Moving on – useful clinical lessons learned in developing an International Classification System for Cancer Pain
Objectives

Discuss the following concepts:

1. Can improved definitions of neuropathic and incident pain help assessment and management?

2. What is stable pain control? Can a personalized pain goal help?

3. Can chronic pain and a smoking history contribute to complexity of pain management?
Advanced Cancer Pain

- Underdiagnosis and undertreatment
- Complex pain syndromes often require more intense treatment and more time to achieve stable pain control
- No universally accepted system to predict complexity of cancer pain management
Development of the Edmonton Classification System for Cancer Pain (ECS-CP)

- **ESS**
  - 1989 - 1995

- **rESS**
  - 2000 - 2005

- **ECS-CP**
  - 2005 - present

- Inter-rater reliability (Fainsinger et al, 2005)
- Predictive validity (Fainsinger et al, 2005)
- Construct validity (Nekolaichuk et al, 2005)
- Pain intensity as predictor (Fainsinger et al, 2009)
- Predictive validity in international sample (Fainsinger et al, 2010)
N - Mechanism of Pain

I - Incident Pain

P - Psychological Distress

A - Addictive Behavior

C - Cognitive Function

Table 1. Sample of the Edmonton Classification System for Cancer Pain (ECS-CP)

| Patient Name: __________________________________________ |
| Patient ID No: ________________________________ |

For each of the following features, circle the response that is most appropriate, based on your clinical assessment of the patient.

1. **Mechanism of Pain**
   - No: No pain syndrome
   - Nc: Any nociceptive combination of visceral and/or bone or soft tissue pain
   - Ne: Neuropathic pain syndrome with or without any combination of nociceptive pain
   - Nx: Insufficient information to classify

2. **Incident Pain**
   - Io: No incident pain
   - Ii: Incident pain present
   - Ix: Insufficient information to classify

3. **Psychological Distress**
   - Po: No psychological distress
   - Pp: Psychological distress present
   - Px: Insufficient information to classify

4. **Addictive Behavior**
   - Ao: No addictive behavior
   - Aa: Addictive behavior present
   - Ax: Insufficient information to classify

5. **Cognitive Function**
   - Co: No impairment. Patient able to provide accurate present and past pain history unimpaired
   - Ci: Partial impairment. Sufficient impairment to affect patient’s ability to provide accurate present and/or past pain history
   - Cu: Total impairment. Patient unresponsive, delirious or demented to the stage of being unable to provide any present and past pain history
   - Cx: Insufficient information to classify.

**ECS-CP profile**: N__ I__ P__ A__ C__ (combination of the five responses, one for each category)

Assessed by: ______________________________ Date: __________________________

Edmonton Classification System for Cancer Pain
Case 1

- 65-year-old male
- Prostate/bone mets cancer
- Pain localized right arm and hip
- Moves comfortably
- Oriented and alert
- On codeine 30 mg prn
- Stable marriage and home life
- No psychiatric history
- No history of addiction
### N - Mechanism of Pain

1. **Mechanism of Pain**
   - No: No pain syndrome
   - Nc: Any nociceptive combination of visceral and/or bone or soft tissue pain
   - Ne: Neuropathic pain syndrome with or without any combination of nociceptive pain
   - Nx: Insufficient information to classify

### I - Incident Pain

2. **Incident Pain**
   - Io: No incident pain
   - Ii: Incident pain present
   - Ix: Insufficient information to classify

### P - Psychological Distress

3. **Psychological Distress**
   - Po: No psychological distress
   - Pp: Psychological distress present
   - Px: Insufficient information to classify

### A - Addictive Behavior

4. **Addictive Behavior**
   - Ao: No addictive behavior
   - Aa: Addictive behavior present
   - Ax: Insufficient information to classify

### C - Cognitive Function

5. **Cognitive Function**
   - Co: No impairment. Patient able to provide accurate present and past pain history
   - Ci: Partial impairment. Sufficient impairment to affect patient’s ability to provide accurate present and/or past pain history
   - Cu: Total impairment. Patient unresponsive, delirious or demented to the stage of being unable to provide any present and past pain history
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**ECS-CP profile:** N___ I___ P___ A___ C___ (combination of the five responses, one for each category)

**Assessed by:** ___________________________  **Date:** ___________________________

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**Table 1. Sample of the Edmonton Classification System for Cancer Pain (ECS-CP)**

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2. **Incident Pain**
   - Io: No incident pain
   - Ii: Incident pain present
   - Ix: Insufficient information to classify

3. **Psychological Distress**
   - Po: No psychological distress
   - Pp: Psychological distress present
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   - Cx: Insufficient information to classify.

