ICU: The Symptom Burden

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COMPREHENSIVE, COMPASSIONATE CARE

CURATIVE CARE

PALLIATIVE CARE

SYMPTOM MANAGEMENT
Symptoms of ICU Patients

What do we know?
Sources of Stress


- **Dyspnea:** Knebel, 1989; Knebel, 1994; Powers, Bennett, 1999; Connelly et al, 2000.


- **Thirst:** Ballard, 1981; Wilson, 1987; Cochran, Ganong, 1989.

- **Worry about hunger and general discomfort:** Turner, 1990.
Symptoms of ICU Cancer Patients
(at moderate - severe level)

Discomfort
Thirst
Diff. Sleep
Anxiety
Pain
Hunger
Depression
Dyspnea

Nelson et al., 2001; 100 ICU patients, 50 could self-report
Symptoms experienced by ICU patients at high risk of dying

NIH NIHR #1 R01 NR008247-04

Puntillo K et al., Crit Care Med, 2010;38; 2155-60
Table 1. Prevalence of symptoms across 405 assessments from 171 patients

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percent</th>
<th>SE</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tired</td>
<td>74.7</td>
<td>2.79</td>
<td>69.2–80.2</td>
</tr>
<tr>
<td>Thirsty</td>
<td>70.8</td>
<td>3.13</td>
<td>64.6–76.9</td>
</tr>
<tr>
<td>Anxious</td>
<td>57.9</td>
<td>3.17</td>
<td>51.7–64.1</td>
</tr>
<tr>
<td>Restless</td>
<td>49.0</td>
<td>3.09</td>
<td>42.9–55.0</td>
</tr>
<tr>
<td>Hungry</td>
<td>44.8</td>
<td>3.32</td>
<td>38.3–51.3</td>
</tr>
<tr>
<td>Short of breath</td>
<td>43.9</td>
<td>3.37</td>
<td>37.3–50.5</td>
</tr>
<tr>
<td>Pain</td>
<td>40.4</td>
<td>3.16</td>
<td>34.2–46.6</td>
</tr>
<tr>
<td>Sad</td>
<td>33.9</td>
<td>3.00</td>
<td>28.0–39.7</td>
</tr>
<tr>
<td>Scared</td>
<td>32.8</td>
<td>3.42</td>
<td>26.1–39.5</td>
</tr>
<tr>
<td>Confused</td>
<td>26.6</td>
<td>2.87</td>
<td>21.0–32.3</td>
</tr>
</tbody>
</table>

Note: ses and 95% confidence intervals used the robust variance estimate from the generalized estimating equation approach.
Table 2. Mean intensity ratings (mild = 1, moderate = 2, severe = 3) for patients who reported symptom to be present

<table>
<thead>
<tr>
<th>Symptom Intensity</th>
<th>Mean</th>
<th>SE</th>
<th>95% Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tired</td>
<td>1.81</td>
<td>.062</td>
<td>1.69–1.93</td>
</tr>
<tr>
<td>Thirsty</td>
<td>2.16</td>
<td>.087</td>
<td>1.99–2.33</td>
</tr>
<tr>
<td>Anxious</td>
<td>1.92</td>
<td>.076</td>
<td>1.77–2.06</td>
</tr>
<tr>
<td>Restless</td>
<td>1.76</td>
<td>.079</td>
<td>1.61–1.91</td>
</tr>
<tr>
<td>Hungry</td>
<td>1.89</td>
<td>.091</td>
<td>1.71–2.07</td>
</tr>
<tr>
<td>Short of breath</td>
<td>1.89</td>
<td>.083</td>
<td>1.73–2.05</td>
</tr>
<tr>
<td>Pain</td>
<td>1.74</td>
<td>.073</td>
<td>1.60–1.88</td>
</tr>
<tr>
<td>Sad</td>
<td>1.85</td>
<td>.107</td>
<td>1.64–2.06</td>
</tr>
<tr>
<td>Scared</td>
<td>1.80</td>
<td>.118</td>
<td>1.56–2.03</td>
</tr>
<tr>
<td>Confused</td>
<td>1.73</td>
<td>.132</td>
<td>1.47–1.96</td>
</tr>
</tbody>
</table>

