Non-Narcotic Multimodal Analgesia in Head and Neck Surgery:

Feasibility, Safety and Impact on Physician Prescribing Practices

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Disclosures

No relevant financial disclosures
An Epidemic of Drug Overdose Deaths in the United States
Percent of persons who had at least one prescription filled for an opioid\(^a\) by sex — United States, 2017

![Bar chart showing percent of persons who had at least one prescription filled for an opioid\(^a\) by sex.]

Source: IQVIA™ Total Patient Tracker, 2017 Enhanced.
\(^a\)Opioid prescriptions, including codeine, fentanyl, hydrocodone, hydromorphone, methadone, morfine, oxycodone, oxymorphone, propoxyphene, tapentadol, tramadol, and Butrans\(^\text{®}\) and Buprenex\(^\text{®}\) (buprenorphine), were identified using the National Drug Code.

Percent of persons who had at least one prescription filled for an opioid\(^a\) by age group — United States, 2017

![Bar chart showing percent of persons who had at least one prescription filled for an opioid\(^a\) by age group.]

Source: IQVIA™ Total Patient Tracker, 2017 Enhanced.
\(^a\)Opioid prescriptions, including codeine, fentanyl, hydrocodone, hydromorphone, methadone, morfine, oxycodone, oxymorphone, propoxyphene, tapentadol, tramadol and Butrans\(^\text{®}\) and Buprenex\(^\text{®}\) (buprenorphine), were identified using the National Drug Code.

Average days of supply per opioid\(^a\) prescription\(^b\) — United States, 2006–2017

![Line graph showing average days of supply per opioid\(^a\) prescription.]

Source: IQVIA™ Transactional Data Warehouse.
\(^a\)Opioid prescriptions, including codeine, fentanyl, hydrocodone, hydromorphone, methadone, morfine, oxycodone, oxymorphone, propoxyphene, tapentadol, tramadol and Butrans\(^\text{®}\) and Buprenex\(^\text{®}\) (buprenorphine), were identified using the National Drug Code.
\(^b\)Temporal trends from 2006 to 2017 were evaluated by applying joint point regression methodology. This modeling approach simultaneously identified statistically significant trends as well as shifts in trends that occurred within a time series. A maximum of two joint points was allowed. Different dash types correspond to year groupings as determined by joint point regression.

Self-reported prevalence of prescription pain reliever misuse\(^a\) in the past year by region, persons 12+ years old — United States, 2016

![Map showing self-reported prevalence of prescription pain reliever misuse.]

Source: 2016 National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration, Rockville, MD.
\(^a\)Misuse of prescription drugs is defined as use in any way not directed by a doctor, including use without a prescription of one’s own medications; use in greater amounts, more often, or longer than told to take a drug or use in any other way not directed by a doctor. Prescription drugs do not include over-the-counter drugs.
THE OPIOID EPIDEMIC BY THE NUMBERS
2016 and 2017 Data

130+
People died every day from opioid-related drug overdoses\(^3\) (estimated)

11.4 m
People misused prescription opioids\(^1\)

42,249
People died from overdosing on opioids\(^2\)

2 million
People misused prescription opioids for the first time\(^1\)

2.1 million
People had an opioid use disorder\(^1\)

17,087
Deaths attributed to overdosing on commonly prescribed opioids\(^2\)

Age-adjusted rates of all opioid\(^a\) poisoning-related hospitalizations\(^b\) by region —
United States, 2015

Source: Weighted national estimates from Healthcare Cost and Utilization Project Nationwide Inpatient Sample, 2015, Agency for Healthcare Research and Quality. Data are from 2015, when HCUP transitioned from using ICD-9-CM to ICD-10-CM/PCS diagnosis codes and should not be compared with other years. Results may have been affected by the transition; please see the Surveillance Report technical notes for a discussion of transition.

\(^a\)For the first three quarters of 2015, includes ICD-9-CM principal diagnosis code of 960.00, 960.01, 960.02, 965.09 or external cause of injury E851.0, E850.1, E850.2; for the fourth quarter of 2015, includes ICD-10-CM/PCS diagnosis codes 292.0, 292.1, 292.2, 292.3, 292.4, 292.5, 292.6, 292.8, 292.9.

\(^b\)In-hospital deaths and patients who transferred from another hospital were excluded. Visits with missing age and gender were excluded. Numbers subject to rounding error.

H.R. 6

To provide for opioid use disorder prevention, recovery, and treatment, and for other purposes.