**ECS-CP profile:** N___ I___ P___ A___ C___ (combination of the five responses, one for each category)

**Assessed by:** ___________________________  **Date:** ___________________________
Case 2

- 65-year-old male
- Prostate/bone mets cancer
- Burning/stabbing pain down right leg
- Cannot move without severe pain
- Evidence of confusion
- Morphine increased 5 mg q4h to 100 mg q4h over 7 days
- Divorced 3 times; lives alone
- History of depression and suicide attempts
- Long history of alcohol and benzodiazepine abuse
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<tr>
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<th>14</th>
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<tr>
<td>Mini-Mental (Normal)</td>
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</tr>
</tbody>
</table>
N - Mechanism of Pain
I - Incident Pain
P - Psychological Distress
A - Addictive Behavior
C - Cognitive Function

Ne II Pp Aa Ci

Table 1. Sample of the Edmonton Classification System for Cancer Pain (ECS-CP)

<table>
<thead>
<tr>
<th>Community Care Services</th>
</tr>
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<tbody>
<tr>
<td>Regional Palliative Care Program</td>
</tr>
<tr>
<td>Improving the quality of living and dying</td>
</tr>
</tbody>
</table>

Edmonton Classification System for Cancer Pain

Patient Name: ____________________________
Patient ID No: __________________________

For each of the following features, circle the response that is most appropriate, based on your clinical assessment of the patient.

1. Mechanism of Pain
   - No pain syndrome
   - Nc Any nociceptive combination of visceral and/or bone or soft tissue pain
   - Ne Neuropathic pain syndrome with or without any combination of nociceptive pain
   - Nx Insufficient information to classify

2. Incident Pain
   - I0 No incident pain
   - Ii Incident pain present
   - IX Insufficient information to classify

3. Psychological Distress
   - Po No psychological distress
   - Pp Psychological distress present
   - Px Insufficient information to classify

4. Addictive Behavior
   - Ao No addictive behavior
   - Aa Addictive behavior present
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5. Cognitive Function
   - Co No impairment. Patient able to provide accurate present and past pain history unimpaired
   - Ci Partial impairment. Sufficient impairment to affect patient’s ability to provide accurate present and/or past pain history
   - Cu Total impairment. Patient unresponsive, delirious or demented to the stage of being unable to provide any present and past pain history
   - Cx Insufficient information to classify

ECS-CP profile: N__ I__ P__ A__ C__ (combination of the five responses, one for each category)

Assessed by: ____________________________ Date: ____________________________
How does pain classification help?

- Different pharmacological options for nociceptive and neuropathic pain
- Specific management for incident or episodic pain
- Approach to total pain syndrome
- Approach to history of addiction
- Cognitive impairment impacts accuracy of history or ability to tolerate pharmacological options
New perspectives

+ Systematic review of cancer pain classification systems
+ Expert conference on cancer pain assessment and classification – need for international consensus
+ Domains that should be included in a cancer pain system
+ New guidelines for the assessment of neuropathic pain

Moving on – a pilot study

- New study using modified ECS-CP definitions for neuropathic and incident pain
- Stable pain control using previous definition and stable pain control based on a personalized pain goal (PPG)
- Hypothesis - less problematic features as classified by the modified variables would require a shorter time to achieve stable pain control and use less complicated analgesic regimens and that PPG would be more valid outcome
- History of chronic pain – years
- Smoking history – pack years
- 300 advanced cancer patients - 3 palliative care sites in Edmonton: RAH (n=100), UAH (n=100), TPCU(n=100).
Neuropathic pain

How do we know a patient has a neuropathic pain syndrome?

How do we know we are using similar and reproducible assessments for diagnosing neuropathic pain?
Diagnosis of Neuropathic Pain

The NeuPSIG criteria for defining and grading neuropathic pain (NP):

1. Pain with a distinct neuroanatomically plausible distribution.
2. History of a relevant lesion or disease affecting the somatosensory system.
3. Confirmatory tests demonstrating presence of negative or positive sensory signs within innervation territory of lesion are present.
4. A diagnostic test confirms lesion or disease entity underlying the neuropathic pain.

