

Pain as the 5th Vital Sign

Guidelines for Doctors

Management of Adult Patients

Pain as the 5th Vital Sign Guidelines for Doctors (Management of Adult Patients)

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Guideline 1

Pain Assessment Guide: Taking a Brief Pain History

“TELL ME ABOUT YOUR PAIN.....”

P	Place	Where is your pain?
A	Aggravating factors	What makes the pain worse?
I	Intensity	<p>If 0 is no pain and 10 is the worst pain imaginable: What is your pain score now?</p> <p>What is the worst level of pain (score) you experience in a day?</p> <p>What is the least pain (score) you experience in a day?</p>
N	Nature Neutralizing factors	<p>Describe your pain – e.g. aching, throbbing, burning, shooting, stabbing, sharp, dull, deep, pressure, etc</p> <p>What makes the pain better?</p>

Other questions to ask on pain:

Pattern of pain: Is the pain always there? (constant) or does the pain come and go? (intermittent or episodic pain)

Associated symptoms: Do you have the following symptoms in the painful area or elsewhere?

- numbness, tingling, allodynia (pain from a non painful stimulus), hyperalgesia (pain out of proportion to a painful stimulus)

Impact of pain: How does the pain affect your sleep? Your appetite? Your mood? Your daily activities? Your relationships? Your work?

Other important information to obtain from the patient:

Past medical history, past and current medications, patient’s understanding about his/her pain and its cause.

(Note: These are usually more important in chronic pain conditions than in acute pain.)

Guideline 2

Diagnosis of acute and chronic pain

Differences between acute and chronic pain

	Acute Pain	Chronic Pain
General	A symptom of underlying damage or disease	A chronic disease of the nervous system
Onset	Acute pain begins suddenly, usually due to an injury	Chronic pain might have originated with an initial trauma/injury or infection, or there might be an ongoing cause of pain. However, onset may be insidious and many people suffer chronic pain in the absence of any past injury or evidence of body damage.
Types of pain	Usually nociceptive (somatic or visceral). Acute neuropathic pain may occur but is much less common	May be nociceptive (somatic or visceral) or neuropathic. Nociceptive somatic pain is that arising from skin, soft tissue and bones while visceral pain is that arising from viscera e.g. liver, pancreas, intestines. Neuropathic pain is pain resulting from damage to the central or peripheral nervous system
Characteristics of pain	Somatic pain is sharp in quality and well localised, and is worse on movement, while visceral pain is dull, aching and poorly localised. Psychological effect when present is usually anxiety.	Nociceptive pain may be sharp or dull, throbbing or aching. Neuropathic pain is usually burning, shooting or stabbing. Neuropathic pain may be associated with the following sensory symptoms: Numbness or Paraesthesia Allodynia: pain in response to a non-painful stimulus, e.g. touch Hyperalgesia: pain out of proportion to a painful stimulus Dysaesthesia: unpleasant abnormal sensations Often has a psychosocial impact e.g. depression / anxiety, anger, fear, family and relationship stresses, sleep disturbances.
Meaning of Pain	Acute pain serves as a warning sign of damage e.g. injury, disease or a threat to the body.	Chronic pain does not signal damage. The nature of the disease is that the pain levels may be worse on some days and better on others so that patients have "bad days" and "good days". Often associated with fear of re-injury resulting in "fear avoidant" behaviour.

