

The Art and Science of Pain Management



Ian Anderson Continuing Education Program
in End-of-Life Care



Objectives:

- To describe basic principles of pain management.
- To list barriers to effective pain management.
- To describe the clinical classification of pain and the specific features of the different types of pain.
- To describe the development and implementation of an interdisciplinary pain management plan.



Introduction

- ❖ In cancer, the prevalence of pain in advanced disease is 70-90%.
- ❖ In HIV disease, pain prevalence is about 50%.
- ❖ Other illnesses may have significant pain but no clear data.



Barriers to Pain Management

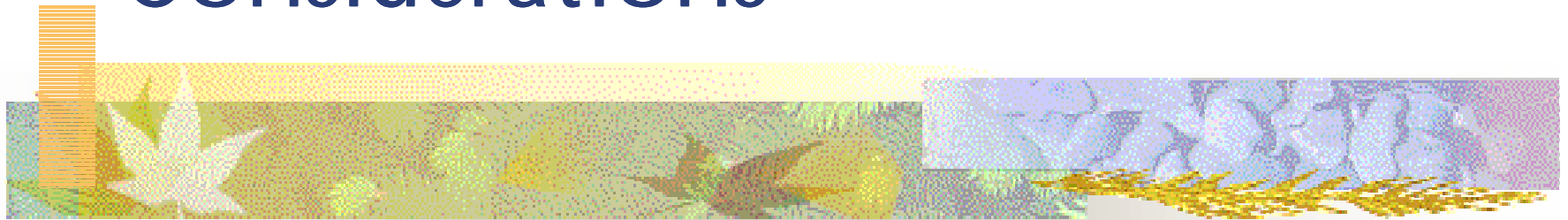
Source	Issues
Care Providers incl. Physicians	<ul style="list-style-type: none"><li data-bbox="974 688 1751 846">❖ Inadequate education in pain management.<li data-bbox="974 867 1734 1114">❖ Fears and myths about pain and opioid analgesics.<li data-bbox="974 1135 1677 1292">❖ Inadequate follow-up processes.



Barriers to Pain Management

Patients and Families	<ul style="list-style-type: none">❖ Myths about the inevitability of pain.❖ Culture and religious issues.❖ Social and economic factors.
System	<ul style="list-style-type: none">❖ A lack of standards in pain control.❖ A lack of palliative care and other specialized pain management resources.

The **CAR_xE** Approach: **C**omprehensive Care Considerations





Components of Comprehensive Care

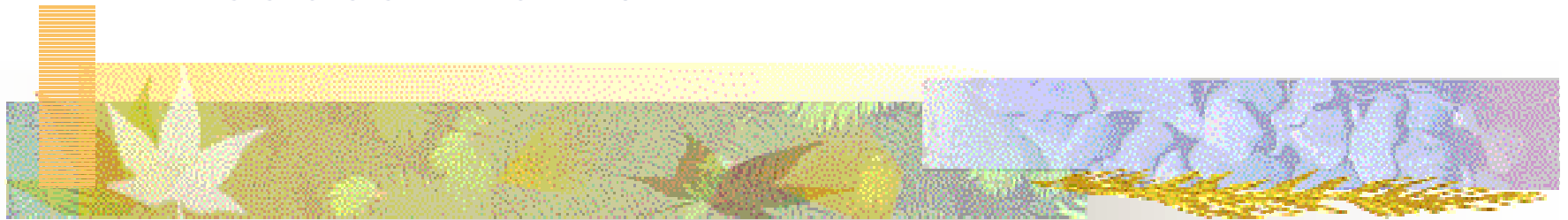
1. Deal with “Total Pain”
 - Physical, psychological, family, & social components.
2. Educate patient and family to ensure active participation in the pain management plan.
 - through repeated conversations & supportive literature that is comprehensive & comprehensible.



Components of Comprehensive Care

3. Be flexible in your approach. Template or algorithmic approaches or guidelines need to be tempered by individual patient factors and by physician reflective experience.
4. Use an interdisciplinary team effectively.
5. Develop standards of pain control that may effectively prevent unnecessary suffering.

The CAR_xE Approach: Assessment






Clinical Classification of Pain — Nociceptive Pain

- Caused by invasion &/or destruction &/or pressure on superficial somatic structures like skin, deeper skeletal structures such as bone & muscle and visceral structures and organs.
- Types: superficial somatic, deep somatic, & visceral.
- Superficial and deep nociceptive pain is usually localized & non radiating.
- Visceral pain is more diffuse over the viscera involved or can be referred.



