Perioperative Behavior in Children

J. Berghmans M.D.

Department of Anesthesia, ZNA Middelheim, Queen Paola Children’s Hospital, Antwerp, Belgium
Department of Child and Adolescent Psychiatry/Psychology, Erasmus University Medical Centre - Sophia Children’s Hospital
Department of Anesthesia, Erasmus Medical Centre, Sophia Children’s Hospital, Rotterdam, The Netherlands
Main objectives

- Distress, anxiety and fear
- Emergence delirium / agitation
- Postoperative behavioral changes
- Postoperative pain
Distress, anxiety and fear

**Child**
- age
- attachment and separation
- trait anxiety
- temperament / personality
- emotional-behavioral functioning
- cognitive development and understanding of illness
- quality of previous medical encounters

**Parent**
- state / trait anxiety
- monitors / blun ters
- SES
- gender
- cultural differences
Anxiety at induction

1. age
2. anxiety at admission
3. PE
4. CBCL scores (internalizing behavior)

Gomez-Ríos, M. A. Minerva Anestesiol 2014.
Distress, anxiety and fear

Figure 2. Profiles of child behavior across phase of induction. a, Acute Distress profile. b, Anticipatory Distress profile. c, Early Regulating profile. d, Procedure Engage profile.

Distress, anxiety and fear

Behavior profiles by child age

40% some distress behavior
17% significant distress
33% efforts to escape

How to assess perioperative anxiety?

Modified – Yale Preoperative Anxiety Scale (m-YPAS)

**Staat van duidelijke arousal**
1. Is alert, kijkt nu en dan rond, bemerkt of kijkt wat de anesthesist doet (zou ontspannen kunnen zijn)
2. Is teruggetrokken, zit stil en is rustig, kan zuigen op duim of gezicht gekeerd hebben tegen de volwassene
3. Is oplettend, kijkt snel overal rond, kan opschrikken van geluiden, ogen zijn wijd open, lichaam is gespannen
4. Jammert paniekerig, kan huilen of anderen wegduwen, draait zich weg

**Gebruik van ouders**
1. Is druk aan het spelen, heeft niets omhanden, of houdt zich bezig met leeftijdsonderklaart gedrag en heeft de ouder niet nodig; kan interageren met de ouder als de ouder de interactie initiëert
2. Zoekt contact met de ouder (benadert de ouder en spreekt met de doorgaans stille ouder), zoekt en aanvaardt troost, kan aanleunen tegen de ouder
3. Kijkt stil naar de ouder, kijkt blijkbaar naar handelingen, zoekt geen contact of troost, aanvaardt het als het wordt aangeboden of klampt zich aan ouder vast
4. Houdt de ouder op afstand of kan zich met kracht teruggrekken van de ouder, kan de ouder wegduwen of klampt zich wanhopig aan de ouder vast en laat de ouder niet los
Correlation between m-YPAS and STAIC was good ($P = 0.01$, $r = 0.79$)

Assessed by comparing the m-YPAS scores at three increasingly stressful points. There were significant differences in m-YPAS scores over the three stress points ($P = 0.01$)

Ranged from 0.68 (emotional expressivity, good clinical significance) to 0.86 (vocalization, excellence clinical significance).

Ranged from 0.63 (state of arousal, good reliability) to 0.90 (vocalization, excellent reliability)

