ERAS / Pain BC: Predicting and Managing Postoperative Pain

Hance Clarke MD PhD FRCPC

Director Pain Services
Director of The Transitional Pain Program
Medical Director of The Pain Research Unit
Toronto General Hospital
University Health Network

Monday January 18th, 2016
None to Declare
INCREASE PATIENT COMFORT
“Pain can be relieved effectively in 90% of patients, but it is not relieved effectively in 80% of patients.”
FOCUS

• Predictors of Increased Postoperative Pain
• Chronic Postsurgical Pain and Cost
• Perioperative Opioid Use
• Strategies For Postoperative Pain Management
• New Initiatives in Postoperative Care
Mechanism

**SURGERY**

- **Nociceptive input**: activation of peripheral sensory neurons by noxious stimuli
  ~ local increase in sensitivity, fades on removal of peripheral stimuli

- **Inflammatory input**: response to tissue injury & inflammation
  ~ Drives acute postop pain until wound healed, usually reversible

- **Neuropathic input**: arises after injury to nerves
  ~ intraoperative nerve trauma from cautery, dissection etc.

Kehlet *et al.* 2006
DECREASING POST OP PAIN

Causal Risk Factor Model

A

Pre-operative pain
- Pain memory
- Injury barrage
- Intra-operative stimuli
- Inflammation
- Ectopic activity

Post-operative pain

B

Pre-operative pain

Intra-operative stimuli

Post-operative pain

Pain free

Pharmacologic block

Katz, Clarke, & Seltzer, Anesthesia & Analgesia, November, 2011
RISK FACTORS

ACUTE POST OP PAIN

PATIENT DEMOGRAPHIC FACTORS HAVE BEEN REPORTED:

- FEMALE (Poleshuck, 2006)
- YOUNGER AGE (Kalkman, 2003)
- INCREASED BMI (Grodofsky, 2012)
RISK FACTORS

ACUTE POST OP PAIN

SURGICAL FACTORS HAVE BEEN REPORTED:

- SURGICAL TYPE
  - Thoracic > Abdominal > Orthopaedic > Laprascopic > Opthal.
- OPEN vs. Laparoscopic
- DURATION OF SURGERY
- # OF CHEST TUBES INSERTED
- INPATIENT vs. OUTPATIENT

Clarke et al, Physiotherapy Canada, 63 (3):289-304, 2011
PATIENT PSYCHOSOCIAL RISK FACTORS:

- Increased Anxiety (Janssen, 2008)
- Depression (Vickers, 2006)
- Pain Catastrophizing (Sullivan, 2011, Pinto, 2012)
- Neuroticism (Kehlet, 2006)
- Pain Expectancies/Optimism (Powell, 2011)
Factors affecting pain perception

- GENETICS
- Demographics
- Cognitive/Catastrophizing
- Anxiety/Depression
- Sensory/discriminative
- Impact on Q of Life
- Pain Control

EXPERIENCE OF PAIN
The neuropathic component in persistent postsurgical pain: A systematic literature review

Simon Haroutiunian\textsuperscript{a,*}, Lone Nikolajsen\textsuperscript{a,b}, Nanna Brix Finnerup\textsuperscript{a}, Troels Staehelin Jensen\textsuperscript{a,c}

\textsuperscript{a} Danish Pain Research Center, Aarhus University Hospital, Aarhus, Denmark
\textsuperscript{b} Department of Anesthesiology, Aarhus University Hospital, Aarhus, Denmark
\textsuperscript{c} Department of Neurology, Aarhus University Hospital, Aarhus, Denmark
• Systematic review. 281 studies assessed investigating PSPS in 11 surgical types

• Prevalence of NeuP determined using NeuP grading system

• Prevalence of NeuP high after thoracic and breast surgery (66/68%). 31% after groin hernia repair and 6% after THA and TKA

• Prevalence of PneuP varies by type of surgery and probability of nerve injury
# Incidence of Chronic Pain Post Surgery

