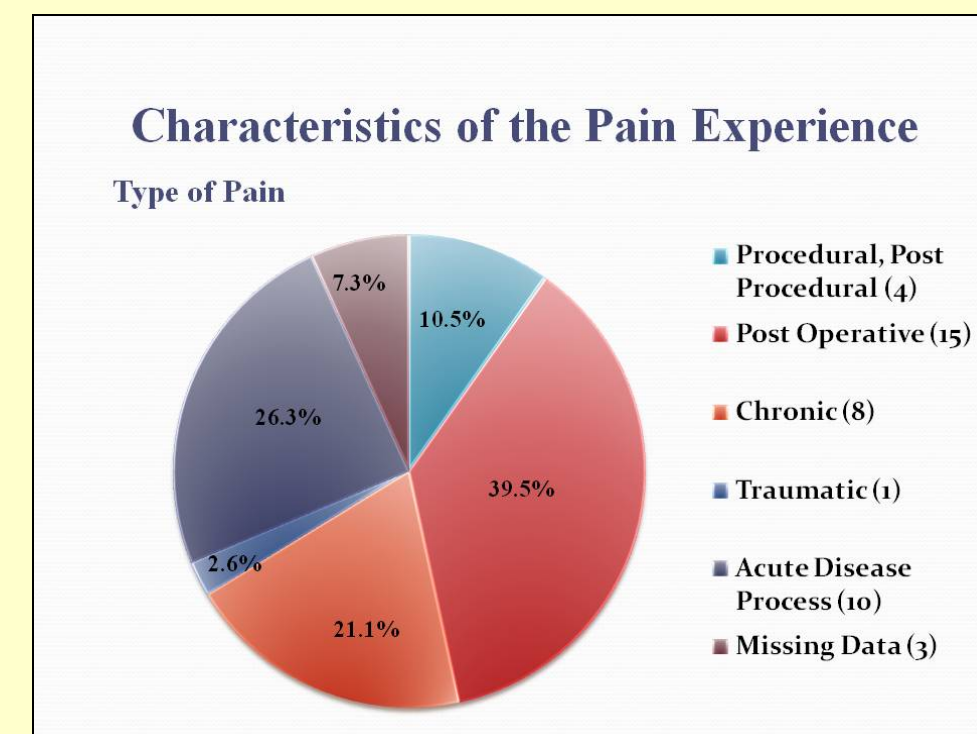
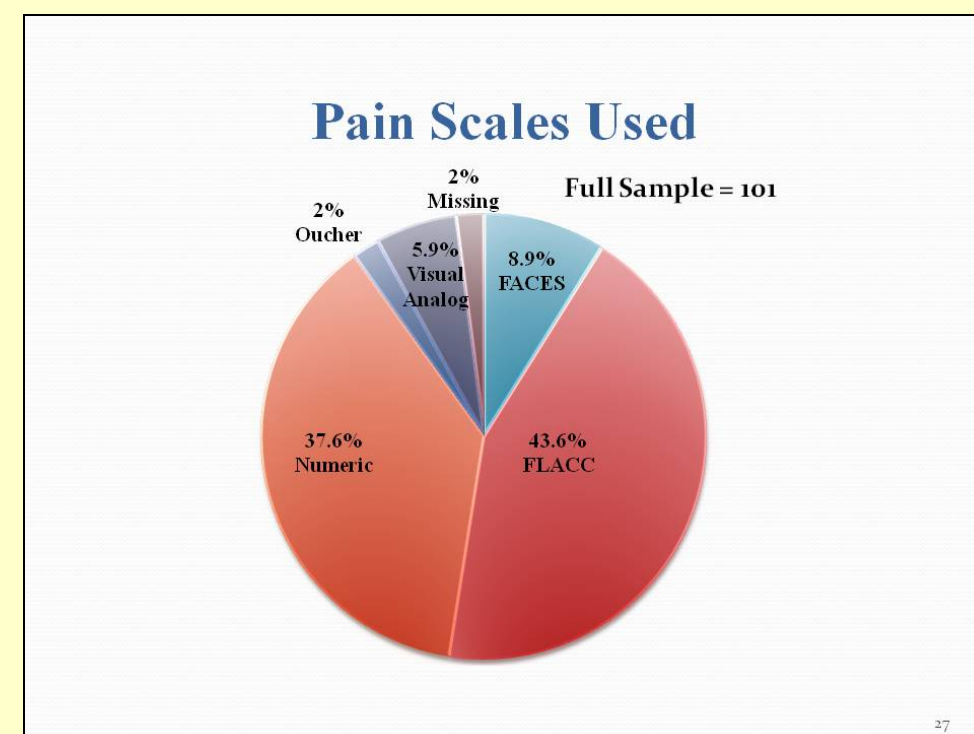
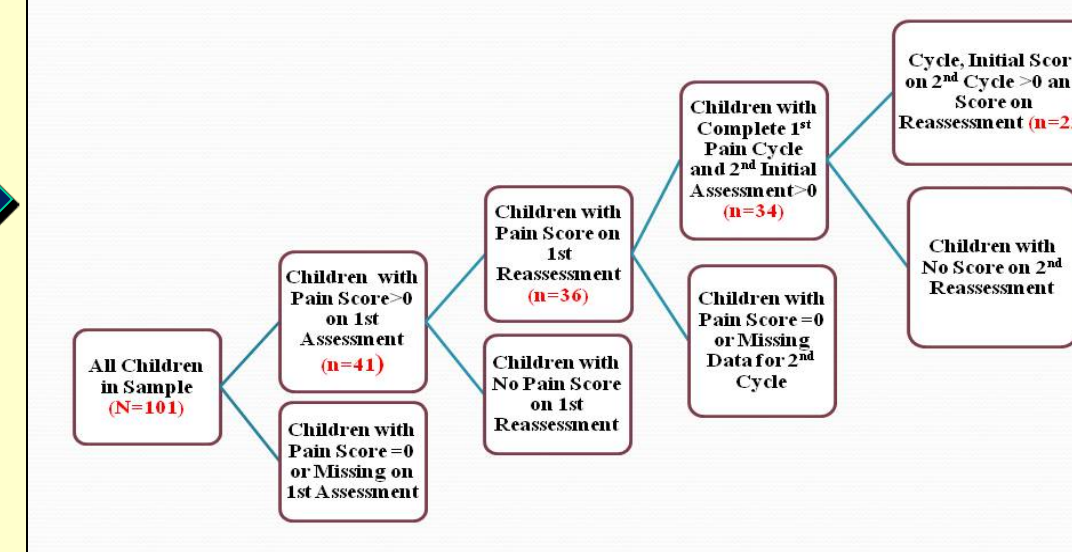
Pediatric Pain Relief Pain Assessment/Intervention/Reassessment Cycle Report (modified)