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Time frame</th>
<th>Behaviors assessed</th>
<th>Behaviors not assessed</th>
<th>Real-time instrument directed interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC</td>
<td>Real time</td>
<td>Child anxiety, fear, and negative behavior during induction of anesthesia</td>
<td>Child coping behaviors, nonanxiety distress behaviors, and adult behaviors</td>
<td>None</td>
</tr>
<tr>
<td>mYPAS</td>
<td>Real time</td>
<td>Preoperative child anxiety (activity, emotional expressivity, vocalization, and use of parents)</td>
<td>Child coping behaviors, nonanxiety distress behaviors, and adult behaviors</td>
<td>Sedative premedication and behavioral preparation</td>
</tr>
<tr>
<td>CAMPIS-SF</td>
<td>Retrospective (videotape)</td>
<td>Child distress and coping behaviors and parent distress promoting and coping promoting behaviors</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>OSBD</td>
<td>Retrospective (videotape)</td>
<td>Child distress behaviors</td>
<td>Child coping behaviors and adult behaviors</td>
<td>None</td>
</tr>
<tr>
<td>P-CAMPIS</td>
<td>Retrospective (videotape)</td>
<td>Preoperative child and parent anxiety behaviors, child coping behaviors, and adult distress promoting and coping promoting behaviors</td>
<td>Postoperative child and parent behaviors</td>
<td>None</td>
</tr>
<tr>
<td>PACBIS</td>
<td>Real time</td>
<td>Perioperative child and parent anxiety behaviors, child coping behaviors, parent-positive and parent-negative behaviors</td>
<td>Targeted parental education; multidimensional family-centered behavioral preparation, active child distraction, active guidance of parental interactions, sedative premedication</td>
<td></td>
</tr>
</tbody>
</table>

ICC = Induction Compliance Checklist; mYPAS = modified Yale Preoperative Anxiety Scale; CAMPIS-SF = Child-Adult Medical Procedure Interaction Scale-Short Form; OSBD = Observation Scale of Behavioral Distress; P-CAMPIS = Perioperative Child-Adult Medical Procedure Interaction Scale-Short Form; PACBIS = Perioperative Adult Child Behavioral Interaction Scale.
## Perioperative Adult Child Interaction Scale (PACBIS)

Table 1. Comparison of Real-Time Perioperative Behavioral Assessment Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>Assessed perioperative behaviors</th>
<th>Behaviors not assessed by scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC</td>
<td>Child anxiety fear and negative behaviors during induction of anesthesia</td>
<td>Child’s coping behaviors, nonanxiety distress behaviors; all adult behaviors</td>
</tr>
<tr>
<td>mYPAS</td>
<td>Preoperative child anxiety (activity, emotional expressivity, state of arousal, vocalization, and use of parents)</td>
<td>Nonanxiety behaviors of child; all adult behaviors</td>
</tr>
<tr>
<td>PACBIS</td>
<td>Pre and postoperative child and parent, anxiety, coping and distraction behaviors, and adult coping and distress promoting behaviors</td>
<td></td>
</tr>
</tbody>
</table>

ICC = induction compliance checklist; mYPAS = modified Yale preoperative anxiety scale; PACBIS = perioperative adult child behavioral interaction scale.

## Appendix 1. Perioperative Adult and Child Behavioral Interaction Scale

<table>
<thead>
<tr>
<th>DOMAIN</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>Neutral to positive expression and behavior; quiet; passive; still; engagement with distraction (e.g., toy, TV, book) or talk (procedural or non-procedural)</td>
<td>Mild physical avoidance (e.g., slight turn away); moaning or quiet whimper; fearful but not crying; mild clinging; minimal verbal avoidance (e.g., quiet &quot;no&quot;); &quot;baby talk&quot;; mild or minimal verbal fear or pain (e.g., &quot;I'm scared&quot;, &quot;It hurts&quot;)</td>
<td>Physical avoidance (e.g., pushing, kicking, arching back, turning head away); clinging some restraint; crying; verbal avoidance (e.g., &quot;NO!&quot;); verbal fear or pain (e.g., &quot;It hurts!&quot;)</td>
</tr>
<tr>
<td>Child</td>
<td>Deep breathing; sounting; active or consistent engagement or involvement in distraction (e.g., toy, TV, book), activity, talk, or nodding</td>
<td>Minimal, brief, or inconsistent engagement in distraction (e.g., toy, TV, book) or talk nodding, one-word, or short answer responses</td>
<td>Neutral to negative expression and behavior; quiet; passive; still; no engagement with distraction (e.g., toy, TV, book) or talk</td>
</tr>
<tr>
<td>Parent</td>
<td>Neutral to positive expression and behavior; quiet; present(e.g., near the child, looking at child or staff); responding or engaging in distraction or talk with child</td>
<td>Avoidance behavior (e.g., walking away; looking away); mild anxious behavior; fearful but not crying; not responding or not engaging in distraction or non-procedural talk; procedural talk with provider</td>
<td>Excessive reassurance (e.g., repeatedly saying, &quot;It's okay, it's okay, you're fine...&quot;), apologizing, offering inappropriate comfort to the child; criticism (e.g., &quot;Don't act like a baby&quot;); anxious behavior (e.g., crying, overt sighing, grimacing, anxious comments)</td>
</tr>
<tr>
<td>Parent</td>
<td>Consistently leading distraction or non-distress talk; giving appropriate choices to the child; encouraging coping; proactive helpful behavior; labeled praise (e.g., &quot;Good job sitting still&quot;)</td>
<td>Close physical presence or touching child; giving appropriate choices to child; reactive but helpful behavior; responding/participating in distraction or non-procedural talk, but not leading distraction or talk praise (e.g., &quot;Good job&quot;)</td>
<td>Neutral to negative expression and behavior; quiet; not in physical proximity to child</td>
</tr>
</tbody>
</table>

