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Chronic Pain (Part 2)

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Treatment

The best pain treatment is no treatment at all. The goal is to increase the patient's ability to control pain without medical intervention. Non-drug interventions such as heat, cold, massage, acupuncture, distraction, relaxation exercises, physical therapy, occupational therapy, hypnosis, biofeedback, and social support all have unique abilities to alter pain sensations. Traditional Native medicine practices such as the sweat lodge ceremony are also powerful modulators of pain and suffering. Urge patients to use these modalities to improve their lives and reduce pain whenever they make sense to the individual and whenever they are available. Sometimes CP can be completely obliterated by traditional medicine ceremonies.

Even if patients do not use all of the non-pharmacological interventions available, it is helpful to reiterate the list and remind patients that they have choices. This reminds patients that no matter how much they feel they may have lost, they still have personal choice in what they will do. This fact helps patients to focus on treatment aspects they have control over.

Teach patients pain control strategies by having them explore various alternative modalities and then list what works. Have patients prioritize their coping strategies from most to least effective. Working with this list, help patients devise a plan for living. Many patients will respond to participation in productive work or hobbies that they enjoy. Some patients have never had a chance to develop artistic talents or practice hand-crafts. Many will need to develop a new occupation that they can do within the limitations of their pain. Many patients will start painting, carving, or jewelry making with your encouragement.

Educate patients about pain contingent behavior and the many misconceptions about pain. Patients commonly believe that they should not exercise when they have pain. Teach patients about the values of endogenous endorphin production and encourage them to maintain the same level of activity, every day, whether or not they have pain. On the other hand, warn patients not to over do it on days when they feel little pain. Most patients will need to acquire new habits and routines.

Pain treatment is determined by numerous coexisting factors. Treatment for CP has important clinical differences that distinguish it from treatment of acute, or short-term pain. Pain can be distinguished by severity, as either mild, moderate, or severe. Some providers categorize pain based on whether it arises from malignant or nonmalignant causes. Nonmalignant causes should not be underestimated. In a study by Hitchcock, Ferrell, and McCaffer,²³ fifty percent of patients with nonmalignant pain had considered suicide. The degree of pain the patient experiences also will assist in determining the treatment

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approaches and medications prescribed. The presence or absence of alcohol or narcotic addiction can influence the treatment choices the provider should consider. Some patients who present with pain complaints are seeking disability or reimbursement from third parties. Compensation issues can serve as a disincentive for healing and have been described as critical factors in the persistence of pain.²⁴

Exercise is one of the most effective treatments for CP. Many times it is necessary to reduce CP to a tolerable level before patients have the energy to begin. Most patients do not understand that their muscles become deconditioned and that their brain shuts down the production of endorphins, serotonin, and other neurochemicals that quiet pain and improve the sense of well being. Many patients gain weight when inactive and further increase the risk for pain because of the increased mechanical pressure on damaged joints. Weight loss is nearly always an important aspect of pain reduction/prevention. Many patients are nearly immobile because of obesity, injury, and pain. These patients usually do not exercise, or their exercise is ineffective because they are unable to engage the large muscle groups essential for conditioning and weight loss. Generally, the best exercise for patients with CP is aquatic exercise. Water relieves the pressure of gravity while allowing for freedom of movement without injury. Most patients can acquire whole-body conditioning with water aerobics.

Understanding Tolerance, Dependence, and Addiction

Whenever treating patients who will be using opioids, providers need to have a clear understanding of the concepts of tolerance, dependence, and addiction. *Tolerance* is the need to use more and more of a drug to achieve the same result. Tolerance can be an ally. Tolerance means that, eventually, most patients will need more of the opioid they are on to achieve pain control. However, tolerance may often allow patients to adjust to the unpleasant side effects of opioids such as itching, nausea, and somnolence. Tolerance is to be expected when using opioids long-term, although many patients never become tolerant to the analgesic effects. *Tolerance does not mean the patient is addicted.*

If a patient has developed tolerance, *dependence* may or may not be present. Dependence means that a patient must have the drug to maintain a stable state. If the drug is abruptly stopped, the patient will go into physiological withdrawal. *Dependence does not mean that the patient is addicted.* Patients who are dependent may or may not be *addicted*.