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Incidence of Chronic Pain (%)</th>
<th>Estimated Incidence of Chronic Severe Pain (&gt;5 out of 10) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amputation</td>
<td>30–85</td>
<td>5–10</td>
</tr>
<tr>
<td>Thoracotomy</td>
<td>5–65</td>
<td>10</td>
</tr>
<tr>
<td>Mastectomy</td>
<td>11–57</td>
<td>5–10</td>
</tr>
<tr>
<td>Inguinal hernia</td>
<td>5–63</td>
<td>2–4</td>
</tr>
<tr>
<td>Coronary bypass</td>
<td>30–50</td>
<td>5–10</td>
</tr>
<tr>
<td>Cesarian section</td>
<td>6–55</td>
<td>4</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>3–50</td>
<td>Not estimated</td>
</tr>
<tr>
<td>Vasectomy</td>
<td>0–37</td>
<td>Not estimated</td>
</tr>
<tr>
<td>Dental surgery</td>
<td>5–13</td>
<td>Not estimated</td>
</tr>
</tbody>
</table>

*Source: Reproduced with permission from: Macintyre et al.*
In 2005, 26.6 million surgical procedures were performed on hospitalized patients.
Persistent postoperative pain can incur direct costs of up to $13,000 per year, and indirect losses (i.e. lost income) of $30,000 per year (Parsons, 2013).

In 2012, the top 10 priority surgeries performed on ~445,000 Canadians resulted in an estimated total cost of $900 million based on a conservative, annual 5%, incidence of severe postsurgical pain (Katz, 2015).

Acute postoperative pain that progresses to a chronic pain syndrome in a 30-year old individual is as much as $1 million over the course of their lifetime (Labatt, 2000).
Chronic pain from surgeries at Toronto General costs the Ontario Health Care System $2.9 – 4.1 M annually in direct and incremental costs.

〜4,000 patients receiving major surgery at Toronto General annually

200 new cases of chronic post-surgical pain (5% of all surgeries)

$7,000 annual Canadian estimate
$13,000 is U.S. published number in direct costs

$1.4 to $2.6M

300 worsening cases of chronic pain post-surgery (12.5% of all surgeries)

$5,000 annually in direct costs

$1.5M
PERI-OPERATIVE OPIOID USE
Solving the painkiller crisis: It’s in the hands of doctors

CARLY WEEKS
The Globe and Mail
Published Friday, Oct. 03 2014, 6:49 PM EDT
Last updated Friday, Oct. 03 2014, 7:18 PM EDT

From morphine to ‘hillbilly heroin’

CARLY WEEKS
The Globe and Mail
Published Friday, Oct. 03 2014, 7:18 PM EDT
Last updated Monday, Oct. 06 2014, 10:53 AM EDT

Doctors’ groups agree painkillers are over-prescribed

CARLY WEEKS
The Globe and Mail
Published Monday, Oct. 06 2014, 3:00 AM EDT
Last updated Monday, Oct. 06 2014, 7:10 AM EDT
The New Drug Crisis: Addiction by Prescription

By Jeffrey Kluger  |  Monday, Sept. 13, 2010

Update Appended: Sept. 17, 2010

It's not easy to find a mother who would look back fondly on the time her son had cancer. But Penny (not her real name) does. Penny lives in Boston, and her son struggled with the battle with the sis and worst the treatment. For that last one, at least, there was help — Oxycontin, a time-released opioid that works for up to 12 hours. It did the job, and more.

Prescribing opioids after minor surgery can lead to long-term use

The finding highlights the need for proper follow-up to ensure that less-risky pain management options are explored, a study says.

By KEVIN B. O'REILLY amednews staff — Posted March 26, 2012
FACT SHEET: Obama Administration Announces Public and Private Sector Efforts to Address Prescription Drug Abuse and Heroin Use
Long-term Analgesic Use After Low-Risk Surgery

A Retrospective Cohort Study

Asim Alam, MD; Tara Gomes, MHSc; Hong Zheng, MSc; Muhammad M. Mamdani, PharmD, MA, MPH; David N. Juurlink, MD, PhD; Chaim M. Bell, MD, PhD

<table>
<thead>
<tr>
<th>Primary Outcome</th>
<th>Opioid Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Events in Non-Early Users</td>
</tr>
<tr>
<td>All operations</td>
<td>27,288</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>26,584</td>
</tr>
<tr>
<td>Laparoscopic cholecystectomy</td>
<td>222</td>
</tr>
<tr>
<td>Transurethral resection of the prostate</td>
<td>425</td>
</tr>
<tr>
<td>Varicose vein stripping</td>
<td>57</td>
</tr>
</tbody>
</table>

**Conclusion:** Prescription of analgesics immediately after ambulatory surgery occurs frequently in older adults and is associated with long-term use.

