

PAIN MANAGEMNT

Bruce A. Ferrell, MD
Susan L. Charette, MD

ABSTRACT:

This module focuses on the management of pain in older persons, especially those near the end of life. Pain management presents some unique challenges in elderly persons. Assessment of pain can be difficult because elderly patients often have visual, hearing and sensory changes that make communication and interpretation of pain more difficult. Multiple sources of pain make assessment and management more perplexing. Elderly persons are often more sensitive to side effects of common analgesic drugs. And many barriers exist for elderly patients that make logistics of care and access more difficult. Physiologic changes associated with aging have important implications for choosing and accomplishing pain relief. Altered distribution, delayed metabolism and prolonged excretion of drugs may effect many drugs in this population. Fortunately, most pain can be relieved using modern principles of assessment and effective treatment strategies. This module will discuss specific age related changes in physiology and pharmacology that may effect drug treatment. Effectiveness and side effects of nonsteroidal anti-inflammatory drugs, opioid analgesics and adjuvant pain management drugs will be discussed. Anticipation, prevention and management of common side effects of analgesic drugs will be emphasized. Non-drug analgesic strategies will also be presented. And finally, the important role of family and caregivers will be explored along with strategies to overcome common barriers to pain management in older persons.

KEY WORDS:

Adjuvant analgesics, adverse effects, alternative medicine, anti-convulsants, anti-depressants, barriers, constipation, family, NSAIDs, nausea, opioids, pain, neuropathic, nociceptive, non-drug, somnulence

OBJECTIVES:

Slide #1

The objectives of this module are:

1. To understand principles of pain management in older persons. Elderly persons often vulnerable to both under-recognition of pain and under-treatment.
2. To be able to prescribe analgesic drugs appropriately for older persons. Not all analgesic strategies may be appropriate for all older persons. Because of altered goals of care, existing barriers to some care strategies, and a higher risk-benefit ratio for many drugs in older persons, it is important to understand these issues in this population.
3. To be able to apply appropriate non-drug strategies for older persons. Many non-drug strategies are quite effective. In this setting, patient and caregiver education cannot be over emphasized.

INTRODUCTION

Slide #2

Pain is a common problem near end of life care. It is the most dreaded symptom and an important source of suffering for most elderly persons. Epidemiologic studies estimate that 25-50% of community dwelling elderly persons have important pain problems. As many as one in five older persons take analgesic medications on a regular basis. Of these, almost two-thirds take prescription analgesics. Pain is also common in nursing homes. As many as 70% of nursing home residents suffer pain that is often under-recognized and under-treated.

Pain assessment and management are important issues of quality of care and quality of life for older patients. Poorly relieved pain is an important cause of functional impairment, decreased ambulation, depression, decreased socialization, sleep disturbance, slow rehabilitation and increased health care utilization and costs. Older persons with pain, especially those near the end of life, rely heavily on family and informal caregivers. For these patients and their caregivers, pain can be a metaphor for death, resulting in substantial suffering.

Most pain can be relieved. For those near the end of life, physicians have a moral and ethical obligation to provide comfort and dignity during their remaining lives.

Slide #3

The approach to pain assessment and management requires a different approach compared to younger persons. The elderly population can be characterized as a very heterogeneous population. It varies remarkably in persons who differ physiologically, the way they react to medication and socio-economically. Some individuals may seem to be well preserved physiologically until a very old age. Some individuals are quite frail, with multiple medical problems and severe disabilities, though comparably young in chronological age.

The burden of disease and disability increase with age. This fact complicates many interventions and treatment of underlying disease. Eventually many older patients develop attenuated goals of treatment and realistic expectation of cure becomes remote. Heroic, high risk, and often technical solutions that are applied routinely in younger populations, are often futile, resulting in additional needless suffering in patients near the end of life. In this setting, it is particularly important to distinguish aggressive futile treatment of underlying disease, with the aggressive treatment of pain and other symptoms that is not only justified but obliged.

Elderly patients often exhibit greater risk-benefit ratios for many treatment strategies. Elderly have:

- Higher side-effects for most drugs
- More frequent complications from diagnostic tests
- Higher co-morbidities (multiple medical problems)
- More drug-disease interactions
- Take more medications
- Have more drug-drug interactions

Slide #4

Understanding pain in terms of pathophysiology may help clinicians choose therapy more effectively. Treatment strategies targeted specifically to underlying pain mechanisms are likely to be more effective. Most pain can be classified into four main types.

- Nociceptive pain is probably the most common mechanism by which pain is produced. It usually arises from stimulation of pain receptors. Nociceptive pain may be visceral or

somatic and can come from tissue inflammation, mechanical deformation, ongoing injury or tissue destruction. Examples include arthritis, trauma, ischemia, tumors, and burns. Nociceptive pain usually responds well to traditional analgesic medication and relief of underlying cause.