A patient who is addicted to an opioid will use more than is necessary to control pain.²⁵ These patients also exhibit a constellation of uncontrolled behaviors whereby a person forfeits legal, economic, and family security in their quest for drugs or alcohol. Addiction is not a predictable effect, unlike tolerance and dependence. It is an idiosyncratic, adverse reaction occurring in biologically and psychosocially vulnerable individuals.²⁵ A good observation to note is that addicted persons usually withdraw from society and social interactions, while

patients who do not have addictions will resume social activity once pain is under control.

Another concept that is misunderstood is “clock or calendar watching” (pseudoaddiction). This is the patient who anxiously awaits the next pain pill or the next refill. Pseudoaddiction is also not to be confused with addiction. Pseudoaddiction often means that a patient is undermedicated for pain or is on short-acting agents when long-acting agents are needed. Some pseudoaddicted patients suffer from untreated anxiety and/or depression and a feeling of loss of control that has not been addressed.

Research studies confirm that less than one percent of persons who are treated with opioid medications become addicted to opioids.^{26,27,28} Fear of addicting patients is a barrier to effective treatment of moderately severe to severe pain. However, concurrent addiction must be addressed. Start patients on pain contracts early, so that there is no misunderstanding about the goals of treatment (improvement in function). Spell out all aspects of the contract. This approach often preempts inappropriate, multiple provider visits, drug-seeking behavior, manipulation, and overdose. Explain to patients that these contracts are between them and their provider and that the provider may choose to no longer care for patients who do not follow the rules. This clarification lays the groundwork for termination of care in any case where the patient puts the provider at risk. Certain patients press the system to the limit to procure more drugs no matter how careful the provider has been. These patients often improve in their behavior once they encounter a unified and consistent organizational approach from all staff members.

Pain Treatment and Addiction

The most difficult patients to treat are usually those with CP resulting from orthopedic or other morbidity as a consequence of alcohol abuse or addiction. Significant numbers of these patients (45%-70%) also have psychiatric comorbidities.²⁹ Many psychiatric comorbidities are undiagnosed and untreated. Indeed, many addictive disorders arise because patients self-treat their emotional suffering with alcohol or drugs. Other psychiatric comorbidities arise *because* of the chronic use of substances/alcohol. Addicted/abusing patients with pain tend to present late and in a more debilitated state. They need addiction/pain work-ups that include assessment for psychiatric comorbidities. For patients with addiction or abuse histories, prevention of relapse is always a goal of pain treatment. Not treating pain or undertreating it in addicted patients creates a very high risk for relapse. Therefore, pain in addicted patients needs to be as aggressively treated as in any patient.

When addiction, dependence, or tolerance is suspected, it is useful to establish a clear diagnosis so that safe treatment can be instituted. The loss of control over the substance/drug or relapse during treatment should not be considered a character disorder or a moral failing, but a chronic disease of neurophysiology where relapse is anticipated. It is essential to get alco-

hol and drug addicted patients into addiction treatment. Those who are dependent may need to be admitted for detoxification. Active drug and alcohol addictions are neurophysiological diseases wherein patients have lost control over use of a substance.³⁰ Of great medical interest is the fact that in both CP and addiction, the endogenous opioid system is so similarly disturbed that the current scientific question is whether it is possible that addictive diseases and CP are different clinical manifestations of related neurophysiological disorders.³¹ Patients with family histories of addictions are six times more likely to become addicted themselves. Current science has revealed that several genetic markers interact, under certain social conditions, to create the increased risk.³² Few patients with CP will get better until the addictions, the pain, and psychological issues are addressed and treated, concurrently.

The mere process of asking questions to establish the historical evidence to diagnose alcohol dependence is therapeutically useful in breaking through the walls of denial that many patients have erected around addictions.³³ As information about accidents, injuries, lost jobs, arrests, lost relationships, economic peril, legal issues, and health losses mount, reality becomes more difficult to deny. Once a problem is suspected, spell out exactly what kinds of issues and risks are identified, how the patient is being affected by the problems, the treatments recommended, and the medical reasons for treatment. The choice for treatment needs to be put squarely on the patient. Many patients are likely to opt for treatment, especially when it is readily available.

