Date: July 10, 2015

Title: Guided Imagery for Pediatric Post-Operative Pain

Clinical Question

P	*(Population/Problem)*	Among school-aged children
I	*(Intervention)*	does the use of guided imagery
C	*(Comparison)*	versus no guided imagery
O	*(Outcome)*	reduce post-operative pain?

Target Population for the Recommendation

Children ages 7-12 years who have undergone surgery

Recommendation

It is recommended that guided imagery be used with school-aged children to reduce post-operative pain (Huth, Broome & Good, 2004 [2a]; Pölkki, Pietilä, Vehviläinen-Julkunen, Laukkala, & Kiviluoma, 2008 [2b]; Lambert, 1996 [2b]; Huth, Daraiseh, Henson, & McLeod, 2009 [4a]; Pölkki, Pietilä & Vehviläinen-Julkunen, 2003 [4a]).

Discussion/Synthesis of Evidence related to the recommendation

A moderate body of research evidence demonstrates school-aged children's post-operative pain can be significantly reduced with the use of guided imagery (Huth, et al., 2004 [2a]; Pölkki, et al., 2008 [2b]; Lambert. 1996 [2b]; Huth, et al., 2009 [4a]). In one of the three randomized controlled trials addressing this clinical question, the children were pre-operatively taught how to engage in guided imagery (Lambert 1996 [2b]). In another, the children listened to a guided imagery compact disc (CD) post-operatively (Pölkki, et al., 2008 [2b]). In the third, the children were given instruction in the use of guided imagery pre-operatively and used a guided imagery CD post-operatively (Huth, et al., 2004 [2a]). In each of these studies, self-reported pain scores in the experimental group were significantly lower than those of the control group one hour after use of guided imagery ($p<.001$, Pölkki, et al., 2008 [2b]); 1-4 hours after surgery ($p = 0.04$, Huth, et al., 2004 [2a]); and throughout the post-operative course ($p <.01$, Lambert 1996 [2b]). Also, in a cross-sectional study, Huth and colleagues (2009, [4a]) found children's self-reported pain scores were significantly lower after the use of guided imagery post-operatively ($p = 0.0033$). Additionally, in a descriptive study, Pölkki, and colleagues (2003 [4a]) found 31% of the children used guided imagery for post-operative pain relief. Of note, the reviewed studies also measured the effect of guided imagery on the following outcomes: anxiety, sleep, relaxation and length of stay (Huth, et al., 2004 [2a], Polkki, et al., 2003 [4a]; Lambert, 1996 [2b]).

In determining the strength of the recommendation, the development group made a considered judgment in a consensus process which was reflective of critically appraised evidence, clinical experience, and these dimensions:			
Given the dimensions below and that more answers to the left of the scales indicate support for a stronger recommendation, the recommendation statement above reflect the strength of the recommendation as judged by the development group. (Note that for negative recommendations, the left/right logic may be reversed for one or more dimensions.)			
1. Grade of the Body of Evidence	☐ High	☒ Moderate	☐ Low
Rationale:			
2. Safety/Harm (Side Effects and Risks)	☒ Minimal	☐ Moderate	☐ Serious
Rationale: Children may recall unpleasant memories (Huth, et al., 2004, [2a]).			
3. Health benefit to patient	☐ Significant	☒ Moderate	☐ Minimal
Rationale: Reduction of children's post-operative pain (Huth, et al., 2004 [2a]; Pölkki, et al., 2008 [2b]; Lambert. 1996 [2b]; Huth et al., 2009 [4a]).			
4. Burden to adhere to recommendation	☒ Low	☐ Unable to determine	☐ High
Rationale: Little instruction is needed for children to use this technique (Pölkki, et al., 2003 [4a]).			
5. Cost-effectiveness to healthcare system	☒ Cost-effective	☐ Inconclusive	☐ Not cost-effective
Rationale: Few if any materials are required for this technique.			
6. Directness of the evidence for this target population	☒ Directly relates	☐ Some concern of directness	☐ Indirectly relates
Rationale: All reviewed and cited literature was conducted with a pediatric population.			
7. Impact on morbidity/mortality or quality of life	☐ High	☒ Medium	☐ Low
Rationale: Quality of life is enhanced by reduction in pain with this non-invasive, non-pharmacologic intervention.			