	Acute Pain	Chronic Pain
Pain Duration	<p>Acute pain resolves when the injury heals and/or when the underlying cause of pain has been treated.</p> <p><i>Unrelieved severe acute pain, however, might lead to chronic pain.</i></p>	<p>Chronic pain persists despite the fact that the injury has healed.</p> <p>Duration of pain is usually more than 3 months.</p> <p>Patients often present to hospital with “acute” episodes which are actually “flare-ups” of pain.</p>
Common Causes	<p>Acute pain might be caused by many events or circumstances, including:</p> <ul style="list-style-type: none"> • Surgery • Fracture • Burns or cuts • Labour and childbirth • Myocardial infarction • Inflammation e.g. abscess, appendicitis 	<p>Common chronic pain conditions include:</p> <ul style="list-style-type: none"> • Headache • Low back pain • Cancer pain • Arthritis pain • Chronic pancreatitis • Chronic abdominal pain from “adhesion colic” • Neuropathic pain e.g. <ul style="list-style-type: none"> a. Post-herpetic neuralgia b. Diabetic peripheral neuropathy c. Post-spinal cord injury pain d. Central post-stroke pain

Summary
Differences between Acute and Chronic Pain

Acute Pain	Chronic Pain
Symptom	Disease
Tissue injury / inflammation	Tissue injury may not be present OR pain persists even after tissues have healed
Onset recognizable	Gradual onset
Short- term - resolves when tissues heal	Long-term - does not resolve despite healing / no injury
Warning sign	False alarm
Psychological impact (anxiety) is usually short term	Associated with psychological problems e.g. depression, anger, fear.

Guideline 3

General guide for diagnosis and management of chronic non-cancer pain

Rememberchronic pain is different from acute pain.....chronic pain won't Kill your patients!

1. Firstly, you need to differentiate between acute and chronic pain. Ask the patient how long he/she has had the pain – patients often tell you the duration of the current episode of flare up, so do not get misled by this – one question you may ask is “Have you ever had this kind of pain before or is this the first time you are having this pain?”
2. Often, the patient is already “known” to have chronic pain e.g. in emergency department where he/she is a “regular visitor” or in the surgical or orthopaedic ward where the patient gets admitted every few weeks or months. When such a patient is readmitted for the same complaint you must still rule out any new acute condition – this is easily done if you have already documented the **site** and **nature** of pain in previous admissions. You need to re-investigate the patient **ONLY IF THE PAIN IS IN A COMPLETELY DIFFERENT SITE OR IF THE PATIENT HAS NEW SYMPTOMS E.G. VOMITING, LOSS OF WEIGHT.**
3. All patients with chronic pain who are coming for repeated admissions or treatment (often analgesic injections) because of pain should be referred to a Pain Clinic. However, in places where you do not have pain clinics you may have to manage the patient in an acute ward.
4. Principles to follow when you manage patients with chronic non-cancer pain include:
 - a. Give **regular oral** analgesics eg. Tramadol, Aqueous or SR morphine and PCM. If you suspect neuropathic pain, add antineuropathic agents (antidepressants e.g. amitriptyline and anticonvulsants e.g. carbamazepine)
 - b. Avoid Pethidine. Avoid injections as far as possible.
 - c. Do not use NSAIDS / COX2 inhibitors longer than 1-2 weeks. You may use them for a few days to get control of a flare up (exacerbation) of chronic pain, but they should never be given for long term use as the patient will have a risk of developing renal failure and have a higher risk of CV problems (stroke and myocardial infarction).
5. Continued management of the patient involves the following:
 - a. Refer to a physiotherapist for an exercise program (tailored to the patient’s current physical abilities) that he/she can do at home.
 - b. Discharge the patient on a regime of regular analgesics (as in (4a) above).
 - c. Refer to a pain clinic for assessment and follow-up.
 - d. If a pain clinic is not accessible, you may have to follow up the patient in your clinic. You should emphasise to the patient that he/she should come for regular follow-up and not just when he/she has flare ups (severe pain). When the patient does come for follow-up, focus not just on the pain itself (it will always be there) but on function and mood, i.e. what the patient is doing (is he/she back to work?), how is he/she feeling and how is her/his relationship with his/her family and friends.