Clinical Classification of Pain — Neuropathic Pain

- Caused by pressure on &/or destruction of peripheral, autonomic or central nervous system structures.
- Radiation of pain along dermatomal or peripheral nerve distributions.
- Often described as burning and/or deep aching & associated with dysesthesia or lancinating pain.

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- It is of clinical importance to try and distinguish the types or components of a patient's pain since this assessment has clinical management implications in the use of analgesics, adjuvant drugs and other analgesic modalities.



The Pain History

- The pain history remains the key to understanding the patient's pain and directing the management scheme.
- The usual questions of location, duration of pain, and aggravating and relieving factors need to be asked.



The Pain History

- There are several important additional questions to be asked.
 - What is the quality of the pain?
 - What is the response to past and current analgesic therapy?
 - Any kind of diary or record about the pain?
 - Fears they have about analgesics?



Some Questions Particularly Helpful in the Home Setting

- What analgesics do they have at home?
- How much medication do they have on hand?
- Who looks after dispensing the medication?
- What is their pharmacy phone number? Does the pharmacy deliver? The number of the nearest 24-hour pharmacy if one is available?
- How do they pay for medication?
- How do they renew medications?



Pain Assessment Tools

- Verbal Analogue Scales.
- Visual Analogue Scales.
- The Faces Scale[©].



Pain Assessment in the Elderly and the Cognitively Impaired

1. Pain is a common symptom in the elderly. One U.S. survey of nursing homes showed that 70-80% suffered from significant pain. Of these, 1/3 had constant pain and less than 1/3 of those had orders for regular pain medication.
2. Assessment of pain in elderly &/or cognitively impaired patients may be difficult but not impossible.



Pain Assessment in the Elderly and the Cognitively Impaired

3. There is a need for multiple assessment tools and approaches including:
 - Verbal or visual analog scales.
 - The “faces” scale.
 - The pain thermometer.
 - Team and/or family observation for increasing agitation, moaning, or pain on movement (incident pain).



Pain Assessment in the Elderly and the Cognitively Impaired

4. There is a need for a high index of suspicion when those that are cognitively impaired have diseases like cancer and others associated with significant pain like arthritis and ischemia.

The CAR_xE Approach: R_x -Management





Basic Principles in Managing Pain

1. Educate patient and family.
2. Investigate wisely and effectively.
3. Do not delay treatment. Treat the pain immediately.
4. Use a pain diary and objective measures of pain.
5. Have a good understanding of the pharmacology of analgesics and adjuvant medications.
6. Give medication orally whenever possible.



Basic Principles in Managing Pain

7. Give medication regularly according to its analgesic duration of effect.
8. Prescribe an analgesic that matches the severity of the pain.
9. Always prescribe a breakthrough dose.



Basic Principles in Managing Pain

10. Titrate the dose upwards on a daily basis using immediate-release forms of analgesics until pain is mostly relieved or intractable adverse effects occur.
11. Always consider adjuvant modalities and medication in every patient.
12. Take a preventive approach to avoid the adverse effects of the medication.




Choosing the Appropriate Analgesic

- Match the severity of pain to the strength of the analgesic i.e. strong analgesics for severe pain.
 - The WHO has developed 3-step model to guide analgesic choice depending on the severity of the patient's pain.



Is there any evidence that one opioid is better than another?

- ❑ Evidence of some differential stimulation of opiate receptors among opioids.
- ❑ Good clinical evidence lacking so far about clinical significance of these differences.
- ❑ Also limited clinical evidence about differences in adverse effect profiles between different opioids.



Effective treatment requires a clear understanding of the pharmacology, potential impact, and adverse effects associated with each of the analgesics prescribed, and how these may vary from patient to patient.



Analgesics — Non-Opioids

There are three types of non-opioid analgesics:

1. Salicylates
2. Non-Steroidal Anti-Inflammatory Drugs
3. Acetaminophen



Important Issues in the Use of Non-opioid Analgesics

1. Use in full doses for the most part.
 - Exercise caution in patients in renal failure.
2. The non-opioid analgesics that characterize step 1 of the WHO ladder all have a ceiling effect to their analgesia (a maximum dose past which no further analgesia can be expected).



