PMCNI nurses and patients, and encourages further research and evaluation of these therapies. The use of therapeutic combinations can also impact on the patients physiological, psychological, and social well-being.

Box 1. NOCICEPTIVE PAIN PATHWAYS

- **Transduction:** Initial stimulation of the primary afferent neurons occurs as a result of thermal, mechanical or chemical stimuli from amputation surgery and the inflammatory response (Caterina et al, 2005). This causes the release of excitatory neurotransmitters such as prostaglandins, substance P and histamine.
- **Transmission:** Impulses are generated along the afferent neurons to the dorsal horn of the spinal cord. Through excitatory neurotransmitters, the impulse can continue across the synaptic cleft, up the spinal cord, through the ascending pathways to the brain stem and thalamus (Wood, 2008; McCaffrey et al, 1999).
- **Perception:** This does not originate from one distinct area of the brain, which has led to the neuromatrix theory (Brooks et al, 2005). Melzack (1989) proposed this theory to describe the mechanism of phantom limb pain, suggesting a network of neurons continuously communicated information about pain sensation through various circuits in the brain.
- **Modulation:** This describes regulating the response to the perceived pain (Jagger, 2005). Melzack and Wall (1965) suggested inhibitory neurons in the dorsal horn can control incoming sensory information before transmission to the brain. Stimulation by massage and touch can release inhibitory neurotransmitters, including endogenous opioids and serotonin aiding pain relief (Mann et al, 2009; Mitchinson et al, 2005) and its reliability may be affected by the intervals between the predetermined levels of pain (Jensen et al, 2001). The more levels a tool has to gauge pain, the easier it is to identify a change in intensity (Williamson et al, 2005). The 10 point NRS could be considered more responsive to the change in pain intensity than the four-point VRS, but the advantage of the VRS is that it uses words to describe pain intensity.

Using the VRS or NRS may enhance a systematic and effective assessment of the pain and evaluation of the effectiveness of treatments for PLP. However, assessing PLP intensity may fail to identify other factors such as reduced quality of sleep and function, and depression (Turk et al, 2001).

Pain should be individually assessed and tools appropriate to the patient should include dimensions such as intensity, sensation, mood and function.

### Multidimensional assessment tools

Some multidimensional pain assessment tools are specifically designed to diagnose neuropathic pain. As PLP appears to be considered within the umbrella term of neuropathic pain, CREST (2008) suggests using The Leeds Assessment of Neuropathic Symptoms and Signs – Self-report tool (S-LANSS).

This tool has encouraged accurate diagnoses of neuropathic-related pain – including PLP – in 75% of people studied and demonstrates high levels of sensitivity (Bennett et al, 2005). This suggests the S-LANSS provides a more accurate and sensitive assessment of PLP when compared with the unidimensional VRS and NRS.

Dworkin et al (2001) argued the assessment of neuropathic-related pain, such as PLP should include more than one tool in order to consider wider aspects of the pain experience. The S-LANSS tool diagnoses the presence and type of pain and, combined with an intensity score – for example, from the VRS or NRS – may help nurses provide the most appropriate treatment or early referral to specialist services. It may also be necessary to use additional tools that assess the different aspects of the effect of PLP on the patient, for example, mood, behaviour and functions. Further research is required to identify a tool that will facilitate a holistic assessment of PLP.

The DH (2010) describes pain as the fifth vital sign and confirms that assessment of it and management strategies should be ongoing and regularly observed along with other vital physiological measurements. This can be done with a unidimensional VRS or NRS but may be more problematic.