Treatment attempts will fail unless a strong therapeutic alliance, built on respect, caring, and trust, is established. When patients do not seem ready to change their behavior, do not be discouraged. State your concerns. Offer advice. Restate your worries for the patient's well being. Reinforce your willingness to help. Encourage patients to consult alcohol specialists. Recommend a trial period of abstinence and monitor the response and the pain responses in a follow-up visit. Ask patients to discuss your recommendations with family, and schedule follow-up visits with family members.³⁴ Tell patients you will be there when they change their mind and decide to get treatment. Remind patients that many people do get clean and sober with proper treatment, and give them hope that they, too can get off alcohol. Kindness and genuine concern will often prompt people to think more deeply about their choices. When caring and respect are the tone, the patient is more likely to hear what is being said and less likely to deny the problem. The presentation of facts and medical observations, in a caring way, is the basic premise of the art of motivational interviewing, which is the recommended approach to working with all patients with chronic diseases, but especially those with diabetes, alcoholism, and CP, where control and outcomes are predicated on self-responsible choices.³³

Although it is important to identify patients who might be susceptible to addictive diseases at the outset, pain treatment

should never be refused or withheld because of a history of addiction. Two screening methods are useful in evaluating addictive diseases and drug dependence. The first is a two-question test: 1) Has your drinking ever been a problem for you? and, 2) When was your last drink? "Yes, within the last 24 hours" is a positive screen. Many providers in IHS facilities use the CAGE screening test (C = Have you ever felt that you ought to *cut* down on your drinking? A = Have people *annoyed* you by criticizing your drinking? G = Have you ever felt *guilty* about your drinking? E = Have you ever had a drink as an *eyeopener*?). Two or more positives are highly correlated with alcohol problems. It should be emphasized that no single event is diagnostic of addiction. Rather, the diagnosis is based on a pattern or behavior that becomes obvious over time.

Most patients with addictions alternate between the states of intoxication and withdrawal, and in this latter state there is heightened sympathetic arousal and pain perception. In addition, patients with addictive diseases experience affective changes such as depression and anxiety that worsen the pain. It is useful to sort out what came first: the depression, or the pain. A key question to ask patients is whether they felt better *before* they started drinking or *after* they were under the influence. Many patients with abusive childhood histories, post-traumatic stress disorders and childhood sexual abuse began their drinking as a way to escape feelings of helplessness, hopelessness, and overwhelming emotional despair. These patients are likely to have a reoccurrence of psychological dysphoria, and relapse, unless their pre-existing depression is treated from the outset.

Those patients in remission (five years or more of sobriety) still have an addictive disorder and still need aftercare and follow-up, just as with any chronic disease, for the rest of their lives. Some patients with addictions, or addiction histories, easily convert their addictions to other addictive substances or addictive behaviors. Studies have shown that addictions lead to long-term changes in brain chemistry that persist for years.³² Patients in remission are usually compliant with treatment and eager to prevent relapse.

Social support, as a treatment, is vital. Support groups are ideal. In the group setting, patients learn from each other, and they can find the empathy and support so often missing at work or at home. In a group, patients who feel hopeless can gain strength from exposure to those who are more evolved in their coping skills. The best teacher for persons living with CP is good examples. If adults with CP encounter other persons with CP, the exposure helps them gain perspective on their pain in a productive way. Patients can also learn new and better coping styles from each other.

Patients with a history of addictions or imprisonment should always be screened for hepatitis B and C, HIV, TB, and sexually transmitted diseases when they present for treatment for CP. They should be given hepatitis A and B immunizations and pneumovax, routinely.