LEGISLATIVE BILL 931

Approved by the Governor April 04, 2018

Introduced by Howard, 9; Kuehn, 38; Lindstrom, 18; Halloran, 33.

A BILL FOR AN ACT relating to controlled substances; to amend sections 28-101 and 28-401.01, Revised Statutes Supplement, 2017; to provide requirements for prescriptions; to harmonize provisions; to provide termination dates; and to repeal the original sections.

Be it enacted by the people of the State of Nebraska,
HHS 5-POINT STRATEGY TO COMBAT THE OPIOIDS CRISIS

1. Better addiction prevention, treatment, and recovery services
2. Better data
3. Better pain management
4. Better targeting of overdose reversing drugs
5. Better research
The Problem

• Head and Neck surgical procedures rely heavily on opioid-based analgesia

• Numerous negative consequences of opioid analgesia¹
  • Addiction Potential
  • Opiate related adverse events
  • Societal costs
  • Controlled substance regulation

• Multimodal analgesia techniques incorporate non-narcotic agents²

Multimodal analgesia

- Opioids
- Alpha-2 agonists
- Acetaminophen
- Anti-inflammatory agents
- Ketamine

- Local anesthetics (epidural)
- Opioids
- Alpha-2 agonists
- NMDA antagonists

- Local anesthetics (peripheral nerve block)

- Local anesthetics (field block)
- NSAIDs
- COX-2 inhibitors
- Opioids

Pain

Descending modulation

Ascending input via spinothalamic tract

Dorsal horn

Peripheral nerve

Tissue injury

Peripheral nociceptors

Medscape courtesy of Hospital for Special Surgery
Study 1: Feasibility and Safety of Multimodal Analgesia

Key question:
Can multimodal analgesia techniques be safely applied in patients undergoing outpatient head and neck surgery?

✓ Thyroidectomy
✓ Parathyroidectomy
✓ Parotidectomy

• 64 adult patients
• Retrospective review of prospectively collected data (July 2016 to February 2017)
Multimodal analgesia

• Non-narcotic post-operative analgesia
  • Ibuprofen 600 mg po q6h
  • Acetaminophen 500 mg po q6h

• Escalation to narcotics permitted, as indicated

• Use of post-operative discharge narcotics identified (failure of strategy)
  • Poor analgesia
  • Patient anxiety with non-narcotic strategy
  • Physician anxiety

• Same-day discharge
Outcome Measures

Composite OBAS measure:

- Pain
- Vomiting
- Itching
- Sweating
- Freezing
- Dizziness
- Satisfaction with pain management

Table 1. Overall Benefit of Analgesia Score (OBAS)\(^a\) and Components\(^7\)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description (Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current pain (0 = minimal to 4 = maximum imaginable pain)</td>
</tr>
<tr>
<td>2</td>
<td>Distress and bother from vomiting in preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
<tr>
<td>3</td>
<td>Distress and bother from itching in preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
<tr>
<td>4</td>
<td>Distress and bother from sweating in preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
<tr>
<td>5</td>
<td>Distress and bother from freezing in preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
<tr>
<td>6</td>
<td>Distress and bother from dizziness in preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
<tr>
<td>7</td>
<td>Patient satisfaction related to pain management during the preceding 24 h (0 = not at all to 4 = very much)</td>
</tr>
</tbody>
</table>

\(^a\) Calculated OBAS = (sum total of scores from items 1 through 6) + (4 – score from item 7); low OBAS indicates high benefit of analgesia.

Composite OBAS measure:
Results

- 61% patients: successfully avoided discharge narcotics
- 88% patients: ‘high’ or ‘very high’ overall satisfaction
- Unplanned contact with providers for pain management minimized
- No adverse events:
  - Readmission
  - Bleeding (with use of perioperative NSAIDs)
  - Aspiration

Table 2. Patient-Reported Outcomes Related to Use of Multimodal Analgesia Strategy, With or Without Narcotic Prescription at Discharge

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median (Range)</th>
<th>Narcotics Prescribed on Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Patients</td>
<td>Yes (n = 25)</td>
</tr>
<tr>
<td>Resting pain&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2 (0-8)</td>
<td>2 (0-8)</td>
</tr>
<tr>
<td>Peak pain&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4 (0-9)</td>
<td>4 (1-8)</td>
</tr>
<tr>
<td>Overall Benefit of Analgesia Score&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1 (0-10)</td>
<td>2 (0-10)</td>
</tr>
</tbody>
</table>

<sup>a</sup> On a scale of 0 to 10 (0 = no pain, 10 = worst pain ever experienced).