First 2 criteria – possible NP
Addition of either 3 or 4 – probable NP
All 4 criteria present – definite NP

65 year old woman with Breast Cancer

- Known to have extensive local metastases
- Develops a new complaint of burning pain radiating down her right arm
- No sensory changes and no recent diagnostic imaging
- Possible Neuropathic pain
65 year old woman with Breast Cancer

- Known to have extensive local metastases
- Develops a new complaint of burning pain radiating down her right arm
- Numbness in some areas and allodynia in other areas of right arm
- No recent diagnostic imaging
- Probable neuropathic pain
65 year old woman with Breast Cancer

+ Known to have extensive local metastases
+ Develops a new complaint of burning pain radiating down her right arm
+ Numbness in some areas and allodynia in other areas of right arm
+ Diagnostic imaging shows brachial plexus and Cervical spine bone metastases with evidence of nerve root involvement
+ Definite neuropathic pain
65 year old woman with Pancreas Cancer

- Known to have extensive local metastases
- Develops a new complaint of burning epigastric pain radiating posteriorly
- No sensory changes
- Diagnostic imaging shows metastases to celiac plexus
- Probable neuropathic pain
## Edmonton Classification System for Cancer Pain: Mechanism of Pain (EZPCP, 2013/14)

<table>
<thead>
<tr>
<th>2013/2014</th>
<th>No</th>
<th>Nc</th>
<th>Ne</th>
<th>Nx</th>
</tr>
</thead>
<tbody>
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<td>RAH</td>
<td>26.2%</td>
<td>65.5%</td>
<td>4.4%</td>
<td>3.9%</td>
</tr>
<tr>
<td>UAH</td>
<td>33.9%</td>
<td>51.1%</td>
<td>5.1%</td>
<td>9.9%</td>
</tr>
<tr>
<td>PCCT Home</td>
<td>22.3%</td>
<td>60.5%</td>
<td>12.0%</td>
<td>5.1%</td>
</tr>
<tr>
<td>PCCT Hospitals</td>
<td>32.7%</td>
<td>52.4%</td>
<td>8.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>CCI</td>
<td>3.4%</td>
<td>69.0%</td>
<td>19.5%</td>
<td>8.0%</td>
</tr>
<tr>
<td>TPCU</td>
<td>3.9%</td>
<td>55.0%</td>
<td><strong>35.8%</strong></td>
<td>5.2%</td>
</tr>
</tbody>
</table>

![2013/2014 Mechanism Pain](image-url)

EZPCP data as of May 23, 2014
Break Down of Ne Across 3 Sites (n=300)

<table>
<thead>
<tr>
<th></th>
<th>TPCU*</th>
<th>RAH*</th>
<th>UAH*</th>
<th>All Sites*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nc</td>
<td>57</td>
<td>66</td>
<td>52</td>
<td>175 (58)</td>
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<tr>
<td>Ne</td>
<td>39</td>
<td>4</td>
<td>5</td>
<td>48 (16)</td>
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<tr>
<td>No</td>
<td>2</td>
<td>29</td>
<td>38</td>
<td>69 (23)</td>
</tr>
<tr>
<td>Nx</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>8 (3)</td>
</tr>
</tbody>
</table>

*For each site n=100, All sites n=300

Total Possible Ne: 4 (8%)
Total Probable Ne: 20 (42%)
Total Definite Ne: 24 (50%)

Total: 48 (100%)

Graph showing percentage of Ne across Nc, Ne, No, Nx categories for TPCU, RAH, UAH, and All Sites combined.
In univariate analysis, neuropathic pain was independently associated with time (days) to stable pain control ($p<0.05$).

In multivariate analysis, the following variables were independently associated with time (days) to stable pain control ($p<0.05$):

- Age
- Nociceptive pain
- **Neuropathic pain**
- incident pain (present, unable to assess)
- pain intensity
Incident pain

+ How do we know a patient has an incident pain syndrome?

+ How do we know we are using similar and reproducible assessments for diagnosing incident pain?
Incident Pain (I)

Pain can be defined as incident pain when a patient has background pain of no more than moderate intensity with intermittent episodes of moderate to severe pain, usually having a rapid onset and often a known trigger.