Important Issues in the Use of Non-opioid Analgesics

3. COX-2 inhibitors may be associated with fewer side-effects but evidence for this is not conclusive.



Important Issues in the Use of Non-opioid Analgesics

4. Use cytoprotection with NSAIDs only in patients who have symptoms suggestive of GI distress or who are at high risk of ulcer formation e.g. recent history of ulcer, concomitant use of corticosteroids.
 - For cytoprotection use sulcrafate or misoprostol. Acid antagonists are not cytoprotective (H2 antagonist). The use of proton pump inhibitors is controversial.



Analgesics — Weak Opioids

- Useful drugs:
 - Codeine & codeine combination products
 - Oxycodone combination products.
- *DO NOT USE:*
 - Dextropropoxyphene (Darvon™)



Analgesics — Strong Opioids

■ Useful drugs:

- morphine
- hydromorphone
- fentanyl
- oxycodone
- methadone.

■ Do not use:

- X meperidine
(Demerol™).
- X anileridine
(Leritine™).
- X pentazocine
(Talwin™)



Addiction, Tolerance, Physical Dependence

- ❑ The perception that the administration of opioids and analgesics for pain management causes addiction is a prevalent myth that inhibits adequate pain control.
- ❑ Opioids do not cause the psychological dependence involved in addiction.
- ❑ Physical dependence is not the same as addiction.



Adverse Effects of Opioids

Common	Less Frequent	Rare
<ul style="list-style-type: none">• constipation• nausea• sedation• dry mouth	<ul style="list-style-type: none">• urinary retention• pruritus• severe myoclonus• confusion• psychotomimetic effects	<ul style="list-style-type: none">• allergy• respiratory depression



Opioid Adverse Effects

1. Opioid Allergy

- Allergy to codeine expressed as urticaria and other severe anaphylactic reactions is relatively common but there does not seem to be any cross-reactivity with other opioids .
- True allergy to morphine and other potent opioids is rare.



Opioid Adverse Effects

2. Constipation is easier to prevent than treat.
3. Opioids are poor sedatives unless given in toxic doses. They should never be used as single agents for sedation.
4. Unfounded fear of respiratory depression and lack of skill with opioid dosing leading to significant unnecessary pain, loss of function, and suffering.



Choice of Opioids — Factors

- Factor 1: The “Unwanted” Opioids
- Factor 2: The Severity of the Pain
- Factor 3: The Type of Pain
- Factor 4: Opioid Metabolites
- Factor 5: Adverse Effects



Choice of Opioids — Factors

- Factor 6: Patient Related Issues
- Factor 7: Physician Issues
- Factor 8: Availability of Opioids



Choosing the Right Dose

- The following sections describe dosage guidelines using morphine as the example strong opioid of choice. If using other opioids, then use the dose as per the suggested guidelines in the preceding table.
- All strong opioids are equally effective and there is little evidence to support a difference in adverse effects or analgesic efficacy for any of these potent drugs over the others.



Choosing the Right Dose

- Starting Doses of Potent Opioid in Opioid Naïve Patients:
 - 10-20mg IR morphine q4h
 - 2-4mg IR hydromorphone q4h
 - 5-10mg IR oxycodone q4h



Choosing the Right Dose

- If the patient has been on strong opioid but this has been ineffective or the drug has been given PRN, *calculate the total daily dose of opioid in morphine equivalence orally, increase by 25% and divide by 6 to get the suggested initial 4-hourly dose.*



Choosing the Right Dose

- In patients with unstable or poorly controlled pain, titrate the dose upwards until pain is mostly controlled.
- Titration can be done on a daily basis. *The total daily dose of opioid including regular doses and breakthrough doses should be calculated. The new regular dose should incorporate this total daily dose plus a 25% increase to account for pain that is not controlled.*
- A double dose can be given safely at bedtime.



Choosing the Right Breakthrough Dose

- Transitory flares of pain, called “breakthrough pain”, can be expected both at rest and during movement.
- When such pain lasts for longer than a few minutes, extra doses of analgesics, i.e. breakthrough or rescue doses, will likely provide additional relief.