6. At a Pain Clinic, the following are carried out:
- i. Multidisciplinary Assessment of the patient, which includes
 - e. Medical assessment, which includes making a diagnosis and deciding whether any further investigations are indicated, as well as reviewing current treatment. This is usually the task of a pain specialist.
 - f. Physical assessment to look for primary and secondary musculoskeletal effects of chronic pain. This is usually done by a physiotherapist.
 - g. Psychological assessment which includes looking at the psychological impact of the pain, level of anxiety and depression, how the patient copes with the pain, effect on family and work, etc. This is usually done by a clinical psychologist or psychiatrist.
 - ii. Multidisciplinary multimodal management, which includes
 - Review of current treatment
 - Making a plan, together with the patient, regarding initial and long-term pain management. This usually includes more than one of the following modalities.
 - pharmacotherapy, using appropriate drugs
 - nerve blocks and other interventions,
 - active physiotherapy, including exercises and activities that patients can do at home
 - psychological therapy, including relaxation training and other pain management strategies
 - In the management of chronic pain, emphasis is on **self-management** (what the patient can do for him/herself) and achieving long-term changes (e.g. from exercise) rather than short-term gains (e.g. from short acting analgesic medications).

Guideline 4 Drugs in Acute Pain Management: The Analgesic Ladder

Analgesic Ladder for Acute Pain Management

MILD		MODERATE		SEVERE		UNCONTROLLED
0-3		4-6		7-10		To refer to APS for: PCA or Epidural or other form of analgesia
<u>Regular</u> No medication or	<u>PRN</u> PCM &/or NSAID /	<u>Regular</u> Weak Opioid ± PCM 1gm QID oral ± NSAID / COX2 inhibitor	<u>PRN</u> Additional weak opioid	<u>Regular</u> Higher dose of weak opioid Or IV/SC Morphine 5-10mg 4 hrly OR Aqueous morphine 10-20 mg	<u>PRN</u> IV/SC Morphine 5-10mg OR Aqueous morphine *Oral or SC Morphine may be safely given	

Note: See chart below for dosages of analgesic drugs

1. Weak opioids include Dihydrocodeine (DF118) and Tramadol.
2. In NBM patients oral drugs may be replaced by any of the following, depending on the pain level
 - a. Morphine sc or iv (Note that 10 mg IV morphine is equivalent to 20 mg oral morphine)
 - b. SC or IV Tramadol
 - c. Rectal PCM
 - d. Rectal Diclofenac or IV Parecoxib or IV Ketorolac
3. NSAIDs should be used with caution in patients with thrombocytopenia, coagulopathies, asthma and renal, hepatic or cardiac impairment. It is contraindicated for patients with hypovolemia, active peptic ulceration or with a history of sensitivity, eg. wheezing to aspirin or other NSAIDs. In the elderly (over 65 yrs) consider using a lower dose NSAID and buffer those at risk of GI problems with Proton Pump Inhibitors. For patients with peptic ulcers, use COX2 inhibitors.
4. For those with severe pain, use SC or IV morphine and titrate to comfort (see Guideline 5, Morphine Pain Protocol)