*Arch Intern Med. 2012;172(5):425-430*
**CADUMS 2009-2012**

<table>
<thead>
<tr>
<th>Year</th>
<th>General Use of POA in past year</th>
<th>Use to get high</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>19.2%</td>
<td>0.4%</td>
</tr>
<tr>
<td>2010</td>
<td>20.6%</td>
<td>0.2%</td>
</tr>
<tr>
<td>2011</td>
<td>16.7%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2012</td>
<td>16.9%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

*2011 did not separate nonmedical use of opioids from other psychoactive pharm (opioids, stimulants, tranqs and sedatives)*

**In 2012 0.3% also acknowledged tampering with the delivery of the drug**

The results for 2012 are based on telephone interviews with 11,090 respondents across all 10 provinces, which represent 27,767,855 Canadian residents aged 15 years and older.
Rationale

- Does this apply to major surgery?
  - Increased patient concern about addiction
  - Opioid exposure unavoidable
  - Risks unknown

Methods

- Population based cohort study
- Major elective surgery 2003-2010 in Ontario
- Prolonged opioid use in opioid naïve patients
- Multivariable logistic regression

Clarke et al., British Medical Journal, 2014

3.1% Prolonged Opioid Use Rate
What this study adds

• Approximately 3.1% of patients who had not used opioids previously continued to use them for more than 90 days after major elective surgery

• Although 3.1% risk is low at an individual patient’s level, it represents an important public health concern because millions of patients undergo major surgery every year

Clarke et al., British Medical Journal, 2014
Prolonged Opioid Use By Surgery

<table>
<thead>
<tr>
<th>Procedure Type</th>
<th>(# Cases)</th>
<th>% With Prolonged Opioid Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open hysterectomy</td>
<td>(4185)</td>
<td></td>
</tr>
<tr>
<td>MI hysterectomy</td>
<td>(5287)</td>
<td></td>
</tr>
<tr>
<td>Open colorectal surgery</td>
<td>(8642)</td>
<td></td>
</tr>
<tr>
<td>MI colorectal surgery</td>
<td>(3202)</td>
<td></td>
</tr>
<tr>
<td>Open lung resection</td>
<td>(2423)</td>
<td>OR 2.58</td>
</tr>
<tr>
<td>MI lung resection</td>
<td>(720)</td>
<td>OR 1.95</td>
</tr>
<tr>
<td>CABG via sternotomy</td>
<td>(9488)</td>
<td></td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>(5193)</td>
<td></td>
</tr>
</tbody>
</table>

Clarke et al., British Medical Journal, 2014
Risk Factors for prolonged opioid use after surgery:

- Younger age
- Lower income
- Specific comorbidities (Renal Failure)
- Specific preoperative drugs (Benzodiazepines & SSRIs)
- Thoracic surgical procedures

Clarke et al., British Medical Journal, 2014
Female Gender, ↓ Age, & ↑ Anxiety predict CPSP, but not with the consistency or magnitude with which pain predicts pain.

*No other patient factor is as consistently related to the development of future pain problems as pain itself.

Why Does Pain Predict Pain?