The Right Breakthrough Dose

- Prescribe a **breakthrough dose** of *50-100% of the regular q4h oral dose (5-15% of the 24-hour total dose)* also of immediate-release opioid.
- *This can be given orally every hour if necessary (1/2 hr parenterally) so that up to 3 doses can be given in between each regular dose.*



Titration to the Right Dose

- **Increase the dose after 4 dosage intervals or at least daily** until pain is well controlled.
- Requires daily monitoring of patients by the physician, nurse and family.
- When the patient has stabilized, **switch to a sustained-release preparation, at an 8-12 hourly interval** for best control and ease of administration.
- The breakthrough dose should almost always be of the same immediate-release opioid.



Choosing the Right Dose

- Remember to take a preventive approach to managing side effects as described below.
- Adjust the dose of morphine, switch to another opioid and/or place the patient on PRN immediate-release morphine if the patient is in renal failure or in liver failure.



Transdermal Fentanyl

- Transdermal fentanyl can be an effective way of delivering potent opioids.
- Dosage equivalence guidelines that are recommended are rough guidelines only and it seems response is very individualized as it is to all strong opioids.

Recommended Initial Transdermal Fentanyl Dose

Oral 24 h morphine (mg)	Transdermal fentanyl ($\mu\text{g/h}$)	Oral 24 h morphine	Transdermal fentanyl ($\mu\text{g/h}$)
45-134	25	585-674	175
135-224	50	675-764	200
225-314	75	765-854	225
315-404	100	855-944	250
405-494	125	945-1034	275
495-584	150	1035-1124	300



Transdermal Fentanyl

- ❑ Instructions for applying the patches should be followed exactly so that skin contact with the membrane is maximized.
- ❑ Dosage increases should usually only occur at 2-3 day intervals.
- ❑ It often takes at least 24 hours to reach a steady state after the patch is first applied and with dose increases.



Transdermal Fentanyl

- ❑ A significant skin depot remains after the patch is removed.
- ❑ In general this is not an appropriate way to manage severe escalating pain.
- ❑ The breakthrough dose generally should be of an oral strong opioid such as morphine or hydromorphone.
- ❑ A maximum dose of 300-400 μ g/h is suggested.



Transmucosal Fentanyl

- ❑ Breakthrough sublingual fentanyl (use the IV solution of 50 μ g/ml) in a dose of 10-50 μ g can be used every 30-45 minutes. It is effective usually 15 minutes and lasts about 45 minutes.
- ❑ The small volume doses must be measured out carefully.



Finding the Right Dose — Severe Pain

- Rapid pain escalation unusual but usually means something major is happening. e.g. impending fracture, intraperitoneal bleeding, etc.
- Titrate with parenteral drugs.
- Subcutaneous or IV route easiest especially continuous infusion.



Possible Indications for Parenteral Opioids

- Inability to swallow
- Rapidly escalating pain
- Intractable adverse effects such as nausea with oral opioids
- Cognitive dysfunction
- Compliance problems
- Bowel obstruction
- Severe stomatitis
- Large doses of opioids with many tablets to swallow



Parenteral Opioids

1. Parenteral intermittent.
 - in selected patients over limited periods of time.
 - Preferred route is SC, occasionally IV.
2. Parenteral continuous.
 - Generally SC but also IV.



Effective Alternate Routes for Opioid Administration

1. Via Enteral Tube
2. Rectal
3. Oral Transmucosal
4. Intrathecal or epidural
5. Nebulized opioids not effective.



Specific Pain Problems and the Use of Adjuvant Medication

Adjuvant analgesics (or coanalgesics) are medications that when added to primary analgesics, further improve pain control. They may themselves also be primary analgesics (e.g. tricyclic antidepressant medications for postherpetic neuralgia). They can be added into the pain management plan at any step in the WHO ladder.



Adjuvants for Neuropathic Pain

1. When pain is neuropathic there is good evidence for treating with adjuvant medication rapidly.
2. Always remember the potential of using radiotherapy, chemotherapy and surgery as adjuvant modalities with neuropathic pain but they should not replace drug adjuvants completely.
3. An adequate trial of 2-4 weeks at full dosage should be tried for each drug.



Adjuvants for Neuropathic Pain

4. Opioid responsiveness is a continuum in neuropathic pain. Well-established neuropathic pain of long duration is generally most resistant to opioids. But, opioids may still work if higher doses are used.
5. SSRIs have shown disappointing clinical efficacy as adjuvants.