- Neuropathic pain results from a pathophysiological process that involves peripheral nerves or central pain pathways and processing. Examples include peripheral neuropathies, nerve trauma (e.g., post amputation, phantom limb), and post-stroke thalamic pain syndromes. These pain problems do not respond as favorably to traditional approaches, however they have been observed to respond occasionally to unconventional therapies such as tricyclic anti-depressants, anti-convulsants, and anti-arrhythmic drugs.
- Mixed or unspecified pain is unusual and regarded as having mixed or unknown mechanisms. Treatment is even less predictable and may require various trials of combined approaches. Examples include some headaches and some vasculopathic syndromes.
- Psychologically mediated pain is a rare disorder when psychological factors are judged to have the only role in pain onset, severity and exacerbation. Examples may include conversion reactions or some somatoform disorders. Patients with these disorders may benefit from specific psychiatric interventions, but traditional medical interventions for analgesia are not indicated.

Pearl: Most experts believe that age related changes in pain sensation are subtle and probably not clinically significant.

Slide #5 & #6

Elderly persons often exhibit significant changes in pharmacologic response to many drugs.

- Increased fat/lean body ratio. Most older people gain weight up until the last years of life. During the last years of life they may lose substantial muscle mass along with a loss of body fat. The result is a larger fat compartment that may alter volume of distribution for many lipid soluble drugs. Lipid soluble drugs such as benzodiazepines, methadone, and others may have a prolonged half-life in many older persons
- Absorption is usually unchanged with aging. Unless accompanied by disease states such as atrophic gastritis, surgical alteration of the bowel or other more unusual diseases, absorption remains relatively unaffected by aging alone.
- It is well known that renal clearance decreases predictably with aging. This can have profound effects on excretion of drugs that rely on renal clearance of the drugs or their active metabolites. Meperidine (Demerol) has an active metabolite that is cleared by the kidney, making it a problematic drug for most elderly persons and those with renal failure.
- Normal aging has been shown to be associated with altered hepatic metabolism. Cytochrome oxidation varies widely in older populations and can have an effect on those drugs metabolized by oxidation. On the other hand, conjugation is largely unchanged with aging. Thus, drugs like morphine that are largely eliminated by conjugation are usually tolerated reasonably well. There have been observations of decreased hepatic arterial blood flow with aging; however, portal circulation does not seem to be affected as much. Thus first pass kinetics remain largely unchanged in most elderly patients.

- Other common diseases and disorders often affect analgesic drugs. Hypoalbuminemia may affect those drugs that are highly protein bound, resulting in a lower volume of distribution and higher swings in serum levels. Atrophic gastritis and the presence of H. Piloni can affect gastric pH and alter absorption of some drugs. Finally, elderly persons are highly sensitive to anticholinergic effects of many drugs. Anti-histamines, major tranquilizers, anti-emetics all have high rates of anticholinergic effects including constipation, confusion and even movement disorders.

Pitfall: Lipid soluble drugs such as benzodiazepines, methadone and other psychotropic drugs often have prolonged half-lives in elderly persons due to the increased fat reservoir as a result of the fat/lean body weight changes that occur with normal with aging.

Slide #7

Assessment is the most important aspect of pain management. Another module provides a more detailed discussion of this topic. None-the-less, the importance of accurate assessment cannot be over-stated. Moreover, the successful management of pain in this population, requires continuous re-assessment for optimum pain relief, early detection and management of side-effects. Initial pain assessment is necessary to develop a rational approach to initial pain strategies and timely re-evaluation must be provided to identify next-steps in pain management strategies.

Pearl: Most patients with dementia or delirium can report pain reliably at the moment.

Slide # 8

The World Health Organization step-wise approach provides a reasonable model for pain management for most older patients. Inherent in this model is the accurate assessment of pain followed by appropriate choice of analgesic medications. Safe, albeit less potent analgesics are recommended for patients with mild pain. More potent, and more dangerous drugs reserved for severe and more recalcitrant pain. Important points include:

- If a patient presents with severe pain, they should be started on a potent analgesic such as morphine. There is no reason to delay in an effort to prove failure of milder analgesics in a patient who presents with obviously severe pain.
- Adjuvant analgesic medications, drugs often used for neuropathic pain, may appropriate at any level in addition to other more traditional analgesic drugs. These drugs should be started early for patients with neuropathic pain.

Pearl: More than 80% of pain can be manage using the WHO approach.

Slide #9

Acetaminophen is safe and effective for most elderly patients and is the drug of choice for most patients with mild to moderate pain of musculo-skeletal origin. A common mistake, is not giving enough. The usual dose is 650 – 1000 mg every 6 hours or 4 times a day. This dose is safe and effective for many elderly patients, including those who have a limited alcohol intake.