Formulations And Dosage Of Commonly Used Analgesics

DRUG	FORMULATION AVAILABLE	DOSAGE
Paracetamol	Tablet 500mg, Suspension 500mg/5ml, Suppositories	500 mg – 1gm qid
NSAID		
Diclofenac	Tablet 50mg & 25mg, Suppositories 12.5mg, 25mg, (50mg & 100mg)* Gel	Oral: 50mg tds, Sup: 50mg-100mg stat Topical: PRN
Mefenamic Acid (Ponstan)	Capsule 250mg	250 mg – 500mg tds
Ibuprofen (Brufen)	Tablet 200mg & 400mg*	200 mg – 400 mg tds
Naproxen (Naprosyn, Synflex)	Tablet 250mg, 550mg	500mg-550 mg bd
Ketoprofen (Orudis, Oruvail)	Capsule 100mg *, Injection 100mg, Patch 30mg, Gel	Oral: 100mg daily, IV: 100mg bd Patch: 30mg - 60mg bd, Topical: PRN
Ketorolac (Toradol)	Injection 30mg/ml	10mg - 20 mg bd max 3 days
Meloxicam (Mobic)	Tab 7.5mg	Daily or bd
COX 2 inhibitors		
Celecoxib	Capsule 200 mg	200 mg bd (max 1 week)
Etoricoxib	Tablet 90 mg & 120 mg	120 mg daily (max 1 week)
Parecoxib	Injection 20 mg/ml	40 mg bd (20 mg bd for elderly) max for 2 days
WEAK OPIOID		
Tramadol	Capsule 50mg, Injection 50mg/ml	50mg -100mg tds or qid (max 400mg/day)
Dihydrocodeine (DF118)	Tablet 30 mg	30mg-60mg qid (max 360mg/day)
STRONG OPIOID		
Nalbuphine (Nubain)	Injection 10mg/ml	Stat dose only: 10mg (equivalent to Morphine 10mg) patients on regular Morphine/ Pethidine/ Fentanyl
Morphine	Tablet SR 10mg,30mg Aqueous 10mg / 5ml Injection 10 mg/ml,	SR and Aqueous to be used for cancer pain IV and Subcut : < 65yrs : 5mg -10mg 3-4hrly > 65yrs : 2.5mg -5mg 3-4hrly Reduce dose in renal and hepatic impairment
Fentanyl	Injection 50 mcg/ml, Patch 25 mcg, 50 mcg	IV only to be prescribed by APS team. Patch to be used in cancer pain; NOT in Acute Pain
Pethidine	Injection 50mg/ml,100mg/2ml	IV and Subcut : < 65yrs : 50mg -100mg 3-4hrly > 65yrs : 25mg -50mg 3-4hrly Reduce dose in renal and hepatic impairment. Use not encouraged because of Norpethidine tox

		addiction.
Oxycodone (Oxycontin)	Tablet SR 10mg & 20mg	Mainly used for cancer pain

Guideline 5

Titration of Opioids for Rapid Pain Relief: The Morphine Pain Protocol

Rapid control of severe acute pain may be necessary in certain situations e.g.

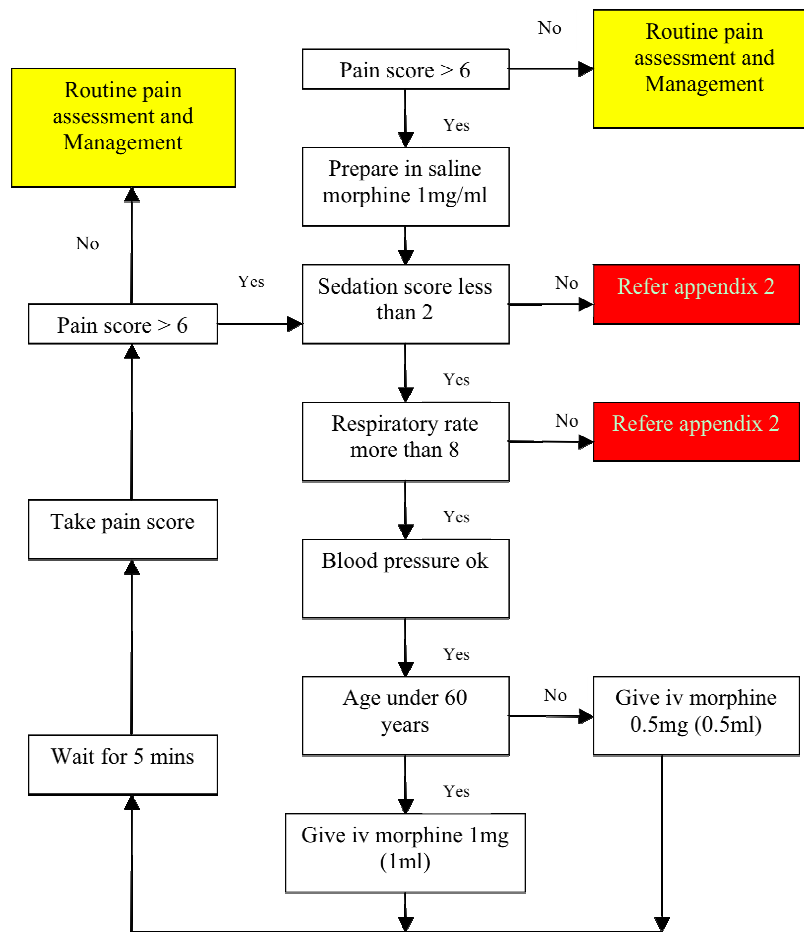
- In the recovery ward, immediately after an operation
- In the emergency department, following acute trauma
- To cover episodes of incident pain e.g. dressing changes, physiotherapy
- In patients with severe cancer pain presenting with an acute exacerbation of pain