• Collateral sprouting from intact nociceptive A\(\delta\) afferents that neighbour the innervated by injured afferents (Katz, 1996)

• Central Sensitization (Coderre & Katz, 1997)

• Pain Genetics (Clarke, 2015)


• Social & Environmental Factors
Two Distinct Populations

- Non-Chronic Pain Patient (80 - 85%)

- Chronic Pain Patient / Persistent Opioid Patient (15 - 20%)
Pre-operative Pre-emptive Analgesia

- Original 1988 definition

Administration of local anesthetics or opioids prior to surgery in order to block or suppress the central sensitizing effects of the “afferent injury barrage” brought about by incision (Wall, P.D. Pain 1988; 33: 289-290)
PREVENTIVE PERIOPERATIVE ANALGESIA

Treatment combination

PERI-OPERATIVE PERIOD

<table>
<thead>
<tr>
<th>PRE-OP</th>
<th>INTRA-OP</th>
<th>POST-OP</th>
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<tbody>
<tr>
<td>-</td>
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</table>

Use of different classes of analgesic agents acting at different sites in order to reduce peripheral / central sensitization and obtain better analgesia with fewer side effects.
The modern day approach is to manage pain using preventive strategies with the aims of reducing the intensity of acute postoperative pain, consumption of analgesics and associated adverse effects.
Classes of Medications

- Opioids
- NSAIDS
- Acetaminophen
- Anticonvulsants
- NMDA Antagonists
- Alpha 2 agonists
- Steroids
- Stimulants
- Local Anesthetics
- SNRIs
MULTIMODAL ANAGESIA

Activation of the peripheral nervous system

Tissue Damage

IL-6?

IL-1β

Activation of the central nervous system at the spinal cord level

Pain

Transmission of the pain signal to the brain

Humoral signal

SNRIs

GABAPENTIN

CELECOXIB

ACETAMINOPHEN

DEXAMETHASONE

LOCAL ANESTHETIC

LOCAL ANESTHETIC

OPIOID

CELECOXIB

GABAPENTIN

Activation of the peripheral nervous system

ACETAMINOPHEN

GABAPENTIN

CELECOXIB

SNRIs
• Reduce opioid consumption 30-50%
• Reduce opioid related side effects
• Improve pain scores up to 2/10

• CELECOXIB: among the most potent analgesics, no platelet dysfunction, no effect on bone fusion, no increase in thrombosis rates, minimal GI side effects

• *retrospective data demonstrated an association with anastamotic leaks

LEESE   CLIN PHARM 2000   MCGETTIGAN JAMA 2006
Gabapentin & Pregabalin

- Anticonvulsants
- Analgesic
- Alpha 2 delta Ca Channel blocker
- Amino Acid substitution more reliable absorption profile than gabapentin.

MATHIESEN  BJA 2008
PANDEY  J NEUROSURG ANESTHESIOLOGY 2005
BUVANENDREN ANESTH ANALG 2010

How it Works:

- Absorption small intestine
- Metabolism & excretion
- No interactions
Gabapentin Binds to the $\alpha_2$-delta Subunit of Voltage-gated Calcium Channels

Gabapentin binds here

extracellular

Lipid bilayer

cytoplasmic

Gabapentin and DPN
Backonja et al., JAMA, 1998

Gabapentin and Post-Op Pain
Gilron et al., Pain, 2005
Neuropathic Pain Characteristics

**Sensation**
- Loss of sensation of touch, temperature, pressure

**Hypersensitivity**
- Paresthesia by non-noxious stimuli, symptoms continuous or spasmodic
- Hypersensitivity can mask sensory loss

**Descriptors**
- Stabbing, shooting, burning, numbness
- pins & needles, tingling.....

(Kehlet 2006, Steegers 2008)
Gabapentin Modulates Hyperexcited Neurons

*Does not affect Ca\(^{2+}\) influx in normal neurons*
Genetic Link To Acute Pain Responses

ARUNDO DONAX
Local Anesthetic

• Improves dynamic pain

• Decreases Opioid Use

• Intraperitoneal/ Incision Infiltration

Peripheral Nerve Blocks
Recommendations for Perioperative Pain Management for Colorectal Resections

**Preoperative Management**

- Patients having open or laparoscopic colorectal resections
  - Celecoxib (400 mg) PO
  - Gabapentin (300 mg) PO

**Intraoperative Management**

- Open resections and patients at high risk for pulmonary complications having laparoscopic colorectal resections
  - Laparoscopic resections
    - TEA (T6-9) with LA + Opioids and general anaesthesia
      - TEA for 48-72 hrs, then oral opioids PRN
      - Acetaminophen 1000mg q6h x 3-4 days

**Postoperative Management**

- TEA contraindicated or declined
  - IV lidocaine started pre-incision
    - IV- PCA
    - Acetaminophen 1000mg q6h x 3-4 days
    - Celecoxib 200mg BID x 5-7 days or discharge
Intraoperative lidocaine infusion

Recommended for pts having laparoscopic colorectal surgery, or open colorectal surgery cases where a TEA is contraindicated or declined.