Note: ses and 95% confidence intervals used the robust variance estimate from the generalized estimating equation approach.
Table 3. Mean distress ratings (mild = 1, moderate = 2, severe = 3) for patients who reported symptom to be present

<table>
<thead>
<tr>
<th>Symptom Distress</th>
<th>Mean</th>
<th>SE</th>
<th>95% Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tired</td>
<td>1.94</td>
<td>.058</td>
<td>1.83–2.06</td>
</tr>
<tr>
<td>Thirsty</td>
<td>1.90</td>
<td>.080</td>
<td>1.74–2.06</td>
</tr>
<tr>
<td>Anxious</td>
<td>1.93</td>
<td>.076</td>
<td>1.79–1.79</td>
</tr>
<tr>
<td>Restless</td>
<td>1.95</td>
<td>.088</td>
<td>1.78–2.12</td>
</tr>
<tr>
<td>Hungry</td>
<td>1.62</td>
<td>.087</td>
<td>1.45–1.79</td>
</tr>
<tr>
<td>Short of breath</td>
<td>2.34</td>
<td>.088</td>
<td>2.17–2.52</td>
</tr>
<tr>
<td>Pain</td>
<td>2.08</td>
<td>.081</td>
<td>1.92–2.24</td>
</tr>
<tr>
<td>Sad</td>
<td>1.97</td>
<td>.114</td>
<td>1.74–2.19</td>
</tr>
<tr>
<td>Scared</td>
<td>2.15</td>
<td>.102</td>
<td>1.95–2.35</td>
</tr>
<tr>
<td>Confused</td>
<td>2.10</td>
<td>.152</td>
<td>1.80–2.40</td>
</tr>
</tbody>
</table>

Note: SESs and 95% confidence intervals used the robust variance estimate from the generalized estimating equation approach.
Symptom Burden

89 self-reporting patients had a mean (SD) of 4.8 (2.4) of 10 symptoms (Puntillo et al., CCM, 2010)
TARGETING SYMPTOMS
Symptom Assessment

A few words...
Assess Symptoms Versus Signs

• Most nurses (clinicians) discuss observable signs of disease when asked to assess patient symptoms.

Interviewer: So, today, what kinds of symptoms do you see her having?

Nurse: She’s running a temperature this afternoon. She’s been tachycardic all day, between 110 and 120. This isn’t new; she was tachycardic yesterday. Her blood pressure is stable, her skin is warm and dry, respirations regular and easy.

Puntillo et al., Heart & Lung, 2008
Use A Symptom Checklist: Valid, Reliable, Feasible

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes/No</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Tired</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short of breath</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Restless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungry</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Scared</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Thirsty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confused</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Puntillo et al., CCM, 2010
Assessing Symptoms in Non-Communicative Patients

1) **Behavioral assessment** (Pain, dyspnea, restlessness/agitation)

2) **Proxy assessment** (Puntillo et al., CCM, 2012)
   
   (Intraclasse coefficients from .35 to .78 are considered to be appropriately robust)
   
   • Correlation coefficients, patients & family members: ≥.35 for **intensity** in 6 of 10 symptoms (pain, SOB, restlessness, anxiety, sadness, and fear.)
   
   • Correlation coefficients of ≥.36 between patient & physician in 3 symptoms (pain, tiredness, SOB.)
   
   • No intensity ratings between patients and nurses had correlation coefficients >.32.

3) **Presumption of symptom distress**
Pain in ICU Patients

- Adult medical, surgical, and trauma ICU patients routinely experience pain, both at rest and with routine ICU care (B).

- Procedural pain is common in adult ICU patients (B).

- Pain should be routinely monitored in all adult ICU patients (+1B).