Plus guidelines for use
Guidelines for use

There are six key characteristics of *incident pain*, as defined in the ECS:

- **Relationship with background pain**: The intensity of incident pain is significantly greater than background pain.

- **Severity**: The intensity of incident pain is moderate to severe.

- **Predictability**: The trigger is often known, such as movement, defecation, urination, swallowing and dressing change. However, clinically significant episodic pain (i.e. no predictable trigger) can be included (e.g. bladder or bowel spasm).

- **Onset**: Its onset is rapid, with intensity often peaking within 5 minutes.

- **Transiency**: Incident pain is transient, and may return to baseline shortly after the trigger is stopped or removed.

- **Recurrence**: It is intermittent, recurring when the trigger is reinitiated or reapplied.
Edmonton Classification System for Cancer Pain: Incident Pain (EZPCP, 2013/14)

<table>
<thead>
<tr>
<th>2013/2014</th>
<th>IO</th>
<th>II</th>
<th>IX</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>67.3%</td>
<td>21.0%</td>
<td>11.7%</td>
</tr>
<tr>
<td>UAH</td>
<td>45.7%</td>
<td>16.9%</td>
<td>24.4%</td>
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<tr>
<td>PCCT Home</td>
<td>45.9%</td>
<td>40.8%</td>
<td>13.3%</td>
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<tr>
<td>PCCT Hospitals</td>
<td>52.1%</td>
<td>39.0%</td>
<td>8.9%</td>
</tr>
<tr>
<td>CCI</td>
<td>59.3%</td>
<td>35.0%</td>
<td>5.7%</td>
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<tr>
<td>TPCU</td>
<td>31.1%</td>
<td>45.7%</td>
<td>23.3%</td>
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2013/2014 Incident Pain

EZPCP data as of May 23, 2014
Modified Incident pain definition

1. Background pain mild or moderate (0 – 6)

2. Intensity of incident pain **significantly** greater than background pain going from mild (0 - 3) to moderate (4 – 6) or mild or moderate to severe (7 – 10) with at least a 2 point change noted to be significant by patient and/or rater.

   - Both criteria - Ii

   - Background pain severe - Ix
Breakdown of Incident Pain Across 3 Sites (n=231)

<table>
<thead>
<tr>
<th></th>
<th>TPCU*</th>
<th>RAH*</th>
<th>UAH*</th>
<th>All Sites*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
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<tr>
<td>li</td>
<td>41 (41.8)</td>
<td>11 (15.5)</td>
<td>8 (12.9)</td>
<td>60 (26.0)</td>
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<tr>
<td>lo</td>
<td>26 (26.5)</td>
<td>53 (74.6)</td>
<td>44 (71.0)</td>
<td>123 (53.2)</td>
</tr>
<tr>
<td>lx</td>
<td>31 (31.6)</td>
<td>7 (9.9)</td>
<td>10 (16.1)</td>
<td>48 (20.8)</td>
</tr>
</tbody>
</table>

*For TPCU n=98, RAH n=71, UAH n=62, All Sites n=231
Predictive Validity of Incident Pain

+ In univariate analysis, incident pain was independently associated with time (days) to stable pain control ($p<0.05$).

+ In multivariate analysis the following variables were independently associated with time (days) to stable pain control ($p<0.05$)
  - Age
  - Nociceptive pain
  - Neuropathic pain
  - Incident pain (present, unable to assess)
  - Pain intensity
What is stable pain control?

- Clinical outcome
- Research outcome
Stable Pain Control

<table>
<thead>
<tr>
<th>For 3 Consecutive Days:</th>
<th>Cognitively Intact</th>
<th>Cognitively Impaired</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 PRN doses per day</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pain-NRS ( \leq 3/10 )</td>
<td>✓</td>
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## Stable Pain Control

<table>
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<tr>
<th>For 3 Consecutive Days:</th>
<th>Cognitively Intact</th>
<th>Cognitively Impaired</th>
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<tbody>
<tr>
<td>&lt; 3 PRN doses per day</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pain-NRS ≤ 3/10</td>
<td>✓</td>
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</table>
Personalized Pain Goal (PPG)