Reference List

American Academy of Pediatrics. (2001). The assessment and management of acute pain in infants, children, and adolescents. Pediatrics, 108(3), 793. DOI: 10.1542/peds.108.3.793. [5a].

Huth, M. M., Boome, M. E. & Good, M. (2004). Imagery reduces children's post-operative pain. *Pain*, *110*(1-2), 439-448 [2a].

Huth, M. M., Daraiseh, N. M., Henson, M. A. & McLeod, S. M. (2009). Evaluation of the magic island: Relaxation for kids© compact disc. *Pediatric Nursing, 35*(5), 290-295 [4a].

Lambert, S. A. (1996). The effects of hypnosis/guided imagery on the postoperative course of children. *Journal of Developmental and Behavioral Pediatrics, 17(*5), 307-310 [2b].

Pölkki, T., Pietilä, A. & Vehviläinen-Julkunen, K. (2003). Hospitalized children's descriptions of their experiences with postsurgical pain relieving methods. *International Journal of Nursing Studies, 40*(1), 33-44 [4a].

Pölkki, T., Pietilä, A., Vehviläinen-Julkunen, K., Laukkala, H. & Kiviluoma, K. (2008). Imagery-induced relaxation in children's postoperative pain relief: A randomized pilot study. *Journal of Pediatric Nursing, 23*(3), 217-224 [2b].

IMPLEMENTATION

Applicability & Feasibility Issues

Nurses, patients and parents may or may not be familiar with guided imagery techniques and education may be offered as needed based on baseline level of understanding and previous use. In order to assist children to use guided imagery, resources such as compact discs, guided imagery web or technology-based applications or child life specialists and/or Holistic Health staff may be enlisted.

Relevant CCHMC Tools

Guided Imagery Resource Guide
Pharmacy and therapeutics Policy II-114, Pain Management and Analgesia
Mosby's Skills:
Pain assessment Scales (Pediatric)
Pain Assessment and Intervention (Oncology)
Pain Assessment (Neonatal)
CCHMC Resource: Pain Scales 2013
Pain Relief
Comfort Promotion: Guided Imagery
Comfort Promotion: Guided Imagery (Pediatric)

Outcome Measures and Process Measures

Assess child's level of post-operative pain prior to and following guided imagery use in addition to standard pain assessment using the most appropriate assessment tool for the child. Pain assessment tools include:

- Neonatal Infant Pain Scale (NIPS) – Behavioral scale for infants ages birth to 1 year
- F.L.A.C.C.(Face, Legs, Activity, Cry, Consolability) Scale – Behavioral scale for patients ages birth to adult including developmentally delayed patients, excluding patients with paralysis and/or spasticity (Patients able to give self-report are not candidates for the FLACC Scale)
- Faces-R (Faces Revised) Self report scale for children ages 4-18 years
- Numeric Rating Scale (NRS) – Self report scales for patients age 6 - adult

Document in the child's record the assessment of child's pain using a pain assessment tool, pain level and changes in pain scores. Document interventions used to relieve pain and results. The main goal of guided imagery interventions is pain relief, as noted by reduction in pain assessment tool scores.

SUPPORTING INFORMATION

Background/Purpose of BESt Development

Pain management is a frequently encountered problem among pediatric patients. Healthcare professionals who have frequent, closest contact with pediatric patients are in a position to advance pain management with children through practitioner-initiated interventions and prescriber-initiated treatments. It is well established that acute pain can be successfully treated with pharmacologic and non-pharmacological techniques or a combination (American Academy of Pediatrics, 2006 [5a]). It was unknown how much benefit is realized with a non-pharmacological intervention like guided imagery in combination with analgesics for the management of children's post-operative pain.

