

## EDITORIAL

# “Pain as the fifth vital sign” and dependence on the “numerical pain scale” is being abandoned in the US: Why?

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In an effort to reduce the burden of under assessment and inadequate treatment of pain, the American Pain Society (APS) in 1996 instituted the “pain as the 5<sup>th</sup> vital sign” campaign based on quality improvement guidelines published the previous year.<sup>1</sup> The aim of the campaign was to make pain assessment and measurement as important a measure of patient wellbeing as the existing four vital signs. The campaign was initially widely supported by many medical societies, regulatory organisations and pharmaceutical companies,<sup>2–4</sup> and was later adopted in the UK.<sup>5</sup> The APS guidelines suggested that pain should be recorded in a way that makes it highly visible and facilitates regular review by members of the health care team, and recommended use of unidimensional pain scales to record and chart pain intensity. In addition, it was suggested that elevated pain scores should act as a “red flag” to promote action.<sup>1</sup> Examples of recommended scales included the numeric rating scale (NRS), which is also known as the numerical pain scale (NPS); the visual analogue scale (VAS); and the categorical 4 point verbal rating scale (VRS). The NRS is the most commonly used pain scale, and patients are asked to rate their pain on a 0–10 scale. The VAS utilises a similar concept with patients marking a point on a 10 cm line. The categorical 4 point VRS involves asking the patient to state the severity of pain as none; mild; moderate, or severe.<sup>6,7</sup> Over the past 20 years many US healthcare institutions adopted pain as the 5<sup>th</sup> vital sign, and assessed pain using the self-reported unidimensional NPS.

The United States Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, used by the Centers for Medicare and Medicaid Services (CMS), is a patient satisfaction survey that facilitates reimbursement for

US healthcare providers. The survey includes the question “How often did the hospital or provider do everything in their power to control your pain?” It has been suggested that this question embedded pain as the 5<sup>th</sup> vital sign in US healthcare, but also had the unintended consequence of encouraging opioid administration in response to patients’ self-reported numerical pain scores.<sup>8</sup> As a result, it has been suggested that the “pain as the 5<sup>th</sup> vital sign” campaign with its reliance on the NPS directly contributed to the prescribed opioid epidemic that America is now experiencing.<sup>2–4</sup> Subsequently, the American Medical Association, the American College of Surgeons, The Joint Commission, The American Academy of Family Physicians, and the Centers for Medicare and Medicaid services have all withdrawn their advocacy of the “pain as the 5<sup>th</sup> vital sign” campaign.

## Prescribed opioid addiction in the US

Opioid misuse is now seen as a major health epidemic in the US, with social, medical and financial consequences.<sup>9,10</sup> In 2016, it was estimated that the combined economic effect of the opioid epidemic (health care, labour, and criminal justice costs) was \$92 billion.<sup>9</sup> Not surprisingly, there is now a presidential commission to combat the opioid drug addiction crisis. For many years it was believed that the risk of addiction to opioids prescribed for pain was rare.<sup>2,11</sup> There are currently an estimated 2 million US residents aged 12 and older who are addicted to prescription opioids.<sup>9</sup> That the risk of developing addiction to opioids prescribed for acute pain management was rare was not only erroneous but in part propagated by

pharmaceutical companies.<sup>2,12</sup> In 2007, three drug company executives pleaded guilty to federal criminal charges that they misled regulators, doctors, and patients about the risk of addiction associated with prescribed opioids.<sup>12</sup> There have been at least 600,000 deaths in the US from prescribed opioids, and another 180,000 more are predicted by 2020.<sup>9,10</sup>

### Numerical pain scale used alone is misleading

Unidimensional self-reported pain scores have been implicated in contributing to the prescribed opioid epidemic and is associated with over-sedation. One US hospital reported that following introduction of treating pain according to a numerical pain treatment algorithm the incidence of opioid over-sedation adverse drug reactions per 100,000 inpatient hospital days increased from 11.0 to 24.5.<sup>13</sup> Many researchers have not been able to demonstrate improved pain treatment or better pain outcome by measuring pain as the 5<sup>th</sup> vital sign using numerical pain scores.<sup>14,15</sup> As a result there is a movement within the US to abolish pain scores as a surrogate outcome measure of good care, and to stop the exclusive use of unidimensional pain assessment tools, as well as ending the direct relationship between provider reimbursement and patient self-reports of pain control<sup>3,4,8,9,16–18</sup>