Patients who are heavy drinkers of alcohol or have hepatic insufficiency or abnormal liver enzymes should be reduced to half the usual dose. Concerns about renal toxicity with long-term ingestion are probably overstated. In the final analysis, acetaminophen remains as effective and far safer available NSAIDs or other analgesic medications for most patients with mild to moderate pain.

Patients should be cautioned about acetaminophen as an added ingredient in many over the counter preparation and prescription combinations.

Pitfall: The maximum dose of acetaminophen should be reduced by 50-75% in patients with hepatic insufficiency or alcohol abuse.

Pitfall: Many older persons take over the counter drugs that contain acetaminophen without telling their physician. Care must be taken to avoid acetaminophen toxicity.

Slide #10

Non-steroidal anti-inflammatory drugs are effective for mild to moderate pain in older persons. Of concern is a high risk of adverse events associated with these medications. NSAIDs are associated with GI bleeding and renal insufficiency. Some cause platelet dysfunction, and other drug-drug and drug-disease interactions. Interactions have been described patients taking ACE inhibitors and diuretics resulting in hypertension and increased risk of renal insufficiency. For younger and healthy individuals the FDA has recognized that 3-4% of persons taking NSAIDs may have a serious GI event including GI bleeding requiring a transfusion, ulceration with perforation or obstruction. For elderly persons, those on steroid medications, or those with multi-system failure, the risk may be more that twice that high.

The concomitant use of proton pump inhibitors or mesoprostyl may reduce the added risk of GI complications by half. Because many older persons may not tolerate mesoprostyl, the use of a proton pump inhibitor is justified for most patients taking NSAIDs.

The COX-2 NSAIDs may have the potential to reduce the risk of GI toxicity. These new drugs are as effective as older NSAIDs and often require only once a day administration. However, they appear to have similar effects on the kidney and may have similar other drug-drug and drug-disease interactions. Effects on platelet function are more controversial and patients who require aspirin prophylaxis for cardiovascular events should continue to take aspirin daily. Although studies are promising, they remain controversial because of the high cost of therapy.

Pearl: The combination of opioid and NSAID are particularly helpful in boney metastasis such as breast cancer.

Slide #11

Opioid drugs are effective for elderly patients with most kinds of pain. Opioids are probably underutilized in older persons, and may be safer than NSAIDs or some other drug strategies for many older persons.

It is appropriate to use short acting opioids for intermittent or episodic pain. Long acting drugs should be used for those with continuous pain, or those with frequent (several times a day) pain.

Orally active, short acting drugs, such as hydrocodone (Vidodin), oxycodone (Percocet), morphine (Roxanol), hydromorphone (Dilaudid), etc behave very similarly. They reach peak pain relief in 60 to 90 minutes. They are eliminated from the body in a very predictable way by conjugation in the liver with metabolites that have little activity, and excreted in the urine with a half life of 3-4 hours. They reach steady state after 4-5 half-lives, usually attainable in 24-36 hrs.

Morphine does have a partially active metabolite (morphine-6-glucuronide) that may accumulate in renal failure or anuria. These patients (often near the end of life) should be dosed as needed to avoid accumulation of the metabolite.

Morphine and oxycodone are now available orally in a wax matrix slow release formula that delays absorption and provides for continuous analgesia. The half-life of these preparations are 8, 12, or 24 hrs depending on the product. These preparations should not be chewed or crushed, causing immediate release medication. Extended released granules in capsules are available that can be opened and pushed through a g-tube or sprinkled on other food. Using extended release preparations significantly lengthens titration and time to reach steady state. Doses should not be adjusted any more frequently than every 2-4 days. In most cases, it is best to titrate quickly using short acting medication to reach pain relief and steady states quickly, then switch to longer acting preparations for long term pain control.

Pearl: Morphine is the strong opioid of choice for most elderly persons with severe pain because it is the oldest, best understood and most predictable.

Pearl Opioid addiction a behavioral problem that is extremely rare in elderly persons. Fear of addiction is a significant barrier for health care providers and patients resulting in needless suffering.

Pearl: Pseudo addiction is a term applied to behaviors such as hoarding medications, escalating doses and requests for early refills by legitimit patients. Usually escalation of doses and appropriate control of pain reduces this behavior. Misunderstanding of this behavior can lead to inappropriate labeling of patients as addicts, eroding patient relationships and compromising care.

Slide #12

Patients receiving long acting products often experience break-through pain. For these painful periods, a rescue dose of short acting medication should provided as needed.