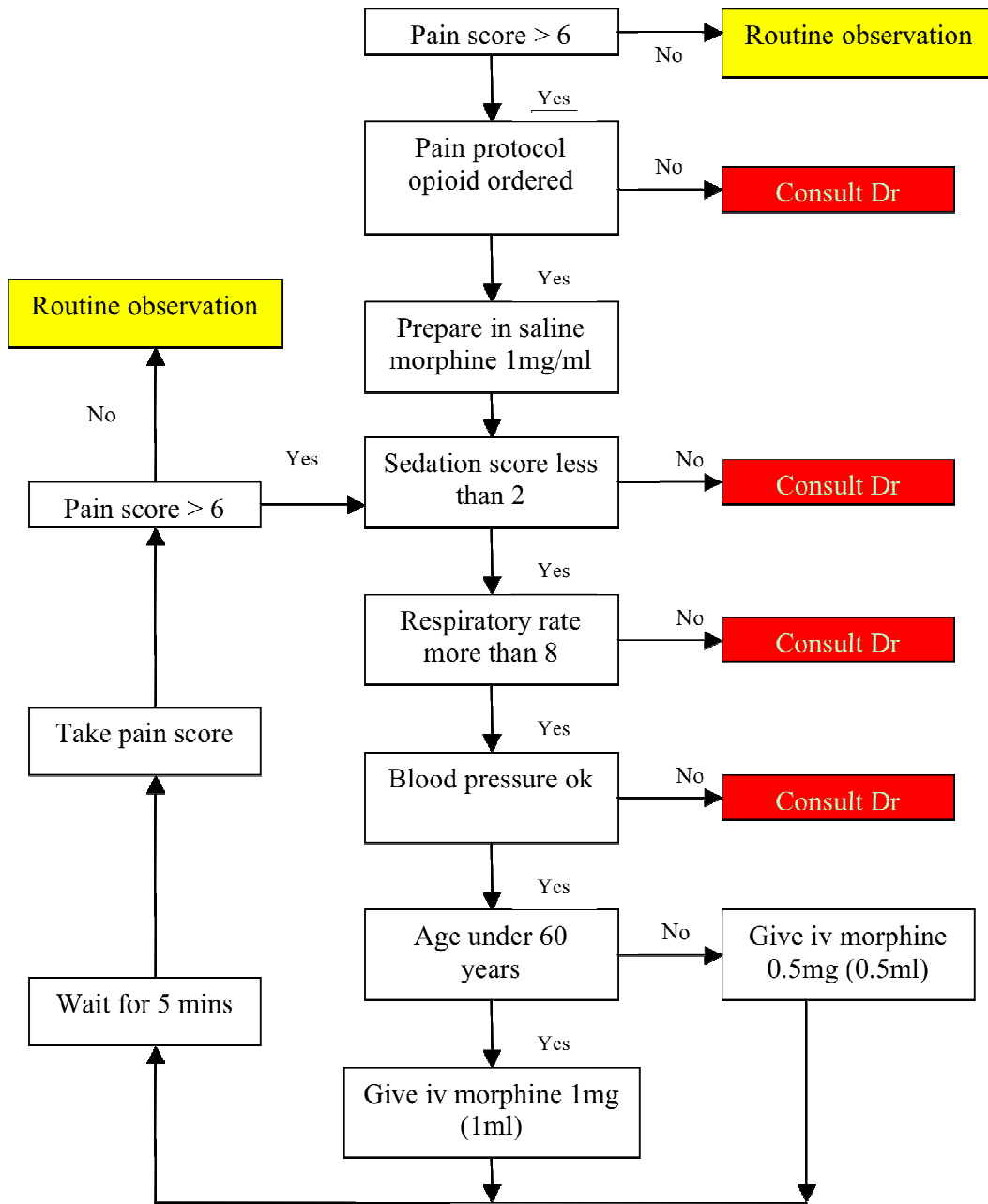
Rapid pain relief can be achieved by titration, i.e. by giving repeated small intravenous bolus doses of opioid (e.g. morphine 0.5, 1 or 2 mg every 5 minutes) until the patient is comfortable.