Search Strategy & Evidence Table: *See Appendix*

Group/Team Members

Multidisciplinary Team

Team Leader/Author: Barbara K. Giambra, PhD, RN, CPNP, Evidence-Based Practice Mentor - Research, Center for Professional Excellence – Research and Evidence-Based Practice

Team Members/Co-Authors: Myra Martz Huth, PhD, RN, FAAN, Associate Editor, Journal of Pediatric Nursing

Other BESt Development Support

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Conflicts of Interest were declared for each team member and

☒ No financial or intellectual conflicts of interest were found.
☐ The following conflicts of interest were disclosed:

Note: Full tables of the LEGEND evidence evaluation system are available in separate documents:

- *Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality (abbreviated table below)*
- *Grading a Body of Evidence to Answer a Clinical Question*
- *Judging the Strength of a Recommendation (dimensions table below and Rationale)*

Table of Evidence Levels *(see note above)*:

Quality level	*Definition*
1a† or 1b†	*Systematic review, meta-analysis, or meta-synthesis of multiple studies*
2a or 2b	*Best study design for domain*
3a or 3b	*Fair study design for domain*
4a or 4b	*Weak study design for domain*
5a or 5b	*General review, expert opinion, case report, consensus report, or guideline*
5	*Local Consensus*

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength *(see note above)*:

Language for Strength	*Definition*
It is strongly recommended that… *It is strongly recommended that… not…*	*When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens. (or visa-versa for negative recommendations)*
It is recommended that… *It is recommended that… not…*	*When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.*
There is insufficient evidence and a lack of consensus to make a recommendation…	

Copies of this Best Evidence Statement (BESt) and related tools (if applicable, e.g., screening tools, algorithms, etc.) are available online and may be distributed by any organization for the global purpose of improving child health outcomes.
Website address: http://www.cincinnatichildrens.org/service/j/anderson-center/evidence-based-care/bests/
Examples of approved uses of the BESt include the following:

- Copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- Hyperlinks to the CCHMC website may be placed on the organization's website;
- The BESt may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- Copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at **EBDMinfo@cchmc.org** for any BESt adopted, adapted, implemented, or hyperlinked by the organization is appreciated.

Please cite as: Giambra, B., Cincinnati Children's Hospital Medical Center: Best Evidence Statement Guided Imagery for Pediatric Post-Operative Pain, http://www.cincinnatichildrens.org/service/j/anderson-center/evidence-based-care/recommendations/default/, BESt 078, pages 1-7, 7/10/15. *This Best Evidence Statement has been reviewed against quality criteria by two independent reviewers from the CCHMC Evidence Collaboration. Conflict of interest declaration forms are filed with the CCHMC EBDM group.*
The BESt will be removed from the Cincinnati Children's website, if content has not been revised within five years from the most recent publication date. A revision of the BESt may be initiated at any point that evidence indicates a critical change is needed.

Review History

Date	*Event*	*Outcome*
4/1/2015	**Amendment**	Implementation and relevant CCHMC tools added, format changes made, outcome and process measures added, new team member added
3/18/2015	**Literature Search**	No new evidence found
9/1/2010	**Original Publication**	New BESt developed and published

For more information about CCHMC Best Evidence Statements and the development process, contact the Evidence Collaboration at EBDMinfo@cchmc.org.

Note

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

APPENDIX: EVIDENCE SEARCH STRATEGY, RESULTS, & EVIDENCE TABLE

Criteria for considering studies for this review

Types of Studies

All study designs were considered for inclusion in the systematic review

Types of Participants

Only studies that enrolled pediatric patients were included

Types of Interventions

Guided imagery interventions were considered for inclusion in the systematic review