Clinical Practice Guidelines for the Management of Pain, Agitation, & Delirium in Adult ICU Patients

Pain in ICU Patients (cont.)

- Vital signs (or observational pain scales that include vital signs) **should not be used alone for pain assessment in adult ICU patients** (-2C).

- Vital signs **may be used as a cue** to begin further assessment of pain in these patients (+2C).

Treatment of Pain

- We recommend that IV opioids be considered as the first-line drug class of choice to treat non-neuropathic pain in critically ill patients (+1C).

- All available IV opioids, when titrated to similar pain intensity endpoints, are equally effective (C).

Barr et al., CCM, 2013
Symptom Control

- Short of breath
- Hungry
- Thirsty
- Tired
- Anxious
- Short of breath
- Pain
- Scared
- Confused

Most frequent
Most intense
Most Distressful

Puntillo et al., Crit Care Med, 2010
Dyspnea: Important Points

• 44% of 405 symptom assessments (Puntillo et al., CCM, 2010)

• May occur even in ventilated patients (40% of 400 survey reports)

• Assessment similar to that of pain; subjective sensation
<table>
<thead>
<tr>
<th>Variable</th>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate per minute</td>
<td>&lt;90 beats</td>
<td>90-109 beats</td>
<td>≥110 beats</td>
<td></td>
</tr>
<tr>
<td>Respiratory rate per minute</td>
<td>≤18 breaths</td>
<td>19-30 breaths</td>
<td>&gt;30 breaths</td>
<td></td>
</tr>
<tr>
<td>Restlessness: non-purposeful movements</td>
<td>None</td>
<td>Occasional, slight movements</td>
<td>Frequent movements</td>
<td></td>
</tr>
<tr>
<td>Accessory muscle use: rise in clavicle during inspiration</td>
<td>None</td>
<td>Slight rise</td>
<td>Pronounced rise</td>
<td></td>
</tr>
<tr>
<td>Paradoxical breathing pattern</td>
<td>None</td>
<td></td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Grunting at end-expiration: guttural sound</td>
<td>None</td>
<td></td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Nasal flaring: involuntary movement of nares</td>
<td>None</td>
<td></td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Look of fear</td>
<td>None</td>
<td></td>
<td>Eyes wide open, facial muscles tense, brow furrowed, mouth open</td>
<td></td>
</tr>
</tbody>
</table>
Management of Dyspnea

• Treat underlying condition
• Oxygen as indicated (e.g., hypoxemic)
• Mechanical Ventilation
• NIV in patients forgoing invasive mechanical ventilation (Curtis et al., CCM, 2007)
• Opioids – consider an opioid trial
• Benzodiazepines – equivocal; but in presence of COPD
• Optimal positioning
• Balancing rest with activity
• Cold cloth or fan on face – trigeminal nerve stimulant
• Inhaled furosemide?
Symptom Control

- Pain
- Short of breath
- Anxious
- Thirsty
- Hungry
- Scared
- Confused
- Tired

Most frequent
Most intense
Most Distressful

Puntillo et al., Crit Care Med, 2010
Palliation of Thirst in ICU Patients

- Single-blind randomized clinical trial

- Intervention group:  
  - N = 129

- Usual care group:  
  - N = 123

NIH- NINR Grant 1NR011825-03  
K. Puntillo, Principal Investigator
Thirst Relief Bundle

- Moisturizer
- Sterile ice cold water sprays
- Oral Swabs
Thirst Intensity

Estimated Thirst Intensity 0 - 10 NRS

- Pre-assessment
- Post-assessment

Group
- Usual Care
- Intervention
Thirst Distress

[Graph showing the comparison of thirst distress levels pre-assessment and post-assessment for Usual Care and Intervention groups.]
Symptom Control

- Pain
- Short of breath
- Scared
- Hungry
- Thirsty
- Tired
- Confused
- Anxious
Managing Patient Symptom Burden

It takes teamwork!
Thank You

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