The smaller and more frequent intravenous doses permit a more rapid, predictable and readily observable response and allow titration of dose to response. Indeed, this is the rationale behind PCA and explains the success of this technique.

The practical application of this is shown in the “Morphine Pain Protocol”. In Malaysia, doctors usually administer this, although in other countries trained nurses are able to safely administer morphine and other opioids using this protocol.

MORPHINE PAIN PROTOCOL





**MORPHINE PAIN PROTOCOL FOR NURSES:
ONLY TO BE USED BY NURSES WHO ARE TRAINED AND ACCREDITED**

Appendix 1

Notes on Analgesic Medications

1. List of analgesic medications: (See Guideline 4 for formulations available and dosages)

NON OPIOIDS

- **Paracetamol**
- **NSAIDs**
 - Diclofenac (Voltaren)
 - Mefenamic Acid (Ponstan)
 - Ibuprofen (Brufen)
 - Naproxen (Naprosyn, Synflex)
 - Ketoprofen (Orudis, Oruvail)
 - Meloxicam (Mobic)
 - Ketorolac (Toradol)
- **COX2 inhibitors**
 - Celecoxib (Celebrex)
 - Etoricoxib (Arcoxia)
 - Parecoxib (Dynastat)

OPIOIDS

- **Weak opioids**
 - Dihydrocodeine (DF118)
 - Tramadol (atypical opioid; also increases the levels of serotonin and noradrenaline in the CNS)
- **Strong opioids**
 - **Morphine**
 - Fentanyl
 - Oxycodone
 - Pethidine
- **Partial agonist opioids**
 - Nalbuphine

2. Pharmacology of NSAIDs and COX2 inhibitors

a. 4 major effects

- Analgesic
- Anti-inflammatory
- Anti-pyretic
- Anti-platelet

b. 5 major side effects:

- Allergic reaction (cross allergy is common between different NSAIDs / COX2 inhibitors)
- Gastric irritation / ulceration (less with COX2 inhibitors)
- Reduced renal blood flow (long term use can lead to renal failure)
- Anti-platelet effect (can lead to bleeding; less with COX2 inhibitors)
- Cardiovascular effects – increased risk of stroke and myocardial infarction

Note: the main difference between NSAIDs and COX2 inhibitors is that COX2 inhibitors have a lower incidence of peptic ulceration and upper GI bleed, and COX2 inhibitors have less risk of bleeding.

3. Pharmacology of Morphine

- Acts on the mu and kappa opioid receptors in spinal cord and brain
- Potent analgesic agent – the “gold standard” opioid analgesic
- Commonly used as an analgesic in moderate to severe acute pain
- Also used in moderate to severe cancer pain, and sometimes in chronic non-cancer pain.