Breakthrough pain includes:

- End of dose failure. This is caused by long acting drugs that have not reached steady state or the effect of worsening disease. This is usually experienced in the last hours prior to the next scheduled dose of medication.
- Incident pain is usually associated with activity, movement or manipulation of a focus of pain. This pain is difficult to completely eradicate, but can be reduced considerably by the appropriate timing of short acting medications prior to activities known to induce breakthrough pain.

- Spontaneous pain sometimes occurs, especially with neuropathic pain. Unpredictable and sometimes severe, the availability of short acting, immediate release analgesic medications can be highly effective.

A rescue of short acting, immediate release opioid analgesics should be provided for every patient on long acting opioids in anticipation of breakthrough pain. An increase in the use of short acting medications, e.g. more than 4 doses a day, should trigger an increase in long acting medication dose. The usual dose of short acting medication is usually 5-15% of the 24 hour long acting dose, administered every 2 hours as needed.

Pearl: Normal aging does not effect first pass kinetics for drugs rapidly metabolized after absorption in the intestine.

Slide #13

The oral route provides the safest, easiest and most predictable route of administration. It has been said that if the gut works, use it. Intramuscular and subcutaneous injections are unpredictable, especially in those patients at the end of life when tissue perfusion is poor, muscle mass is diminished and repeated injections may be necessary.

For patients with acute pain, intravenous infusion provides the most rapid titration for stabilization.

Although rectal suppositories of some products can be compounded, this route provides the least reliable absorption and may not be effective in some patients.

Slide #14

Transderm fentanyl is a product that can be helpful in patients unable to swallow pills, but it can also be problematic in elderly persons. This product delivers medication to the skin which then becomes the reservoir for the drug. Studies suggest the function of the skin as a reservoir for this drug is relatively stable despite large variations in subcutaneous fat and atrophic skin found in many frail elderly people. The long half-life may be longer than 72 hours in many older persons, resulting in long delays for titration and dose escalation. Also there has been noted to be incomplete cross tolerance to fentanyl often resulting in difficulty predicting the appropriate equianalgesic dosing. In the final analysis, transderm fentanyl should not be initiated in opioid naive patients and should probably be reserved for those unable to take safer and more predictable oral sustained release preparations.

Pitfall: The peak effect of transdermal fentanyl may take as long as 24 hours.

Pitfall: Early removal of a transdermal fentanyl patch (less than 72hrs) may not change the expected half-life of 72 hours or longer.

Pitfall: Transdermal fentanyl patches should not be cut, broken or ingested resulting in immediate release fentanyl.

Slide #15

Methadone is a potent opiate receptor agonist whose use for pain control has waxed and waned. Methadone is often difficult to titrate because of its long half life (18-24 hours or sometimes longer in elderly persons) and propensity for drug accumulation in older patients. It has no active metabolites, it is highly lipid soluble and metabolized by cytochrome oxidation in the liver. Unfortunately, the drug's analgesic half-life is often much shorter, requiring q12 or q8 hour dosing for optimum analgesia. This property is onerous in older patients with altered distribution and modified hepatic metabolism. Methadone should be prescribed by clinicians who have considerable expertise with its use or in closely monitored settings.

Pitfall: Methadone is metabolized by the cytochrome oxidase enzymes in the liver, the activity of which may decline variably aging and result in unpredictable pharmacokinetics in older persons.

Slide #16

Several opioid analgesic drugs are often problematic in older persons and should be relegated to second line therapy. More predictable analgesia and fewer side-effects are usually provided by other analgesic choices.

- Meperidine (Demerol) should be avoided because of its active metabolite that tends to accumulate in persons with renal insufficiency. This metabolite causes CNS excitement, delirium and seizures.
- Mixed agonist-antagonist opioid drugs have been developed and marketed with the hope of reducing unwanted side effects of narcosis and addictive potential. Unfortunately the prediction of equipotent dosages for these drugs is often problematic and they are often associated with delirium in the elderly. Some of these drugs can reverse the effects of pure opioids antagonists and cause immediate withdrawal symptoms.
- Propoxyphene is a controversial drug that has poor documentation for effectiveness compared to acetaminophen, though the drug has substantial opioid receptor activity with propensity for dependency.

Slide # 17

All opioid drugs have the propensity to cause constipation. This property may be caused by direct effects on opioid receptors in the GUT on top of the propensity for dehydration and decreased colonic motility often seen in elderly patients. If impactions are present, they should be removed manually. Oral fluids should be encouraged. Osmotic laxatives, such as sorbitol or lactulose may help some patients, but many patients require stimulant laxatives when opioids are present. For some patients with recalcitrant constipation who require high dose opioids or other anticholinergic drugs, intermittent enemas may be required to evacuate the bowel on a regular basis and to prevent the complication of obstruction and megacolon.