If TEA is contraindicated or declined, parenteral and/or oral opioids
Pain Management: Evidence for Lidocaine Infusions

Vigneault, et al. (2011) Metaanalysis of 29 trials (n=1,754)

<table>
<thead>
<tr>
<th></th>
<th>Effect Size</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain at rest:</td>
<td>-8.7</td>
<td>(-16.2 to -1.2)</td>
</tr>
<tr>
<td>Pain with cough:</td>
<td>-11.2</td>
<td>(-17.2 to -4.7)</td>
</tr>
<tr>
<td>Pain with movement:</td>
<td>-9.6</td>
<td>(-17.3 to -1.8)</td>
</tr>
<tr>
<td>↓ Opioid:</td>
<td>-8.4 mg</td>
<td>(-11.3 to -5.6)</td>
</tr>
<tr>
<td>↓ time to 1st flatus:</td>
<td>-7.6 h</td>
<td>(-10.8 to -4.5)</td>
</tr>
<tr>
<td>↓ time to 1st feces:</td>
<td>-10.7 h</td>
<td>(-16.1 to -5.3)</td>
</tr>
<tr>
<td>↓ Hospital Stay:</td>
<td>-0.2 d</td>
<td>(-0.4 to -0.07)</td>
</tr>
</tbody>
</table>

- 8/19 studies: toxic plasma levels (> 5 mcg/ml)
Local anaesthetics and regional anaesthesia for preventing chronic pain after surgery (Review)

Andreae MH, Andreae DA

Andrae & Andrae, Cochrane Collaboration 2012
Cochrane Review

• Compared the effectiveness of local anesthetics and regional anesthesia versus conventional analgesia for the prevention of pain 6 or 12 months after surgery

• Search Strategy yielded 4,481 studies, 23 studies were included (1,090 patients)

Andrae & Andrae, Cochrane Collaboration 2012
Cochrane Review

• Studies were grouped into: thoracotomy, limb amputation, breast surgery, laparotomy and other

Types of Regional used:
• Epidural anesthesia was used in thoracotomy studies (Ju 2008; Lu 2008; Senturk 2002)

• Paravertebral block was used in two studies on breast cancer surgery (Ibarra 2011; Kairaluoma 2006)

• For other surgical interventions, studies investigated a variety of regional anesthesia techniques: spinal anesthesia, epidural, nerve blocks, topical, i.v. infusions

Andrae & Andrae, Cochrane Collaboration 2012
Thoracotomoy: OR of 0.34 (95% CI 0.19 to 0.60)
NNT = 4

Breast surgery: OR of 0.37 (95% CI 0.14 to 0.94)
NNT = 5

*Small studies

Andrae & Andrae, Cochrane Collaboration 2012
Pharmacotherapy for the prevention of chronic pain after surgery in adults (Review)

Chaparro LE, Smith SA, Moore RA, Wiffen PJ, Gilron I

Chaparro et al., Cochrane Collaboration 2013
Figure 4. Forest plot of comparison: 1 Ketamine versus placebo comparisons, outcome: 1.5 Incidence of any pain at 6 months (all studies).

1.5.1 Abdominal and/or pelvic surgery

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Ketamine</th>
<th>Placebo</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Kock 2001</td>
<td>1</td>
<td>3</td>
<td>0.16</td>
<td>(0.02, 1.31)</td>
</tr>
<tr>
<td>De Kock 2001</td>
<td>0</td>
<td>2</td>
<td>0.10</td>
<td>(0.01, 1.89)</td>
</tr>
<tr>
<td>Katz 2004a</td>
<td>2</td>
<td>4</td>
<td>0.38</td>
<td>(0.05, 1.31)</td>
</tr>
<tr>
<td>Katz 2004a</td>
<td>6</td>
<td>19</td>
<td>1.12</td>
<td>(0.31, 3.97)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>108</td>
<td>56</td>
<td>0.40</td>
<td>(0.18, 0.98)</td>
</tr>
</tbody>
</table>