Pharmacokinetics :

- Bioavailability of oral route is 30% due to first pass effect (metabolized in liver)
- Converted to morphine-6-glucuronide (active metabolite) and Morphine-3-glucuronide in liver
- Elimination half life is 3-4 hours
- Peak analgesic effect :
 - IM / SC : 30 minutes
 - IV : 5 minutes

4. A note on Pethidine in acute pain management

- **Pethidine** is a popular analgesic in Malaysian hospitals, both in the wards as well as in the emergency department.
- **HOWEVER, PETHIDINE IS NOT RECOMMENDED** in postoperative pain relief and in chronic or recurrent pain conditions because of the active metabolite, norpethidine, which can accumulate in the body with prolonged use of high doses, and in renal impairment and give rise to convulsions.

Appendix 2

Management of Side effects

1. Nausea and Vomiting

- Nausea and vomiting is a common side effect of opioids.
- There is no need to stop the opioid (e.g. tramadol, morphine, codeine) but it is necessary to treat the nausea and vomiting with anti-emetics.
- Suggested first line anti-emetic is:
 - Metoclopramide (Maxolon)
10 – 20 mg IV / subcut / oral – give one dose (STAT) and repeat if necessary 6-8 hourly
- If the patient continues to vomit or have nausea, then use
 - Ondansetron 8 mg IV – give one dose (STAT) and repeat if necessary 8 hourly OR
 - Granisetron 2 mg IV – give one dose (STAT) and repeat if necessary 8 hourly
- Alternatives if the above are not available are
 1. Haloperidol 1.5 mg BD oral or 1 mg BD IV
 2. Dexamethasone 4 mg IV stat

2. Respiratory Depression

- Respiratory depression may occur with overdose of opioids.
- However, it is very uncommon, and is always associated with sedation; in fact, sedation may be present without a decrease in the respiratory rate of the patient.
- The risk of respiratory depression is minimal if strong opioids are titrated to effect and only used to relieve pain (i.e. not to help patients to sleep or to calm down agitated patients).
- The risk of respiratory depression is also minimal in patients on chronic opioid use (e.g. patients on morphine for cancer pain).

Management of respiratory depression

- Diagnosis:
Respiratory Rate <8/minute AND Sedation Score = 2 (difficult to arouse)
OR Sedation Score = 3 (unarousable)
- Confirm opioid-induced respiratory depression – check pupils (should be pin-point)
- Management
 1. Administer oxygen – face mask or nasal prongs
 2. Stimulate the patient – tell him/her to breathe
 3. Dilute Naloxone 0.4 mg / ml in 4 mls water or normal saline. Administer Naloxone 0.1 mg (1 ml) every 1-2 minutes until the patient wakes up or Respiratory Rate is more than 10/minute.
 4. Continue to monitor the respiratory rate and sedation score every hourly for at least another 4 hours. If respiratory depression or oversedation recurs, a second dose of naloxone may be required. After treating with the second dose of naloxone, you should refer the patient to the ICU or HDU for close monitoring as the patient may require a naloxone infusion.

Naloxone

- Naloxone is a pure opioid antagonist.
- It is available in ampoules of 0.4 mg/ml (adult dose) or 0.02 mg/ml (paediatric dose).
- Doses for treating opioid-induced respiratory depression:
 - Adult 0.1 – 0.4 mg IV/IM/SC; IV dose may be repeated every 1-2 minutes
 - Paediatric 0.01 mg/kg IV (maximum 0.4 mg), repeat every 2 minutes.
- The half life of naloxone is 45-60 minutes; this is important to know because when used to antagonize respiratory depression due to morphine, the effect of naloxone may wear out before the effect of morphine (half life 3-4 hours). Therefore, after treating morphine-induced respiratory depression, the patient has to be monitored closely for at least another 4 hours.
- Naloxone should be available in every emergency drug trolley.