Pitfall: Use of fiber containing products for chronic constipation may be poorly tolerated and often require increased fluid intake to avoid bloating, cramping and abdominal discomfort.

Slide # 18

Nausea is a common problem near the end of life that may be caused by a variety of problems such as chemo-receptor effects on the brain, gastro-paresis, or vertiginous symptoms. Opioids may cause nausea by any of these mechanisms. Mild nausea as a result of drug effects on the brain, may develop tolerance after a few days. Other treatments include changing to a different opioid versus adding an anti-emetic drug if symptoms are particularly severe or persistent. Identifying the physiology of the nausea may help choose an appropriate anti-emetic.

- Direct chemo-receptor effects on the brain may respond to low dose phenothiazine anti-emetics or low dose haloperidol (Haladol). Low dose haloperidol (0.5 bid or qid) may be a better choice for most older persons compared to other neuroleptics because of lower incidence of side-effects. In elderly patients particular caution should be exercised to prevent delirium, anticholinergic effects and movement disorders that are often associated with these drugs.
- Gastro paresis is sometimes related to opioids, diabetes and other autonomic neuropathic conditions. In this case metaclopramide (Reglan) may be a reasonable approach.
- Occasionally, opioids in high dose may cause symptom of nystagmus or vertigo associated with nausea or vomiting. In this case, anti-histamines such as dimenhydrinate (Dramamine) or hydroxyzine (Vistaril) may be more useful.

Pitfall: Phenothiazine anti-emetics (e.g. compazine) may cause constipation, urinary retention, sedation, and distressing movement disorders in elderly persons.

Slide #19

Somulence, psychomotor retardation and risk of accidents are common problems that are often associated with opioids during initial treatment or escalation of opioid doses. Fortunately tolerance to these cognitive effects of opioids usually develops in a few days after reaching steady state drug levels. Once tolerance develops to these effects, patients can usually return to normal activities including driving or other complex tasks with little or no cognitive impairment.

Respiratory depression associated with opioids occurs in a predictable fashion related to increasing serum levels. With low serum levels, patients experience psychomotor retardation, followed by pain relief as the serum level rises. If serum levels continue to rise, patients become somnolent, at first easily arousable, but as the serum level continues to rise patients become less arousable and later obtunded. When serum opioid levels rise beyond this level patients may then be observed to slow their respiratory rates and respirations often become more shallow. For most patients, opioid medications should never be held in the presence of severe pain; and usually should not be held unless patients are poorly arousable or respiratory rate is less than 6 to 8 per minute.

It is important to avoid naloxone (Narcan) in most patients with severe pain because naloxone also reverses analgesia and may require substantial increased opioid dose to overcome the powerful competitive antagonism of naloxone the opioid receptors. Naloxone should be

reserved for true emergency use and should be titrated carefully against the unwanted side-effects.

Slide #20 & Slide #21

The so-called "adjuvant" analgesic drugs are medications technically not classified as analgesics, but have been found to be helpful in certain recalcitrant pain syndromes. The term adjuvant is a misnomer because these non-opioid drugs may be the primary pain-relieving pharmacologic intervention in some cases. Some anticonvulsant drugs, anti-depressant drugs and some anti-arrhythmic drugs may be found useful in neuropathic pain problems. The mechanisms of action may be related to activity of sodium channels, or modulation of serotonin and nor-epinephrine neurotransmitters. The activity of these medications on non-neuropathic pain is less predictable and usually less effective. Most of these drugs are not FDA approved specifically for pain management. Muscle relaxants may be helpful in patients with severe muscle spasm, spasticity or muscle cramps. Steroids may be helpful in many conditions where inflammation, induration, or local swelling may be contributing to pain mechanisms.

These drugs work best when used in addition to other pain management strategies and are rarely completely successful as single agents. Most have high side effects in elderly patients that may limit dose or duration of therapy. The best advice is to use those with the lowest known side-effect profiles and then anticipate and monitor carefully for side-effects.

Pearl: Adrenal cortical steroids may be helpful in reducing pain associated with acute inflammatory events such as tumor infiltration of nerves or in bone metastasis.

Slide #22

Of the anticonvulsant drugs, gabapentin (Neurontin) is approved by the FDA for the management of post-herpetic neuralgia. Also, studies suggest at least partial effectiveness for a variety of other neuropathic pain syndromes including diabetic neuropathy. Studies suggest that a dose of 1200-3600 mg per day may be effective in a significant number of patients. In older patients, larger doses are often poorly tolerated due to somnolence and other side-effects. Of particular concern is the occurrence of ataxia that may increase the risk of falls. Fortunately, many older patients may respond to lower doses. One caveat is to start with low dose and escalate doses slowly to prevent many of the side-effects.