Total events: 9 out of 12
Heterogeneity: $\chi^2 = 4.37$, df = 3 ($P = 0.31$); $I^2 = 22$
Test for overall effect: $Z = 2.28$ ($P = 0.02$)

1.5.2 Amputation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Ketamine</th>
<th>Placebo</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hayes 2004</td>
<td>7</td>
<td>15</td>
<td>0.66</td>
<td>(0.35, 1.23)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>46</td>
<td>40</td>
<td>0.69</td>
<td>(0.47, 1.60)</td>
</tr>
</tbody>
</table>

Total events: 7 out of 12
Heterogeneity: Not applicable
Test for overall effect: $Z = 1.30$ ($P = 0.19$)

1.5.3 Breast surgery

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Ketamine</th>
<th>Placebo</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malek 2006</td>
<td>14</td>
<td>45</td>
<td>0.87</td>
<td>(0.47, 1.60)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>46</td>
<td>40</td>
<td>0.87</td>
<td>(0.47, 1.60)</td>
</tr>
</tbody>
</table>

Total events: 14 out of 14
Heterogeneity: Not applicable
Test for overall effect: $Z = 0.45$ ($P = 0.65$)

1.5.4 Orthopedic surgery

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Ketamine</th>
<th>Placebo</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perrin 2006</td>
<td>2</td>
<td>5</td>
<td>0.66</td>
<td>(0.17, 1.91)</td>
</tr>
<tr>
<td>Sanz in 2000</td>
<td>16</td>
<td>72</td>
<td>0.66</td>
<td>(0.29, 1.11)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>94</td>
<td>96</td>
<td>0.65</td>
<td>(0.40, 1.06)</td>
</tr>
</tbody>
</table>

Total events: 19 out of 30
Heterogeneity: $\chi^2 = 0.22$, df = 2 ($P = 0.90$); $I^2 = 0$
Test for overall effect: $Z = 1.74$ ($P = 0.08$)

1.5.5 Thoracotomy

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Ketamine</th>
<th>Placebo</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suzuki 2005</td>
<td>6</td>
<td>22</td>
<td>1.26</td>
<td>(0.25, 1.21)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>22</td>
<td>22</td>
<td>1.26</td>
<td>(0.25, 1.21)</td>
</tr>
</tbody>
</table>

Total events: 6 out of 11
Heterogeneity: Not applicable
Test for overall effect: $Z = 1.40$ ($P = 0.14$)

Total (95% CI) | 285 | 231 | 100.0% | 0.63 (0.47, 0.83) |
Total events | 56 | 70 |
Heterogeneity: $\chi^2 = 0.52$, df = 9 ($P = 0.69$); $I^2 = 9$
Test for overall effect: $Z = 3.23$ ($P = 0.001$)
Test for subgroup differences: $\chi^2 = 2.49$, df = 4 ($P = 0.09$); $I^2 = 0$
Beyond Acute Pain: What’s Next?

• Early and effective acute pain treatments

• Besides patient comfort: lasting effects?

• Does better pain control = less painful / more effective rehabilitation?

• Does this early benefit translate to better functioning long term?

• Affect the development of Chronic pain?
Goals: Transitional Pain Service

1. Modify trajectory of postoperative pain

1. Provide regular monitoring and safe weaning of opioids

2. Team-based approach to management of pain and return to baseline level of function

1. Facilitate safe discharge and transition from hospital to community.
Development of a Transitional Pain Service

Toronto General Hospital program uses new methods to prevent pain killer addictions after surgery

Acupuncture, exercise, psychological techniques and non-opioid pain medications used to prevent patients from developing chronic pain.
Transitional Pain Service

- APS Nurse Practitioner(s)
- Transitional Pain Service Co-ordinator
- Clinical Psychologist
- Physiotherapy / Acupuncture
- Social Work (various surgical services)
- TPS Physician
- TPS Administrative Assistant
First of Its Kind Program Aims to Break the Chronic Pain Cycle

Released: 13-Nov-2014 1:30 PM EST
Embargo expired: 13-Nov-2014 1:30 PM EST

TGH Transitional Pain Service

Toronto General Hospital program uses new methods to prevent pain killer addictions after surgery.