Types of Outcomes

Pain outcomes were considered for inclusion in the systematic review

Search Strategy

Search Databases	Search Terms	Limits, Filters, & Search Date Parameters	Date of Most Recent Search
☒ MedLine *via PubMed or Ovid*	•Guided Imagery •Relaxation •Distraction •Cognitive behavioral interventions •Pain •Post-operative pain	Publication Dates or Search Dates: •No limit ☒ English Language ☒ Pediatric Evidence Only: •School-aged children ☐ Other Limits or Filters: •none	03/20/2015
☒ CINAHL	•Guided Imagery •Relaxation •Distraction •Cognitive behavioral interventions •Pain •Post-operative pain	Publication Dates or Search Dates: •No limit ☒ English Language ☒ Pediatric Evidence Only: •School-aged children ☐ Other: •none	03/20/2015

Search Results & Methods

The revised search for evidence identified no additional evidence. The initial search for evidence identified 11 articles. 5 articles were discarded, as they were not related to the clinical question of interest based on title (n=3) and abstract (n=2) review.
6 articles were reviewed in full text, 1 was discarded and 5 were critically appraised.

Evidence Table for Included Articles

First Author & Year	Sample Research Design	Independent Variable	Dependent variable (s)	Significant Results	Limitations	Evidence Level
Huth, 2004	n = 73 children ages 7-12 years scheduled for ambulatory surgery Randomized controlled trial (RCT)	Experimental group watched video on use of guided imagery, then listened to 30 minute audio tape 1 week prior to surgery (T1), 1-4 hours after surgery (T2) and 22-27 hours after discharge (T3) Control group watched attention control video, and received standard care	Sensory pain - Oucher - amount of analgesics used Affective pain - Facial Affective Scale (FAS) Anxiety - State-Trait Anxiety inventory for Children (STAIC)	Significantly lower pain and anxiety scores at T2 only (p = 0.04)	Unblinded, limited attention control, homogenous sample.	**2a**
Huth, 2009	n = 17 post-surgery children ages 7 - 12 years (one did not participate) Cross sectional, pre-post-test	Guided Imagery Compact disc (CD)	Pain - Modified Oucher Relaxation - 5 point Likert scale	Pain scores significantly lower (p = 0.0033) No significant change in relaxation scores (p = 0.0583)	Small sample, lack of randomization, control group or control for pain medication, type of surgery.	**4a**
Lambert, 1996	n = 52 children ages 7 – 19 years scheduled for elective surgery (matched controls) RCT	Experimental group taught guided imagery on preadmission visit 1 week before surgery by researcher Control group spent equal time with research assistant (Attention control)	Pain - Rating on numeric analog scale - Amount of pain medication used Anxiety - State-Trait Anxiety Inventory (STAI) or State-Trait Anxiety Inventory for Children (STAIC)	Pain ratings significantly lower in experimental group (p < .01) No difference in amount of pain meds between groups Experimental group anxiety scores decreased post-op (-1.00) whereas control scores increased (2.04) but no statistical difference between groups	No control for pain med delivery (PCA vs prn vs both) No power analysis	**2b**

Pölkki, 2003	n = 52 post-surgery children ages 8-12 years Descriptive		Children interviewed day of or day before discharge to assess: 1. Self-initiated pain relief methods 2. Child perception of RN and parent pain relief methods 3. Suggestions to RNs and parents re: pain relief Pain - Visual analog Scale (VAS)	13 types of self-initiated pain relief methods (top 5 used) – Distraction (98%), resting/sleeping (81%), positioning/immobility (52%), asking for pain med/help from RN (52%) Imagery (31%) 10 types of RN used methods 14 types of parent used methods 7 types of suggestions to RNs 4 types of suggestions to parents Worst pain described as severe or moderate	Recall bias, social desirability bias	**4a**
Pölkki, 2008	N = 60 post-surgery children aged 8-12 years RCT	Experimental group listened to imagery trip CD Control group received standard care	Pain (assessed by child and RN before (T1), immediately after (T2) and 1 hour after (T3) intervention or standard care) - VAS	Experimental group had significantly less self- reported pain (p<.001) from T1 – T2 than control group No differences in groups or times on RN assessed pain scores RNs scored child's pain lower than child did at each time point, significantly lower at T1 and T3 (p<.001)	Children in experimental group had more fears re: hospitalization (p = .032). No power analysis	**2b**