The Joint Commission, which acts as the regulatory body for many US healthcare institutions, now recognises there is a direct link between healthcare policies, the numerical pain scale, pain expectations and opioid addiction.<sup>17</sup> In an effort to mitigate against the harm from prescribed opioid addiction The Joint Commission has developed 19 different “elements of performance” (EPs) that accredited hospitals will need to comply with by January 2018. To support this transformation of services they have published a detailed R<sup>3</sup> (Requirement, Rationale, Reference) manual to support each EP.<sup>18</sup>

Element of Performance 7 states that “using numerical pain scales (NPS) alone to monitor patients’ pain is inadequate” and “stresses the importance of assessing how pain affects function and the ability to make progress towards treatment goals.” They give the example of major abdominal surgery, and suggest that “immediately after surgery the goal of pain control may be the patient’s ability to take a breath without excessive pain. Over the next few days, the goal of pain control may be the ability to sit up in bed or walk to the bathroom without limitation due to pain”.<sup>18</sup>

### Other pain assessment tools

In 2016, the American Pain Society published authoritative guidelines on the management of postoperative pain and whilst they strongly recommend the use of validated scoring systems such as NRS, VRS, VAS and the faces rating scales, they acknowledge that the evidence surrounding their use is weak.<sup>7</sup> In addition to the validated scoring system, they propose that there should be 7 further elements to pain assessment, in effect promoting a pain conversation based around the following questions:

1. Onset and pattern (When did the pain start? How often does it occur? Has its intensity changed?)
2. Location (Where is the pain? Is it local to the incisional site, referred, or elsewhere?)
3. Quality of pain (What does the pain feel like?)
4. Aggravating and relieving factors; What makes the pain better or worse?

5. Previous treatment (What types of treatment have been effective or ineffective in the past to relieve the pain?)
6. Effect (How does the pain affect physical function, emotional distress, and sleep?)
7. Whether there are barriers to pain assessment (eg cultural or language barriers, cognitive barriers, misconceptions about interventions).<sup>7</sup>

Clinicians dealing with patients in chronic pain clinics have sufficient time to use multi-dimensional pain scores that integrate functional activity and pain that allow the analgesia to be titrated to pain and function.<sup>6</sup> However, none of these tools have been validated in assessing acute postoperative pain in busy time-pressured surgical wards, and may be too unwieldy for the members of the ward healthcare staff to reliably use.

The functional activity scale (FAS) is a novel development that builds on the rationale of the dynamic pain score.<sup>6,19</sup> The functional activity scale is a simple three level ranked categorical score applied at the point of care. It is used to assess whether the patient’s pain is sufficiently controlled to enable them to undertake appropriate activity for their surgery and pre-morbid state. The FAS is recorded as:

- A. No limitation: the patient is able to undertake the activity without limitation due to pain;
- B. Mild limitation: the patient is able to undertake the activity, but experiences moderate to severe pain;
- C. Significant limitation: the patient is unable to complete the activity due to pain, or pain treatment-related adverse effects.

Pain interventions are instituted to facilitate function, rather than empirical treatment of a self-reported pain score. The FAS score has not been independently validated but it is sufficiently brief to allow its adoption into routine clinical practice and has the potential to help rationalise the inappropriate use of analgesic interventions by promoting goal-directed pain control.<sup>6,19</sup>

### Dreaming

Dreaming is the concept of providing optimal perioperative pain management that promotes drinking, eating and mobilisation (i.e. function), and is considered a prerequisite to enhancing recovery after surgery.<sup>20</sup> A recently published editorial by Joshi and colleagues highlights that despite the well documented benefits, postoperative pain continues to be inadequately treated.<sup>21</sup> Furthermore, rather than simply using opioids as the backbone of multimodal analgesia, Joshi and colleagues argue that procedure-specific postoperative pain management (PROSPECT) utilising local anaesthetic techniques should be utilised when and where possible, based on the following benefits:

1. reduces the burden of untreated pain
2. promotes drinking, eating and mobilisation (function)
3. reduces perioperative use of opioids (and consequently associated opioid side-effects including delirium, hallucinations, sedation, dizziness, nausea, vomiting, reduced gastric emptying, constipation, tolerance, respiratory depression, hyperalgesia and dependence).

### Deprescribing and safe opioid disposal

The risk of prescribed opioid addiction following surgery in the US in previously opioid-naïve surgical patients may be as high

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