Slide #23

Anti-depressants and some anti-arrhythmic medications may also be useful for neuropathic pain. In fact there is a large body of early literature on the effects of tricyclic antidepressants (particularly amitriptyline) on a variety of neuropathic conditions. Unfortunately, amitriptyline has a high side-effect profile and is no longer favored in most elderly patients. Side-effects of tricyclic anti-depressants in elderly patients include somnolence and significant anticholinergic effects that are often poorly tolerated in older patients. Studies suggest that desipramine may be as effective as amitriptyline with fewer problems. Of special note is the fact that the newer serotonin re-uptake inhibitor antidepressants are not effective for

pain management. Although they may be very helpful in management of concomitant depression, they have little or no effect on pain mechanisms.

Slide #24

Non-pharmacologic approaches, used alone or in combination with appropriate pharmacologic strategies should be an integral part of pain management for most patients. Non-drug strategies include a broad range of treatments and physical modalities. Education programs, behavioral therapy, exercise, acupuncture, TENS, chiropractic, relaxation and massage techniques are each helpful in some patients. Many patients use these approaches, whether their physician is aware of not. Although many of these interventions provide short term relief, few have been shown to have broad success in randomized controlled trials. None-the-less, these interventions used in combination with appropriate drug regimens often improve overall pain management and enhance therapeutic effects that may reduce the escalation of drug doses to toxic levels.

Pearl: Cognitive-behavioral therapy that enhances positive coping strategies and reduce maladaptive behavior have been shown to be highly successful in randomized controlled trials.

Slide #25

A variety of alternative therapies are used by many patients. Health care providers should be aware that patients with unrelieved pain often seek alternative medicine approaches. Although there is often little scientific evidence to support these strategies, it is important that health care providers not leave patients with a sense of hopelessness in an effort to discourage unapproved benign therapies. End of life care may not be the time to take on a crusade to debunk all health care quackery and fraud at the risk of alienating patients at a time of great anguish or suffering.

Slide #26

While common drug and non-drug approaches are the mainstay of pain management, health care providers may need to consider other high tech strategies for patients with recalcitrant pain. High-tech pain management often requires substantial expertise for specific procedures, special equipment, or surgical and anesthetic techniques. Primary care providers may need to refer patients to those with special expertise for these procedures.

Trigger point injections have been used extensively for the treatment of myofascial pain syndromes. Local injection of trigger points followed by stretching and reconditioning of muscles often with physical therapy, pain often subsides.

Continuous opioid infusions are highly effective for providing steady rapid titration and steady state analgesic drug levels. Continuous infusions, maintained by continuous pump via intravenous, subcutaneous, or intrathecal or epidural routes have become the method of choice for many patients with severe recalcitrant pain. These methods are safe and effective for many frail elderly persons compared to intermittent injections. Whether these methods are appropriate of non-cancer related pain remains more controversial. These techniques are very expensive but

they are often reimbursed by many party payers. In general, these techniques should be used only when the oral route of administration is no longer viable.

Pearl: Focused radiation therapy for local pain relief should be considered for cancer related pain.

Slide #27

Most older patients near the end of life are dependent on family and other informal caregivers for their activities of daily living and many health care decision. The importance of patient and caregiver education cannot be overstated. Studies have shown that patient education programs alone significantly improve overall pain management. Such education programs commonly include information about the nature of pain, how to use pain assessment instruments, medications, and non-pharmacologic strategies. Whether the program is conducted one-on-one or organized in groups, it should be tailored to patients' needs and level of understanding. The use of suitable written materials and appropriate methods of reinforcement are important for the success of the programs.

Slide #28 & Slide #29

Health care providers often encounter substantial barriers to providing appropriate pain management for many older persons. We have identified some of the common barriers such as problems in assessment and common problems in treatment. Clinicians should be aware of common institutional barriers to pain management such as need for duplicate prescriptions, nursing home limitations, and home care limitations. Overcoming these common barriers can result in safe and successful relief of most pain and much needless suffering. Clearly, clinicians need to become skilled at accurate and reliable assessment of pain in older individuals. Making plans for the appropriate pain management strategy requires clear identification of the goals of care, putting problems in perspective and realizing limitations and outcomes. Often it is helpful and practical to simplify drug regimens as much as possible. Use safe, predictable drugs and administration strategies to anticipate, prevent and reduce side-effects more effectively. Finally, older persons clearly benefit from a multimodal and multi-disciplinary approach that provides appropriate identification and expertise to manage complex problems.

Pearl: All federal and state drug enforcement agencies recognize the legitimate need and use for potent opioids and other drugs for the management of pain in patients near the end of life. Most state medical boards provide recommendations for appropriate prescribing.