<sup>b</sup> Low score indicates improved benefit of analgesia (Table 1 presents components and score calculation). Permissible range was 0 to 28.

Multimodal Analgesia in Outpatient Head and Neck Surgery
A Feasibility and Safety Study

Justin Oltman, BS; Oleg Milsak, MD; Mark D'Agostino, MD; Brittany Kauffman, BSN; Robert Lindau, MD; Andrew Coughlin, MD; William Lydiatt, MD; Daniel Lydiatt, DDS; Russell Smith, MD; Aru Panwar, MD

- Feasible and Safe
- Low pain perception scores
- High patient satisfaction with MMA (88%)
- Most patients avoided opioid prescriptions (61%)

**Preoperative Counseling**

**PRE-OPERATIVE**
Single oral dose:
- Gabapentin 100-300 mg
- Acetaminophen 1000 mg
- Meloxicam 7.5 mg

**INTRA-OPERATIVE**
- Pre-incision local anesthetic injection
- Prudent use of inhalational/IV agents
- Routine surgical technique

**POST-OPERATIVE**
- Scheduled Acetaminophen & Ibuprofen every 6 hourly (alternating)
Study 2: Adoption of Multimodal Analgesia & Changes in Prescribing Practices

Key question:
In outpatient head and neck surgery, does institutional availability of MMA pathway influence:

1) Adherence to such pathways?
2) Frequency of opioid prescriptions at discharge?

✓ Thyroidectomy
✓ Parathyroidectomy
Methods

• Same-day thyroid and parathyroid surgery (n=528)

• Optional MMA pathway available

• Retrospective data analyses (January 2015 to June 2017)

• Non-opioid post-operative analgesia
  • Ibuprofen 600 mg PO q6h
  • Acetaminophen 500 mg PO q6h

• Outcome metrics:
  • Adherence to all components of MMA pathway
  • Frequency of opioid prescriptions on discharge
Favorable outcomes

• Adherence to MMA pathway
• Frequency of opioid prescription on discharge

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence (to all 3 components of MMA), frequency, n (%)</td>
<td>2015</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>106 (43.4)</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>142 (87.7%)</td>
</tr>
<tr>
<td>Opioid prescription upon discharge, frequency, n (%)</td>
<td>2015</td>
<td>16 (13.1)</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>22 (9.0)</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>3 (1.9%)</td>
</tr>
<tr>
<td>Likelihood of opioid prescription on discharge, OR (95% CI)*</td>
<td>Ref.</td>
<td>0.66 (0.33-1.30)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.13 (0.04-0.44)</td>
</tr>
</tbody>
</table>

NSAIDs indicates nonsteroidal anti-inflammatory drugs.
Conclusion

Non-opioid multimodal analgesia strategy in outpatient thyroid and parathyroid surgery is associated with:

• Reduced frequency of opioid prescriptions upon discharge
• Improved physician prescribing practices
• Adoption and adherence to pathway components

Implications

• Template for actionable, effective, safe multimodal analgesia strategy
• Bridge between desire and ability to effect non-opioid based analgesia
Opioids, Multimodal Analgesia and We

Getting started with MMA

• Study own institutional experience
• Use published guidelines and resources
• Find institutional champions and collaborators
• Create an institutional plan, execute & measure outcomes
Next steps:

• Expanded applications?
• Comparative effectiveness studies
Multimodal Analgesia in Outpatient Head and Neck Surgery: A Feasibility and Safety Study

Jordyn O'Brien, BS, Ching-Michael Mok, MD (Agony Medics), Mark J. Agnes, MD, Dorothy Kauffman, MD, Robert Linn, MD, Andrew Coughlin, MD, William Lytker, MD, Daniel Lytker, MD, DJJ, Randall Smith, MD, Jr, Nasser Farzad, MD

Importance: Perioperative analgesia strategies that rely solely on narcotics may contribute to adverse effects and concerns about opioid abuse or dependence. Multimodal analgesia protocols incorporating nonopioid agents may reduce the need for postoperative narcotics.

Objectives: To evaluate the feasibility and safety of a multimodal analgesia protocol for outpatient head and neck surgical procedures and to identify associations between the multimodal analgesia protocol with postoperative pain scores and patient satisfaction.

Design, Setting, and Participants: Retrospective evaluation of prospectively collected data on 403 adults undergoing outpatient thyroid, parathyroid, and parotid surgery between July 2006 and February 2017 at the head and neck surgery service of a tertiary care hospital using multimodal analgesia strategies with use of immediate preoperative acetaminophen and gabapentin, and and intention to treat with a nonopioid postoperative analgesia strategy.