PI #	Time of assessment	Asses #	PI Age	Gender	Pain Assessment	Pain score	Scale score	Type of Pain	Intervention	Reassessment	Time of reassessment	Pain score	Pain Scale Codes
Yr	Mo	Female - F Male - M	Pain 1 no pain = 2 Sleeping = 3	no pain = 2 Sleeping = 3	Scale score	Type of Pain	Yes-1 No-2	Type of Intervention	Yes-1 No-2	Yes-1 No-2	Time of reassessment	Pain score	Pain Scale Codes
													1=FLACC 2=Numeric Scale 3=Other Scale 4=Other Scale 5=Behavioral cues 6=Physiologic cues 7=Other
													1=Procedural/Post procedural 2=Post operative 3=Chronic 4=Traumatic 5=Acute disease process 6=Developmental 7=Other
													1=Pharmacologic 2=Distraction 3=Relaxation 4=Repositioning 5=Music 6=Education 7=Environmental Modification 8=Other

RESULTS

- Sample Population - 101 hospitalized children ages 3-19 years of age from 4 children's hospitals
 Gender: Male: 62 Age Group: Preschool 31 Hospital Unit/Type: Surgical 45
 Female 39 School Age 30 Medical 39
 Adolescent 40 Med-Surg 11
 ICU 6
- Of 41 children documented with pain, 34% were female and 66% were male
- 51% were adolescent, 22% were school-age, 27% were pre-school age
- Mean pain scale score 4.66; 61% had a reduction in pain score, with mean reduction of 2.36 (based on 1-10 scales) = 23% reduction in pain
- While 82% of preschool age and 83% of school age children had at least 10% reduction, only 42% of adolescents had pain reduction
- Adolescents received pharmacologic intervention 20-40% less often than other children

Flow Chart of Sample Population Completed Pain AIR Cycles



KEY FINDINGS

- Nurses demonstrated modest success in **reducing pain by at least 20%** for the majority of hospitalized children
- Nurses **intervened about 75%** of the time, regardless of the child's initial pain level
- Time Intervals between Assessment and Reassessment** after an intervention varied widely (0.5 hours to 6.0 hours), suggesting lack of adherence to a standard or policy
- Reliance of nurses on medication** to relieve children's pain (73.5%) can limit the pain reduction experienced by hospitalized children. Given the reluctance by nurses noted in the literature to adequately medicate children for documented pain, it suggests that education for nurses in the management of pain would be important
- Use of most valid pain scales** appropriate for the age of the child not followed. Heavy reliance on observational scales for school age children
- Based upon the **systematic reviews** in the literature, **FACES** would have been appropriate for school age children, yet only 8.9% of all children were assessed by using this method
- Adolescents who self-reported their pain scores, had **relief of pain half as often** as did younger children whose pain scale scores were more often determined by nurses,
- Children who reported **higher pain scale scores** were less likely than children with lower scores, to get at least 20% relief of pain.
- Hospital policies**, reported but not evidenced by this data, have been noted by nurses to not require interventions to relieve children's pain unless the pain score is documented as at least 4 out of 10

RECOMMENDATIONS

- Drive development of standards and policy for time to reassessment for pain
- Increase nurses' knowledge of reliable and valid pain scale for each age group and type of pain child is most likely to experience to improve their selections of the appropriate scales to assess the child
- Use the leverage of a large data engine such as NDNQI to drive examination of pain management processes and reductions in pain for children through use of modified pain quality outcome measure such as Lacey's
- Increase nurses' knowledge of a variety of pain relieving interventions, and collect data regarding their effectiveness.
- Explore institutional policies and guidelines regarding level of pain a child is expected to experience before nurses and others are expected to intervene.

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