PACBIS = Perioperative Adult and Child Behavioral Interaction Scale
Behavioral interaction

Empathy
Reassurance

more distress and anxiety

Distracting behavior
(humor and distracting talk)

less distress and anxiety

Why is perioperative anxiety so important?

- Associated with postoperative behavioral changes
- Influence on subjective perception and associated with higher level of postoperative pain
- Poor compliance with future medical therapy

Emergency delirium / agitation
Postoperative behavioral changes

What can be done to relieve anxiety?

- Educational interventions
- Behavioral interventions
- Alternative interventions
- Pharmacologic interventions

- Preparation programs
- Desire for information
- Parental presence, exposure, shaping, distraction, mindfulness, coping skills
- Music, acupuncture, hypnosis
- Midazolam, clonidine, ……
A psychological preoperative program: effects on anxiety and cooperative behaviors

Francesca Cuzzocrea¹, Maria C. Gugliandolo¹, Rosalba Larcan¹, Carmelo Romeo², Nunzio Turiaco² & Tiziana Dominici¹

Conclusions: Preparing children through playful dramatization of the operative procedure, manipulation of medical instruments and psychologist’s support may be useful in pediatric surgery structures.
Non-pharmacological interventions

Parental acupuncture
Clown doctors
Hypnosis
Low sensory stimulation
Hand-held video games

Reducing children’s anxiety
Improving their cooperation

Parents during anesthesia

Non-pharmacological interventions

Streamed Video Clips to Reduce Anxiety in Children During Inhaled Induction of Anesthesia

Cartoon Distraction Alleviates Anxiety in Children During Induction of Anesthesia

Is an effective method of reducing anxiety

Audiovisual aid viewing immediately before pediatric induction moderates the accompanying parents’ anxiety

Moderates the increase in anxiety associated with the anesthetic induction of their child

Preparing Parents to Be Present for Their Child’s Anesthesia Induction: A Randomized Controlled Trial

Non-pharmacological interventions

**Tablet-based Interactive Distraction (TBID) vs oral midazolam to minimize perioperative anxiety in pediatric patients: a noninferiority randomized trial**


**Treating perioperative anxiety and pain in children: a tailored and innovative approach**

Emergence delirium / agitation

Specific pediatric postoperative complication (2 – 80%)  

One could describe emergence delirium / agitation as purposeless agitation with kicking, absence of eye contact with caregivers (or parents) with eyes stared or averted, inconsolability, and absence of awareness of surroundings.

