

Pain During Surgery and its Objective Measurement

The cost of pain during surgery

To the patient

Although not consciously recognised, during general anaesthetic the patient's body reacts to painful stimuli. Intraoperative pain can cause stress to the patient's body¹⁻⁴ and as the patient is unconscious during surgery they are unable to communicate how they are feeling, making evaluation of the situation difficult. Throughout the surgical procedure, anaesthetised patients are continuously monitored for hypnosis and muscle relaxation. Nociception/analgesia are currently assessed by monitoring changes in heart rate (HR), blood pressure (BP), and other indirect parameters which are not sensitive or specific to nociception. As a result, the patient may be given insufficient analgesia which can promote postoperative pain, or excessive analgesia which can result in overdosing and related complications⁵⁻⁸. In addition to pain, upon regaining consciousness after surgery, common complications resulting from opioid administration include nausea, vomiting, respiratory depression, constipation⁹ and hyperalgesia¹⁰. Current data shows up to 62% of patients suffer from moderate/extreme pain immediately after surgery¹¹ and 12.2% suffer from an opioid-related adverse drug event (ORADE) complications¹².

To the healthcare system

On average, post-operative complications result in an additional 3.4 extra days of hospitalisation per adverse event which produces an added cost of 27% per patient (on average US\$4,707 per person) and an increase in re-admissions¹². Patient dissatisfaction is strongly associated with insufficient postoperative pain relief therefore optimal perioperative pain management is a key to increase the physical, mental and social well-being of patients¹¹.

The objective measurement of pain

It has always been notoriously difficult to quantitatively measure pain. It is conditional on the patient's subjective assessment of how much pain they are in and their ability to communicate this effectively. For those who are unable to communicate or find it difficult (e.g. those anaesthetised), the clinicians responsible must rely on surrogate parameters which are not specific nor sensitive enough to pain.

The importance of measuring pain cannot be underestimated; it may contribute to the treatment pathway the patient will take. Currently there are no validated objective markers of nociception or pain that can be recommended for clinical use¹³ although measurements taken through monitoring haemodynamic and clinical parameters, such as heart rate, blood pressure, sweating etc., can aid clinician interpretation. It is accepted that measurements extracted as a result of these singular assessments are not specific to pain and may be caused by something unrelated, which can weaken the validity.

Conclusion

The consensus amongst healthcare professionals is that accurate assessment of a patient's pain is a crucial component of pain management and can achieve:

- Increased patient satisfaction¹⁴
- Earlier mobilisation
- Fewer pulmonary and cardiac complications
- Reduced risk of deep vein thrombosis
- Reduced cost of care¹⁵

Overview of pain

Treating pain is at the heart of medicine and increasing patients' quality of life as a result of easing pain is an essential role of every healthcare professional. Pain represents a major clinical, social and economic problem¹⁶ and affects the quality of life for hundreds of millions of people globally, with almost one in five surveyed Europeans reporting to have moderate or severe chronic pain¹⁷ and nearly 69,000 people dying every year globally from an overdose of painkillers¹⁸. In Europe, national healthcare and socioeconomic costs of conditions associated with chronic pain run into billions annually and represent 3–10% of gross domestic product¹⁷. The inability to quantitatively communicate or measure it only exacerbates the problem.

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