Medications

The approach to moderate to moderately severe CP that works best is to use long-acting opioid agents that are effective around the clock, for baseline control, while using short-acting opioids for breakthrough episodes. Research has shown that narcotic analgesia on a scheduled basis, in adequate doses is far superior to prn dosing. The oral route with twice daily dosing is preferred because compliance is increased. Three times a day dosing should be avoided. It is unwise to omit a breakthrough agent, as patients will sometimes overdose on the long-acting agents when they do not get quick or complete relief. All patients need to be counseled on the risks, benefits, and side effects of, and alternatives to medication use and warned to not crush or chew the long-acting opioid agents to prevent bolus overdosing.

Nociceptive pain (pain generated from tissue damage) responds best to nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen when there is not an inflammatory component. Inflammatory pain responds best to NSAIDs. Bone pain responds well to NSAIDs or steroids. Steroids must be used only in selected patients, and it is best to get a second opinion if they are needed on more than one occasion. If the patient has chronic neuropathic pain, low dose tricyclic antidepressants or gabapentin are usually effective. Adjunctive agents that sometimes work are capsaicin cream or mixilitine. If the patient has mixed pain elements or several different types of pain, NSAIDs may also be started.

A difficult choice is between aggressively treating the pain to capture it, by starting several medications at once, and starting medications one at a time, to judge efficacy. The dilemma can be softened by either seeing the patient on a weekly basis, starting only one medication at a time, until pain can be controlled, or by ordering some sequential trials of medications the patient can take home, so that the patient can identify what works best. Unique patient and clinical situations will help determine which approach to take. Common problems with NSAIDs stem from gastric sensitivity, bleeding due to impaired platelet aggregation, and asthmatic reactions. Over the last year, the Phoenix Indian Medical Center has had more adverse drug effects reported with the drug celecoxib (Celebrex) than any other drug. The drug has since been taken off the formulary.

Although both meperidine and oxycodone/acetaminophen (Percocet) have good pain relief efficacy, they should not be used to treat CP. Meperidine can quickly reach toxic levels and result in seizures. Some hospitals are removing meperidine from their formularies. Percocet is a short-term agent and not effective in CP. Most patients with CP will begin accelerating their doses as the tolerance builds and relief time decreases to 1-2 hours. Once this happens, patients can become pseudoaddicted as they increase the use of Percocet or appear as “drug-seeking” when, in fact, they are presenting with inappropriately treated, unrelieved, CP. Pseudoaddiction stops when

patients receive adequate pain treatment. Six Percocet tablets/day are equianalgesic to 30mg of morphine; therefore there is little reason not to begin the long-acting morphine in these cases. The labels of “clock-watching,” “drug-seeking,” or “Percophile” can be misused, and may result in misdiagnosing and mislabeling of patients who receive inappropriate or inadequate medication for pain.

Another problem concerning the use of Percocet is the acetaminophen content. Percocet contains 325mg of acetaminophen/tablet. The maximum dose recommended by the FDA for acetaminophen is 4 grams per 24 hours, or 12 tablets in 24 hours. Recent findings of unexpectedly high rates of liver injury from casual, chronic use of acetaminophen have increased the scrutiny of all acetaminophen and acetaminophen-combination products with the prospect that the maximum dose recommendations are likely to be further reduced. Frequently, patients exceed safe levels of acetaminophen use because they are also using over-the-counter (OTC) acetaminophen to augment the Percocet. The combination of acetaminophen and Percocet produces a recognized type of euphoria that can be highly addicting in addiction-prone individuals. In patients who already have liver injuries from alcohol or hepatitis, acetaminophen toxicity may happen quickly.

Providers caring for pain patients see a variety of other problems related to treatment that can result in serious consequences. Patients often arrive in pain clinics after trying all sorts of medications, folk-remedies, alcohol, herbals, street drugs, or other treatments to relieve pain, out of desperation. Treatment incompatibilities can result. Providers should ask patients if they are using OTC medications, herbals, or street drugs. St. John’s Wort used with the selective serotonin reuptake inhibitors (SSRIs) increases the risk for serotonin syndrome.

Another problem is the use of multiple nonsteroidal anti-inflammatory drugs (NSAIDs), or the extended use of ketorolac beyond the 4-5 day maximum. Oral ketorolac is not as effective as the injected product. Ketorolac is not a good choice for ongoing treatment of CP.