Pitfall: Some neighborhood pharmacies do not carry potent narcotics for fear of robbery. Contingency plans should be made for providing convenient access.

Pitfall: Some nursing homes limit usefulness of heating pads and ice packs for fear of injury.

SUMMARY

Slide #30 & Slide #31

Clinicians need to choose drugs and non drug strategies that are safe and effective for frail older persons. Drugs should be chosen with mechanism of pain in mind. Analgesic choices should always match the severity of pain with the known potency and effectiveness of available drugs. Side effects to medications should be anticipated and managed appropriately. And finally, patients often benefit from a combination of drug and non-drug interventions.

Most pain near the end of life can be relieved using modern principles of pain assessment and available treatment methods. Although elderly patients are more sensitive to side effects of most drugs, this does not justify failure to provide effective pain methods, especially near the end of life. Analgesic drugs are safe and effective for the management of pain in older persons. For many older persons, health care professionals need to recognize common barriers to effective pain relief and help develop a simplified plan of care that is appropriate for families and caregivers settings such as nursing homes, and other care settings.

RESOURCES:

- Ferrell, BA, Acute and chronic pain: in Geriatric Medicine an Evidence-Based Approach, 4th Ed, Cassel CK, et al (Eds), Springer, New York, 2003, pp323-342
- AGS Panel on Persistent Pain in Older Persons: The Management of Persistent Pain in Older Persons, Journal of the American Geriatrics Society, 50:S205-S224, 2002
- Paice JA, Fine PG: Pain at the end of life, in Textbook of Palliative Nursing, Ferrell BR, Coyle N, Oxford University Press, New York, 2001, pp76-90
- Ripamonti C, Dickerson Ed. Strategies for treatment of cancer pain in the new millennium. Drugs 61:955-977, 2001
- Persistent Pain in Older Adults, Weiner DK, Herr K, Rudy TH (Eds). Springer, New York, 2002
- Portenoy RK: Adjuvant analgesics in pain management. In Oxford Textbook of Palliative Care, 2nd Ed, Doyle D, Hanks GW, MacDonald N (Eds), Oxford, Oxford University Press, 1998, pp361-390
- Derby S, Portenoy RK. Assessment and management of opioid-induced constipation. In Topics in Palliative Care Vol. 1, Portenoy RK, Rruera E (Eds), Oxford Press, New York, 1997, pp95-112
- Walsh TD: Prevention of opioid side effects. Journal of Pain and Symptom Management, 5:363-367, 1999
- Robotham M, Harden N, Stacey B, et al. Gabapentin for the treatment of postherpetic neuralgia: a randomized controlled trial. JAMA 280:1837-1842, 1998
- MacLean CH: Quality indicators for the management of osteoarthritis in vulnerable elders. Annals of Internal Medicine, 135:711-712, 2001
- Fainsinger R, Schoeller T, Bruera E: Methadone in the management of cancer pain: a review, Pain 52:137-147, 1993
- Stucki G, Johannesson M, Liang MH. Use of Mesoprostol in the elderly: is the expense justified? Drugs Aging 8:84-88, 1996
- Taha As, Hudson N, Hawkey CJ, et al: Famotidine for the prevention of gastric and duodenal ulcers caused by nonsteroidal anti-inflammatory drugs. N Engl J Med 333:1435-1449, 1996
- Pain and Policy Studies Group. Annual Review of state pain policies 2003. University of Wisconsin, 2003. [Online] Available: <http://www.medsch.wisc.edu/painpolicy/>
- Morrison RS, Wallenstein S, Natale DK, et al: "We don't carry that" - failure of pharmacies in predominantly nonwhite neighborhoods to stock opioid analgesics, New England Journal of Medicine, 342:1023-1026, 2000

KEY TAKE HOME POINTS

Effects of Aging

1. The elderly population is heterogenous. Individuals vary remarkably with respect to physiological effects of aging and implications for pharmacologic changes.
2. The burden of disease and disability increases with age. Goals of care and utilization of resources are often attenuated.
3. Pain and symptom management should be aggressive in the face of limited expectations for cure or recovery.
4. Changes in body composition, kidney, and liver functions may effect drug distribution, metabolism and excretion result in increased adverse drug events with aging.

Analgesic Drug Strategies

5. The World Health Organization step-wise approach to pain management is a reasonable model of pain management for most older patients.
6. Acetaminophen is safe and effective for most elderly patients with mild to moderate pain.
7. NSAID analgesic drugs are effective for mild to moderate pain, but may have increased risk for GI, renal, and other complications in older persons.
8. The use of COX-2 NSAIDs, concomitant use of proton pump inhibitors or mesoprostyl are only partially successful in preventing NSAID associated side effects.
9. Opioids are safe and effective for most older patients with moderate to severe pain.
10. Long acting opioids, or sustained release preparations require simultaneous prescription of short acting or immediate release preparations for breakthrough pain.
11. The oral route provides the safest, easiest, and most predictable route of administration for most patients.
12. Drugs with active metabolites, mixed receptor agonist-antagonist activity and super-long half lives (e.g. >72h) may be problematic elderly persons.