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Scale</th>
<th>Population Assessed</th>
<th>Scale Type</th>
<th>Scale Development</th>
<th>Reliability</th>
<th>Validity</th>
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</thead>
<tbody>
<tr>
<td>Cole et al., 10 2002</td>
<td>Emergence Delirium</td>
<td>10 months–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Hallen et al., 9 2001</td>
<td>Excitation Scale</td>
<td>3–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
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<tr>
<td>Cohen et al., 19 2001</td>
<td>Agitation Scale</td>
<td>2–9 yr</td>
<td>Ordinal</td>
<td>None described</td>
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<td>None</td>
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<tr>
<td>Gailkin et al., 5 2000</td>
<td>Postoperative Behavior Scale</td>
<td>9 months–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Cravero et al., 6 2000</td>
<td>Emergence Agitation Scale</td>
<td>6 months–10 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Acro et al., 18 1999</td>
<td>Problematic Behavior Scale</td>
<td>3–6 yr, males</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Davis et al., 21 1999</td>
<td>Agitation Scale</td>
<td>1–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Acro et al., 18 1997</td>
<td>Behavior Rating Scale</td>
<td>3–10 yr, males</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Johannesson et al., 27 1995</td>
<td>Behavior during</td>
<td>3–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
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<tr>
<td>Koegel et al., 26 1995</td>
<td>Emergence Scale</td>
<td>1–15 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
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<tr>
<td>Davis et al., 20 1994</td>
<td>Quality of Anesthesia Recovery</td>
<td>1–6 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Watcha et al., 25 1992</td>
<td>Agitation Scale</td>
<td>3 months–4 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Heeman and Mattle, 30 1992</td>
<td>Heeman-Mattle Excitement Scale</td>
<td>13–18 yr</td>
<td>Ordinal</td>
<td>Literature, panel of experts, and experience of authors used to develop scale</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Shields et al., 29 1980</td>
<td>Emergence Excitement Score Sheet</td>
<td>2–13 yr</td>
<td>Adjectival scale</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Sheffler et al., 9 1973</td>
<td>Tranquility/Alertness Scale</td>
<td>3–11 yr</td>
<td>Semantic Differential Scale</td>
<td>None described</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Smessaert et al., 3 1960</td>
<td>Mode of Recovery</td>
<td>10–65 yr</td>
<td>Ordinal</td>
<td>None described</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

*IGC = intraclass correlation coefficient.*

Pediatric Anesthesia Emergence Delirium (PAED) scale

1. The child makes eye contact with the caregiver.
2. The child’s actions are purposeful.
3. The child is aware of his/her surroundings.
4. The child is restless.
5. The child is inconsolable.

Items 1, 2, and 3 are reversed scored as follows: 4 = not at all, 3 = just a little, 2 = quite a bit, 1 = very much, 0 = extremely. Items 4 and 5 are scored as follows: 0 = not at all, 1 = just a little, 2 = quite a bit, 3 = very much, 4 = extremely. The scores of each item were summed to obtain a total Pediatric Anesthesia Emergence Delirium (PAED) scale score. The degree of emergence delirium increased directly with the total score.

Pediciatric Anesthesia Emergence Delirium/Agitation

Table 1. Specific Signs Associated with Emergence Agitation in Children\(^5\)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kick</td>
<td>19.3 (1–373.9)</td>
<td>54%*</td>
<td>98%*</td>
</tr>
<tr>
<td>Purposefulness movement</td>
<td>0.03 (0–0.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consolability</td>
<td>0.06 (0–0.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eyes reverted</td>
<td>73.7 (0.62–97.5)</td>
<td>81%*</td>
<td>90%*</td>
</tr>
<tr>
<td>No language</td>
<td>0.05 (0–316)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purposefulness movement</td>
<td>93.3 (2.75–1.585)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Risk factors of emergence delirium

- Age of patients
- Type of surgery
- Anesthesia-related factors
- Psychologic factors

**Risk factors**

- Epidemiologic characteristic
  - ENT, ophthalmologic procedures
- Anesthesia-related factors
  - 1. new volatile agents
  - 2. pain
- Psychologic factors
  - 1. child behavior
  - 2. anxiety

**Preoperative behavior factors – predisposing children to ED?**

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Emergence delirium

1. age
2. anxiety at induction
3. first anesthetic
4. ENT
5. CBCL scores (externalizing behavior)

Gomez-Rios, M. A. Minerva Anestesiol 2014.
The influence of preoperative emotional and behavioral functioning of children between 1.5 and 12 on postoperative emergence delirium (ED) after dental surgery in day care

ISRCTN06510793 - http://www.controlled-trials.com/ISRCTN06510793/
Pharmacologic prevention of emergence Delirium

Recent meta analysis

Many sedative and analgesic agents (systemically or by regional route) were found efficient

Fentanyl, ketamine, propofol, clonidine, dexmedetomidine, hydroxyzine-midazolam

Midazolam  Lack of efficacy seems paradoxical!