Adjuvants for Neuropathic Pain

6. Early neuropathic pain may respond to dexamethasone probably by a mechanism of decreasing perineural edema.

Some Common Adjuvant Drugs for Neuropathic Pain

Drug	Dose	NNT	Adverse Effects
Cyclic Antidepressants			
-amitriptyline -desipramine -nortriptyline -maprotyline	75-150 h.s.p.o.	3	Dry mouth, constipation, sedation, confusion, urinary retention, cardiac, arrhythmias Do not use with carbamazepine.

Some Common Adjuvant Drugs for Neuropathic Pain

Anticonvulsants	Dose	NNT	Adverse Effects
carbamazepine	200-300mg t.i.d./q.id.	3	<ul style="list-style-type: none">• nausea• sedation
valproic acid	250mg t.i.d/q.i.d	3	<ul style="list-style-type: none">• sedation
gabapentin	300-800mg q.i.d.	3	<ul style="list-style-type: none">• some sedation• ataxia and tremor at higher doses

Some Common Adjuvant Drugs for Neuropathic Pain

Local Anesthetics	Dose	NNT	Adverse Effects
mexiletine	200mg q.i.d	4	frequent GI side effects, cardiac toxicity
lidocaine	SC infusion	?	



Bone Pain

- Bone pain from cancer metastases is exceedingly common. Bone metastases are a significant source of morbidity with decreased mobility & function & pathological fractures.
- Bone pain is well localized, dull and constant in character with sharp flares with movement or pressure (incident pain). There may be associated muscle spasm.



Incident Pain

- Incident pain can be defined as an intermittent exacerbation of pain triggered by movement, weight bearing or increased pressure or procedures such as dressing changes.
- May get incident pain at times from other sources such as nerves tethered by tumor, large tumors that cause pressure phenomena on movement or with upright posture or sensitive skin edges on skin ulcers.



Therapeutic Options for Bone & Incident Pain

- Need to consider all therapeutic options including radiation, chemotherapy and surgery and add appropriate assessments for behavior modification, support surfaces, and for aids from an occupational therapist.



Analgesic Options for Incident Pain

1. Regular immediate release opioids:
 - Oral 1 hour before or parenteral 15-30 minutes before movement/procedure.
2. SL fentanyl-see previous.
3. Bisphosphonates for breast, lung & possibly prostate cancer.
4. NSAIDs.



Nerve Blocks and Ablative Neurosurgical Procedures

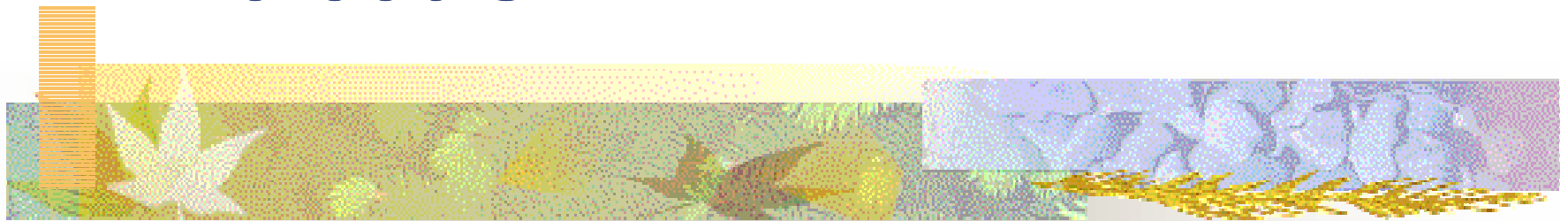
- Nerve blocks, epidural blocks and ablative neurosurgical tractotomies may be effective in pain management.
- Such procedures may be associated with return of pain after a number of months so that timing of procedures may be important.
- Celiac plexus block at the time of surgical procedures, particularly pancreatic procedures may be effective in preventing pain or reducing pain.



Intractable Severe Pain Syndromes

- ❑ Rarely a patient will have pain that is totally intractable to good control.
- ❑ This type of suffering is difficult for patient, family and care providers to observe.
- ❑ Counselling services must be available.
- ❑ Consultation with pain management experts must be sought.
- ❑ Terminal sedation may be the only option close to death.

The CAR_xE Approach: Evaluation





Evaluation

1. Pain outcomes must be evaluated in each patient.
2. The outcomes to be evaluated include:
 - Pain level.
 - Adverse effects of medication.
 - Patient and family knowledge of and participation in pain management.
 - Development of other pains.



Evaluation

3. The care plan should specifically state a monitoring plan implemented by the interdisciplinary team.
4. Access to care providers should be on a 24-hour per day basis.