Main Outcomes and Measures: Overall patient satisfaction scores. Overall Benefit of Analgesia Score (OBA) Scores, and median resting and peak pain scores were recorded. Incidence of reliance on a narcotic-based postoperative analgesia strategy and adverse events related to altered analgesia were recorded.

Results: Sixty-four patients (148 [71%] female; mean [SD], age 54.6 ± 13.4 years) underwent outpatient thyroid, parathyroid, or parotid surgery with use of a multimodal analgesia protocol. On a 10-point rating scale, patients reported lower resting pain scores (median, 2.5 [range, 0.0-10]) and peak pain scores (median, 4.4 [range, 0-10]). The OBA assessment for composite effectiveness of analgesia indicated a favorable median score of 1 (range, 0-10; percentile rank, 56.8%) (IQR, 10.9%). Sixty-nine (87.2%) patients were able to avoid postoperative narcotic use on discharge. Fifty-six (88%) patients reported “high” or “very high” satisfaction with the multimodal analgesia strategy, with no significant adverse events, or readmissions were observed.

Conclusions and Relevance: A multimodal analgesia strategy was feasible and safe in patients undergoing outpatient head and neck surgery and may reduce the need for narcotics. It was associated with lower pain scores and patient satisfaction scores. The use of multimodal analgesia needs additional evaluation through comparative effectiveness assessment vs conventional pain management strategies.

Development of Multimodal Analgesia Pathways in Outpatient Thyroid and Parathyroid Surgery and Association With Postoperative Opioid Prescription Patterns

Deb M. Michaels, MD, Hakoon Lytker, MD, Daniel Lytker, MD, DDS, and Inter, MD, Robert Levy, MD, Andrew Coughlin, MD, Jr, Nasser Farzad, MD

Importance: Prescription opioid contributes to drug-related adverse effects and risk for dependence and abuse. Multimodal analgesia (MMA) has been shown to be a safe and effective strategy for reducing opioid use following thyroidectomy, parathyroidectomy, and surgical thyroidectomy. However, despite its benefit, MMA protocols are not uniformly performed in the same day thyroid, parathyroid, and parathyroid surgery. The objective was to compare the efficacy and effectiveness of current analgesia protocols and to identify the association of the multimodal analgesia protocol with postoperative pain scores and medication use with postoperative opioid prescription patterns.

Objectives: To observe trends in adoption and adherence to institutional MMA protocols following thyroid and parathyroid surgery, and to assess the association of institutional multimodal (non-opioid) analgesia protocols with opioid use and opioid prescription patterns following outpatient thyroid and parathyroid surgery.

Design, Setting, and Participants: Cohort study at a head and neck surgery service at a tertiary care hospital of prescription patterns and retrospective review of patient medical records following implementation of an institutional MMA protocol in 2015, based on preoperative administration of acetaminophen, nonopioid anti-inflammatory drugs (NSAIDs), and gabapentin, and postoperative use of antacids and sertraline for analgesia after thyroid and parathyroid surgery. There were 174 adult patients who underwent thyroid and parathyroid surgery between January 1, 2015, and June 30, 2017.

Main Outcomes and Measures: We report on an adherence to the MMA protocol over the study period as measured of physician key in adoption of the technique. The frequency of opioid use and opioid prescription patterns following thyroid and parathyroid surgery is reported over the study periods to study the association of the available MMA pathways with these variables.

Results: A total of 255 patients (108 [42.7] female; mean age 72 [range, 20-87] years) underwent outpatient thyroid and parathyroid surgery. The frequency of postoperative opioid prescriptions decreased during the study period (12 [22%] in 2015, 22 [44%] in 2016, and 3 [6.3%] in 2017). Patients who received MMA prescriptions were prescribed a lower percentage of opioid analgesics (15% in 2015, 30% in 2016, and 3% in 2017). A significant decrease in opioid use was noted in the study cohort, with 3 patients (0.4%) prescribed opioids on discharge (2015, 30.0%) and 2016 (30.0%) and 2017 (30.0%).

Conclusions and Relevance: Adherence to the MMA protocol increased substantially over the study period for patients undergoing thyroid and parathyroid surgery following MMA protocol. Use of multimodal analgesia, a uniform MMA protocol, was well-tolerated and did not lead to increased incidence of bleeding. Availability of effective nonopioid analgesia pathways may favorably influence physician prescribing practices and avoid unnecessary opioid prescription patterns.
Head and Neck Surgical Oncology

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