- Patients with cognition sufficiently intact (as judged by the clinician) asked to describe on a 0-10 scale the pain intensity level that will allow them to achieve comfort in physical, functional, and psychosocial domains.
Stable Pain Control

<table>
<thead>
<tr>
<th>For 3 Consecutive Days:</th>
<th>Cognitively Intact</th>
<th>Cognitively Impaired</th>
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<tbody>
<tr>
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<td>✓</td>
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<tr>
<td>Pain-NRS ≤ 3/10</td>
<td>✓</td>
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<tr>
<td>Or ≤ PPG</td>
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Frequency distribution of the personalized pain goal (PPG) (n=169)

<table>
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<th>n</th>
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<td>3%</td>
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<tr>
<td>1</td>
<td>1</td>
<td>1%</td>
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<td>10</td>
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<td>1%</td>
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*Declined to Answer = 3
Unable to Assess = 59

Median = 3
### Time to Stable Pain Control (Days)

<table>
<thead>
<tr>
<th>Stable Pain Control Definition</th>
<th>Sample Size (n=231)*</th>
<th>Mean (days)</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
<td>Personalized Pain Goal</td>
<td>81</td>
<td>6.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Study Definition (cognitively intact)</td>
<td>84</td>
<td>6.7</td>
<td>6.5</td>
</tr>
<tr>
<td>PRNs Only (cognitive impairment)</td>
<td>50</td>
<td>8.0</td>
<td>7.7</td>
</tr>
</tbody>
</table>

*Overlap exists as some patients achieved more than one definition*
## Time to Stable Pain Control (Days)

<table>
<thead>
<tr>
<th>Stable Pain Control Definition</th>
<th>Sample Size (n=169)*</th>
<th>Mean (days)</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalized Pain Goal</td>
<td>79</td>
<td>6.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Study Definition (cognitively intact)</td>
<td>3</td>
<td>6.3</td>
<td>5.8</td>
</tr>
<tr>
<td>PRNs Only (cognitive impairment)</td>
<td>21</td>
<td>13.1</td>
<td>9.2</td>
</tr>
<tr>
<td>None of the Above</td>
<td>66</td>
<td>10.7</td>
<td>13.6</td>
</tr>
</tbody>
</table>

*Results only include those who had a recorded PPG
Chronic pain and smoking

In chronic nonmalignant pain, psychological distress and pain catastrophizing have been well recognized as a complicating factor, raising the issue of the role of a previous history of opioid treatment for chronic nonmalignant pain as an additional variable to include in the guidelines for defining psychological distress in the ECS-CP.

The association with smoking and cancer pain identified as an additional possible factor which is presently excluded in the ECS-CP Addiction guidelines.
# Patient Demographics (Initial Assessment) (n=300)

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>166</td>
<td>69</td>
<td>19-98</td>
<td>13</td>
</tr>
<tr>
<td>Female</td>
<td>134</td>
<td>7</td>
<td>1-30</td>
<td>7</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td>300</td>
<td>69</td>
<td>19-98</td>
<td>13</td>
</tr>
<tr>
<td><strong>Previous Opioid treatment for chronic non malignant pain (yrs)</strong></td>
<td>21*</td>
<td>7</td>
<td>1-30</td>
<td>7</td>
</tr>
<tr>
<td><strong>Smoking History (pack yrs)</strong></td>
<td>183</td>
<td>34</td>
<td>1-156</td>
<td>22</td>
</tr>
</tbody>
</table>

*Only 18/21 were able to provide number of years of previous opioid treatment
Predictive Validity of Smoking and Opioid History

- In univariate analysis, smoking (current) was independently associated with time (days) to stable pain control ($p<0.05$).

- In multivariate analysis neither smoking (current) nor chronic opioid history were independently associated with time (days) to stable pain control ($p<0.05$).

- Limitations:
  - Small sample size (particularly opioid use)
  - Further analysis regarding smoking history is pending
Clinical Applications

- Conduct more consistent assessments using standardized criteria
- Identify patients with complex pain profiles
- Assist with pain management strategies
  + pharmacological
  + non-pharmacological: trigger for referrals to ID team members
- Provide team with a common language and communication tool
  + medical record
  + team conference
- Use for administrative purposes
  + appropriate use of resources: assist with patient triage and referral to appropriate setting
  + performance indicator