Storytelling Medicine
Reducing Children’s Anxiety in Hospitals

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Children’s Anxiety

Negative Behaviors:

• Agitation
• Crying
• Spontaneous Urination
• Need for physical restraint
Children’s Anxiety

**Physiological Responses:**

- Negative nitrogen balance and catabolism
- Delay wound healing
- Postoperative immunosuppression
Children’s Anxiety

Effects:

• Increased resistance to induction
• Decreased compliance/cooperation to medical procedures
• Decreased speed of recovery
• Risk of having fears develop into adulthood phobias
Addressing Anxiety

Non-Pharmacological Preparation Programs

Parental Presence
Non-Pharmacological

Benefits

• Decreasing the need for pharmacological treatments
• Avoiding the anxiety caused by separation at the OR
• Increase child’s compliance

Objections

• Disruption of the OR routine
• Adverse reaction of parents
• Prolong anesthetic induction
• Additional stress on the anesthesiologist
Addressing Anxiety

Non-Pharmacological

<table>
<thead>
<tr>
<th>Parental Presence</th>
<th>1995</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowed</td>
<td>26%</td>
<td>32%</td>
</tr>
<tr>
<td>Encouraged</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>No Avoidance Policy</td>
<td>28%</td>
<td>23%</td>
</tr>
<tr>
<td>Formal avoidance Policy</td>
<td>32%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Parental Presence
Non-Pharmacological

Effectiveness Ranking:

- Coping Skills Instructions
- Modeling
- Play Therapy
- Operating room tours
- Printed material

“Child Life preparation programs decrease anxiety level for a short period of time after the preparation in the holding area...”
Addressing Anxiety

Pharmacological

- Midazolam (85%)
- Ketamine (4%)
- Fentanyl (3%)
- Meperidine (2%)

Objections:

- Respiratory depression
- Increased salivary and bronchial secretions
- Extended recovery period
Masking Pain
Addressing Anxiety

Stretchers
Environment
Environment
Design Process

Big Idea

How to make the hospital experience more enjoyable for children
Design Process

Needs

- Engages all stakeholders
- Distracts
- Educates
- Safe
- Customizable
- Easy to implement
- Does not take any extra resources from the hospital
Design Process

Storytelling Medicine
The System

- Electronic story interface
- Real time activation by RFIDs
- Sharing Experiences
- Incorporating existing hospital infrastructure
- Engaging all senses
- Educating through storytelling

Design Process
The Products

Ideas Becoming Reality

- Pre-Anesthesia Assessment
  - 2-4 days
- Day of Surgery
Core Benefits

• The toy provides the child with company and lasting memories
• The two books help the child recognize the hospital before going there
• Allows parents to get involved in the education process
• Provides continuity to the system
The Application

Recreates real spaces of the hospital digitally

Real Photos

Illustrations
Ryan The Raccoon

The Application
Core Benefits

• Easy interaction through touch screen
• Matching backgrounds with real spaces
• Customizable app for every hospital and type of procedure
• Does not require extra resources
• It meets health requirements from the hospital
• Ryan the Raccoon will show one step ahead of the process all the time
Proof Of Concept Study Survey Results

- Tested on 8 Patients
- September –October 2011
- Outpatient Day Surgeries
- 4 surveys performed
  - Clinical Background
  - Parents (pre-procedure)
  - Parents (post-procedure)
  - Clinical (post-procedure)
What % of pediatric pts (3-5yrs) are anxious during their visit to your facility:

- 60-70%: 40.00%
- >75%: 20.00%
- 30-40%: 0.00%
- 50-60%: 0.00%

Do you think your hospital/clinic would benefit from investigating a new methodology for treating children anxiety?

- Yes: 100.00%
- No: 0.00%

Would reducing child anxiety, help you increase your overall productivity and efficiency?

- Yes: 100.00%
- No: 0.00%

What % of your time are you spending waiting/calming a child during a visit?

- 0-10%: 40.00%
- 10-25%: 60.00%
- 25-50%: 20.00%
- >50%: 0.00%
Parents (Pre-Procedure)

Is this your child's first procedure?

- Yes: 6
- No: 2

Was your child scared/nervous before the surgery?

- Yes: 5
- No: 3
Parents (Post-Procedure)

How well of a job did the hospital staff do to keep you child calm?

- Poor
- Moderate
- Great

![Bar Chart (How well of a job did the hospital staff do to keep you child calm?)](chart1.png)

Should the hospital invest in an additional program that aims to decrease child anxiety?

- Yes
- No

![Pie Chart (Should the hospital invest in an additional program that aims to decrease child anxiety?)](chart2.png)

Would you be willing to spend extra during your child's hospital visit to enroll them in a program that promises to decrease their anxiety and tries to make the experience more enjoyable?

- Yes
- No

![Pie Chart (Would you be willing to spend extra during your child's hospital visit to enroll them in a program that promises to decrease their anxiety and tries to make the experience more enjoyable?)](chart3.png)

How much would you be willing to pay for the service?

- $100+
- $75-$100
- $50-$75
- $25-$50
- <$25
- Should be free

![Bar Chart (How much would you be willing to pay for the service?)](chart4.png)
Clinical (Post-Procedure)

Did STM facilitate you providing service to your patient?
- Yes: 8
- No: 2

Did your patient seem calmer than would otherwise be expected?
- Yes: 3
- No: 5

Could STM save you any time with the child?
- Yes: 6
- No: 2
Next Steps

- **Pilot**
  - In collaboration with Dr. Schimdt and Dr. Cunningham
- **Clinical Study**
  - CIHR funds
Innovating Healthcare
Thank you