



# Northern Health Palliative Care

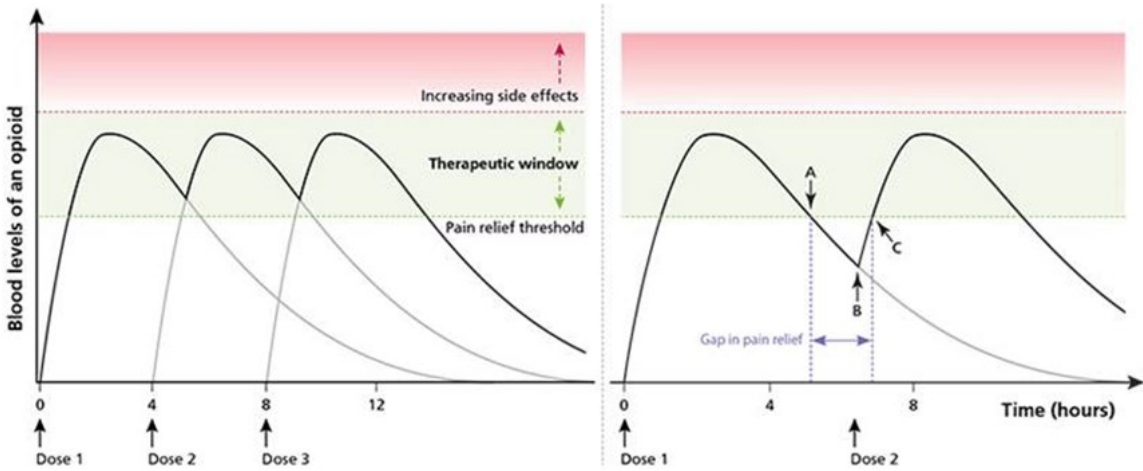
## What is “Steady State” and why is it important?

**Steady State** occurs when the rate of drug availability in the body and elimination from the body equal one another. It takes four to five doses of a regularly scheduled drug to reach a steady state, depending on the drugs half life. This is important because the steady state concentration of a drug is necessary for adequate symptom management .

In palliative care, opioids can be utilized for treating both pain and dyspnea. One of The World Health Organization’s (W.H.O) principles of medication management that can ensure a steady state is achieved and maintained is:

**BY THE CLOCK:** analgesic medications for moderate to severe pain should be given on a fixed dose schedule, **not** on an as needed basis.

To maintain a steady state the medication should be ordered at regular intervals that is usually equal to or less than the half-life duration of the medication. In the case of immediate release (IR) morphine and hydromorphone this is usually every four hours.



A: Level of opioid goes below pain relief threshold. B: The person is experiencing pain until next dose is administered. C: Opioid level rises above pain relief threshold.

### Case Study: What would you do?

**Question:** A 69-year-old man is admitted to hospital with end stage COPD and describes dyspnea as his most distressing symptom. He is ordered hydromorphone IR 1mg PO q4h to help improve this symptom. He says this improves his dyspnea. At night he appears to be sleeping comfortably. Should the nurse wake him to give him his scheduled dose?

**Answer:** YES! As per the W.H.O principle stated above opioids should be given “by the clock” to ensure that steady state is achieved and then maintained. If a drug is not given “by the clock” the patient may experience “end-of-dose failure”. This is when a patient experiences a re-emergence of symptoms due to drug levels dropping below a therapeutic level.

**References:**  
Medical Care of the Dying 4<sup>th</sup> Edition. Victoria Hospice Society Learning Center for Palliative Care, 2006.  
Northern Health Palliative Care Program Symptom Guidelines 4<sup>th</sup> Edition, 2019.  
Murray, K. (2020). *Integrating a Palliative Approach: Essentials for Personal Support Workers Second Edition*.  
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