Acupuncture, exercise, psychological techniques and non-opioid pain medications used to prevent patients from developing chronic pain.
Mindfulness After Surgery - Transitional Pain Service, Toronto General Hospital
The Communication Gap

Typical pain questionnaire

Describe your pain
What’s making it worse?
How do you feel since last time?
Strategies For ERAS

- Identify your high risk 15% of patients preoperatively (with a chronic pain condition or on pre-existing opioids)

- Implement aggressive pharmacological strategies (pre, acute-post and continue into the post discharge period)
Strategies For ERAS

• In the general population, perform a risk assessment on the psychosocial co-morbidities (with the help from primary care / surgery)

• Consider Pre-operative education

• Implement strategies for early identification of patients immediately postoperatively that may lead to unnecessary extended length of hospital stay
## Referrals From Primary Care

**Transitional Pain Service**

200 Elizabeth St. (12NU), Toronto, Ontario M5G 2C4  
(P) 416-340-4800 ext. 2927 (F) 416-340-3698

*The Transitional Pain Service provides comprehensive care to patients preparing for and recovering from major surgery. Services include medication management, pain management workshops and groups, individual counselling, physiotherapy and acupuncture.*

<table>
<thead>
<tr>
<th>Before Surgery</th>
<th>Surgeries with increased risk for chronic postsurgical pain and persistent opioid use</th>
<th>After Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Chronic pain condition</td>
<td>□ Breast Surgery (i.e. mastectomy/axillary dissection)</td>
<td>□ Reports struggling with postsurgical pain</td>
</tr>
<tr>
<td>□ Opioid medication</td>
<td>□ Amputation</td>
<td>□ Reports more post-surgical pain than is typical</td>
</tr>
<tr>
<td>□ Antidepressant medication</td>
<td>□ Thoracic Surgery (esp. Thoracotomy incision)</td>
<td>□ Surgical pain does not appear to be resolving</td>
</tr>
<tr>
<td>□ Anxiolytic medication</td>
<td>□ Open Abdominal Surgery</td>
<td>□ Significant post-surgical pain 3 or more months after surgery</td>
</tr>
<tr>
<td>□ Depressed or distressed</td>
<td>□ Transplant Surgery (Lung / Liver)</td>
<td>□ Difficulty weaning off opioids after surgery</td>
</tr>
<tr>
<td>□ Highly anxious</td>
<td>□ Neck Dissection</td>
<td>□ Depressed, anxious and/or significantly distressed</td>
</tr>
<tr>
<td>□ Fear of surgery and/or fear of pain after surgery</td>
<td>□ Open Gyneocologic Surgery</td>
<td>□ Concern about possible opioid misuse</td>
</tr>
<tr>
<td>□ PTSD diagnosis</td>
<td>□ Orthopedic Surgery</td>
<td>□</td>
</tr>
<tr>
<td>□ Current substance misuse issues</td>
<td>□ Cardiac Surgery</td>
<td>□</td>
</tr>
<tr>
<td>□ History of substance misuse issues</td>
<td></td>
<td>□</td>
</tr>
</tbody>
</table>
Referral Criteria for the TPS

• Psychological co-morbidities (Dr. Aliza Weinrib)

• Average NRS >5 on POD #4 / POD #5 and still on APS

• Repeat consult to APS post discharge from service

• Pre-operative Chronic Pain Diagnosis +/- chronic opioids

• > 80 mg of PO morphine in initial 24 hours after surgery

• Long acting opioid (hm-contin or oxyneo)

• Previous / Current addiction (case by case)
The Toronto General Hospital Transitional Pain Service: development and implementation of a multidisciplinary program to prevent chronic postsurgical pain

Ensuring safe prescribing of controlled substances for pain following surgery by developing a transitional pain service

Alexander Huang¹, Joel Katz¹,²,³ & Hance Clarke*¹,³
QUESTIONS / DISCUSSION