Nonresponders: 1. higher level of anxiety; 2. younger; 3. more emotive; 4. high levels of impulsivity

Nonpharmacologic Prevention of emergence delirium

Anxiety management

**Family-based preparation – ADVANCE STRATEGY**
- Decreases both anxiety en ED
- Drawback: time- and cost-consuming

**Analysing ADVANCE (shaping and exposing)**
- Practising mask induction and parental distraction in the preoperative holding area

Immediate negative behavioral responses develop in a relatively large number of young children following surgery, the magnitude of these changes is limited and long-term maladaptive behavioral responses develop in only a small minority.

Kotiniemi, L. H., et al. Paediatr Anaesth 1996,
.........
Postoperative behavior changes

54% at 2 weeks
20% at 6 months
7.3% at 1 year


24% at day 3
16% at day 30

Which tool has been used to assess these behavioral changes?

Post hospital behavior questionnaire (PHBQ)


1. general anxiety and regression
2. separation anxiety
3. anxiety about sleep
4. eating disturbance
5. aggression towards authority
6. apathy / withdrawal

Limitation of the PHBQ

Validity - face validity
- different age groups
- construct

Reliability - test retest reliability
Cronbach’s alpha ≤ 0.7
Sensitivity?
Cut-off score?

Alternative assessment tools

1. Child Behavior Checklist (CBCL)
2. Pediatric Quality of Live Inventory (PedQSL)

• risk of underestimation
• 6 dimensions of anxiety

Pain at home but not in hospital is a strong risk factor for the onset or worsening of problematic behaviour after childhood hospitalization, which included anaesthesia. Proactive interventions are suggested to prevent this by improving pain treatment at home.

At home – How are we doing?

Following day-care – tonsillectomy, circumcision, strabismus

≥ 50% had significant pain
On day 3 > 25%

Parents pain rating of their children

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>86%</td>
<td>(significant pain)</td>
</tr>
<tr>
<td>Day 3</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td>1st week</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>2nd week</td>
<td>7.5%</td>
<td></td>
</tr>
</tbody>
</table>

At home – How are we doing?

Pain scores higher at home

<table>
<thead>
<tr>
<th>At discharge</th>
<th>3.6%</th>
<th>mild pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>48.3%</td>
<td>mild to significant pain</td>
</tr>
<tr>
<td>Day 2</td>
<td>28.5%</td>
<td></td>
</tr>
</tbody>
</table>

Tonsillectomy – high incidence of pain – up to 75%

Does day-care tonsillectomy compared to overnight stay increase postoperative pain?

At home – How are we doing?

Postoperative pain, nausea and vomiting following adenotonsillectomy – a long-term follow up

52% rated their child’s pain as VAS ≥ 5 on day 3 dropping to 30% by day 7

Postoperative pain

Why is it poorly managed at home?

Inadequate administration

- Parental factors
- Child factors

Inadequate prescription

- Medication factors
- System factors

Pain and behavior changes in children following surgery

93% had pain and 73% exhibited PB on day 2
25% still had pain and 32% PB at week 4

Factors associated

1. Previous pain experience
2. Anxiety child and parent
3. Parent level of education

Nurse assessment of the children’s postoperative sleep difficulties.