Side Effects

13. Constipation should be anticipated and prevented with the use of routine or prophylactic bowel regimens such as increased fluids, osmotic or stimulent laxitives.
14. For nausea, use medications with the lowest anti-cholinergic side effects, or change to a different analgesic medication.

15. Somnolence should be anticipated. Psycho-stimulents or narcotic should be used with caution.

Adjuvant Analgesic Drugs

16. These drugs are rarely successful as single agents and often have high side effect profiles in elderly persons.

17. Choose adjuvant analgesic drugs with the lowest side-effect profiles.

18. Use in combination with traditional analgesic drugs and other non-drug strategies.

Non-Drug Strategies for Pain

19. Non-drug strategies should be used in combination with drugs for pain.

High-Tech Pain Interventions

20. Aggressive interventions are justified for severe pain in elderly persons.

21. Elderly persons with recalcitrant pain problems should be referred to those with special expertise for invasive procedures.

Barriers to Pain Management

22. Health care professionals need to simplify and explain pain strategies as much as possible for family and informal caregivers.

23. Be aware of systems and institutional barriers to pain management. Anticipate and avoid logistic and regulatory barriers that threaten pain relief.

PEARLS

1. Most experts believe that age related changes in pain sensation are subtle and probably not clinically significant.
2. Most patients with delirium or dementia can report pain reliably at the moment.
3. More than 80% of patients pain can be managed using the WHO approach.
4. Morphine is the strong opioid of choice for most elderly persons with severe pain because it is the oldest, best understood and most predictable.
5. Opioid addiction a behavioral problem that is extremely rare in elderly persons. Fear of addiction is a significant barrier for health care providers and patients resulting in needless suffering.
6. Pseudo addiction is a term applied to behaviors such as hoarding medications, escalating doses and requests for early refills by legitimit patients. Usually escalation of doses and appropriate control of pain reduces this behavior. Misunderstanding of this behavior can lead to inappropriate labeling of patients as addicts, eroding patient relationships and compromising care.
7. Cortico-steroids may be helpful in reducing pain associated with acute inflammatory events such as tumor infiltration of nerves or in bone metastasis.
8. The combination of opioids and NSAIDs are particularly helpful in boney metastasis such as breast cancer.
9. Normal aging does not effect first pass kinetics for drugs rapidly metabolized after absorption in the intestine.
10. Cognitive-behavioral therapy that enhances positive coping strategies and reduce maladaptive behavior have been shown to be highly successful in randomized controlled trials.
11. Focused radiation therapy for local pain relief should be considered for cancer related pain.
12. All federal and state drug enforcement agencies recognize the legitimate need and use for potent opioids and other drugs for the management of pain in patients near the end of life. Most state medical boards provide recommendations for appropriate prescribing.

PITFALLS

1. Lipid soluble drugs such as benzodiazepines, methadone and other psychotropic drugs often have prolonged half-lives in elderly persons due to the increased fat reservoir as a result of the fat/lean body weight changes that occur with normal with aging.
2. The maximum dose of acetaminophen should be reduced by 50-75% in patients with hepatic insufficiency or alcohol abuse.
3. Many older persons take over the counter drugs that contain acetaminophen without telling their physician. Care must be taken to avoid acetaminophen toxicity.
4. Meperidine (Demerol) has an active metabolite (normeperidine) that accumulates in patients with renal insufficiency and causes CNS excitement and sometimes seizures.
5. The peak effect of transdermal fentanyl may take as long as 24 hours.
6. Early removal of a transdermal fentanyl patch (less than 72hrs) may not change the expected half-life of 72 hours or longer.
7. Transdermal fentanyl patches should not be cut, broken or ingested resulting in immediate release fentanyl.
8. Sustained release, wax matrix tablet preparations such as Oxycontin or MS Contin should not be chewed or crushed, resulting in immediate release drug.
9. Use of fiber containing products for chronic constipation may be poorly tolerated and often require increased fluid intake to avoid bloating, cramping and abdominal discomfort.
10. Phenothiazine anti-emetics (e.g. compazine) may cause constipation, urinary retention, sedation, and distressing movement disorders in elderly persons.
11. Some neighborhood pharmacies do not carry potent narcotics for fear of robbery. Contingency plans should be made for providing convenient access.
12. Some nursing homes limit usefulness of heating pads and ice packs for fear of injury.