A The child had trouble falling asleep
B The child had trouble staying asleep
C The child woke up crying


Postoperative pain

Specific child factors

THE INFLUENCE OF PREOPERATIVE EMOTIONAL AND BEHAVIORAL FUNCTIONING OF CHILDREN BETWEEN 1.5 AND 5 ON POSTOPERATIVE PAIN AFTER ADENOTONSILLECTOMY IN DAY CARE

A PROSPECTIVE COHORT STUDY

ID: CBCL – A/AT – POK/1.5-5

www.trialregister.nl/NTR3955
Preoperative emotional/behavioral functioning of a child is associated with higher postoperative pain at home after adenotonsillectomy

Poels S.1,5, Berghmans J.1,2,7, Poley M.3, Veyckemans F.4, Weber F.2, Van de Velde M.5, Schmelzer B6, Himpe D.1, Utens E.7

1Department of Anesthesia, ZNA Middelheim, Queen Paola Children’s Hospital, Antwerp, Belgium
2Department of Anesthesia, Erasmus Medical Centre, Sophia Children’s Hospital, Rotterdam, The Netherlands
3Institute for Medical Technology Assessment & Department of Pediatric Surgery, Erasmus MC Sophia Children’s Hospital, Rotterdam, The Netherlands
4Department of Anesthesiology, University Hospital Saint-Luc (UCL), Brussels, Belgium
5Department of Anesthesiology, KU Leuven; University Hospital Gasthuisberg, Belgium
6Department of Otorhinolaryngology, ZNA Middelheim, Queen Paola Children’s Hospital, Antwerp, Belgium
7Department of Child and Adolescent Psychiatry/Psychology, Erasmus University Medical Centre - Sophia Children’s Hospital, Rotterdam, The Netherlands
Child factors

STAI & CBCL

mYPAS

anesth chart

PAED & pain scores

PPPM day 1,2,3

PPPM day 10

Time scale

Admission

Holding area

Entering OR

Induction

OR

PACU

Postoperative period at home

www.trialregister.nl/NTR3955

6/12/2015
Results presented at ESPA meeting (Prague 2014)

Regression analysis with PPPM<sub>sumscores</sub> as dependent variable

<table>
<thead>
<tr>
<th></th>
<th>( B )</th>
<th>( SE , B )</th>
<th>( \beta )</th>
<th>95% CI for ( B )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental anxiety STATE</td>
<td>-15.8</td>
<td>9.6</td>
<td>.37**</td>
<td>[0.17, 0.85]</td>
</tr>
<tr>
<td>mYPAS&lt;sub&gt;sumscores&lt;/sub&gt;</td>
<td>0.51</td>
<td>0.17</td>
<td>-0.27*</td>
<td>[-0.15, 0.0]</td>
</tr>
<tr>
<td>PAED&lt;sub&gt;sumscores&lt;/sub&gt;</td>
<td>0.71</td>
<td>0.28</td>
<td>0.34**</td>
<td>[0.14, 1.27]</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental anxiety STATE</td>
<td>-7.3</td>
<td>9.7</td>
<td>0.26*</td>
<td>[0.01, 0.6]</td>
</tr>
<tr>
<td>mYPAS&lt;sub&gt;sumscores&lt;/sub&gt;</td>
<td>-0.08</td>
<td>0.04</td>
<td>-0.30**</td>
<td>[-0.15, -0.01]</td>
</tr>
<tr>
<td>PAED&lt;sub&gt;sumscores&lt;/sub&gt;</td>
<td>0.47</td>
<td>0.28</td>
<td>0.22</td>
<td>[-0.1, 1.0]</td>
</tr>
<tr>
<td>CBCL&lt;sub&gt;totalsumscores&lt;/sub&gt;</td>
<td>0.18</td>
<td>0.07</td>
<td>0.35**</td>
<td>[0.04, 0.32]</td>
</tr>
</tbody>
</table>

Note: \( R^2 = .24 \) for step 1, \( R^2 = .32 \) for step 2 \( \Delta R^2 = .08 \) ( \( p = .014 \)).
** \( p < .05 \); * \( p = .05 \)
Preliminary conclusions of this study

Children experience significant pain after tonsillectomy

Pre-existing emotional/behavioral problems are associated with more pain at home

CBCL could be helpful to identify more vulnerable children
Conclusions

1. Importance of reducing distress, anxiety and fear

2. Standardized assessment tools to identify vulnerable children and to assess behavioral changes

3. Multiple approaches, individualized and targeted to specific needs should be designed
FAMILY-CENTERED

PEDIATRIC

PERIOPERATIVE

CARE