Some patients do not take their medication at the onset of pain but wait until it becomes “unbearable” before medicating. These patients need to be identified and instructed to take medications early to better control pain and prevent chronicity.

Many CP patients benefit from treatment with antidepressant drugs. Tricyclic antidepressants can be used to enhance sleep, treat neuropathic pain, and treat depression. Although the SSRI class of drugs has not been shown to have direct pain relief qualities, they do enhance the psychological energy patients need to deal with the chronicity of pain and thereby result in less need for opioids and other analgesics by increasing serotonin levels in the central nervous system. As mounting research data confirms the efficacy of treating CP patients with antidepressant drugs, antidepressants are quickly becoming first-line drugs.

Antidepressants should be selected by deciding whether the patient needs the activating effects or the sedating effects. Since the SSRIs have a quicker onset of action, they provide quicker relief to the suffering imposed by depression. This is especially important in patients who are feeling helpless, hopeless, or suicidal. Newer, serotonin-norepinephrine reuptake inhibitors (SNRIs) are often used by pain specialists to treat neuropathic pain, but these drugs are usually restricted on IHS formularies. Specialists in IHS often use morning doses of an SSRI, while using very low nighttime doses of a tricyclic antidepressant to address the neuropathic pain. This combination works well when SNRIs are not available.

Amitriptyline can often be effective for both neuropathic pain and sleep disruption. Imipramine is often recommended over amitriptyline because of fewer side effects. In my practice at PIMC, I have not found imipramine to be as effective in American Indian patients as amitriptyline. The drug has wide neuroreceptor affinity that makes it an effective and widely used drug in pain medicine. When amitriptyline is contraindicated or not effective in restoring sleep, trazadone is a good option. Amitriptyline is not a good choice in patients who are suicidal because of the risk of potentially fatal overdose. In these cases, choose a medication and dose with a higher therapeutic index in case of overdose. Whatever antidepressant is used, it is best to start low and go slow, while allowing at least 4-6 weeks to judge efficacy.

In order to better understand how to use medications effectively in pain intervention, it is useful to look at the sequential neurophysiological stages of transmission of pain. Nociception consists of the sequential steps of transduction, transmission, perception, and modulation. NSAIDs work at the level of transduction; opioids work at the level of transmission; and antidepressants work at several levels, depending on the drug. Therefore, when patients end up on several medications, this is not true polypharmacy, but a reflection of the complicated art of CP management that, like modern diabetes management, often works best with the use of multiple agents that intervene at different levels of neurophysiology.

Fentanyl patches are sometimes useful for elderly patients or for those who can't take medications orally, as in patients who have intestinal malabsorption conditions (*except* those with cystic fibrosis³⁵). However, the patch delivery system sometimes makes it a difficult drug to titrate.

Many patients with addictive disorders can be started on gabapentin. Gabapentin is an antiepileptic drug used to treat neuropathic pain of the peripheral nervous system. Its mechanism of action is thought to be stabilization of the cell membrane. Gabapentin not only is not addictive but it is very useful in neuropathic pain control as well as in treating affective disorders. This often makes it a good choice in patients with dual diagnoses. The most common adverse effects are drowsiness and generalized fatigue. The median effective dose ranges from 900 to 1200 mg and needs to be built up slowly. Some patients require doses as low as 100 mg and others require

higher doses. Another attractive feature of the drug is that it does not have as many drug-drug interactions. In a study done by Cutter,³⁶ gabapentin was found to be effective in reducing the pain and impairment of spasticity in multiple sclerosis patients without the side effects of worsening concentration and fatigue.

Those who cannot be started on gabapentin and who have moderate to severe pain can be started on methadone or long-acting morphine. Many patients with addictive histories will require very high doses of opioids to control their pain. One of the benefits of opioid treatment is that there are no ceiling limits. If patients require opioid treatment, they need to have doses that are effective. The "right" dose for a patient is the dose that controls the pain.

Long-acting morphine is the drug of choice for the treatment of cancer pain and moderately severe to severe non-malignant pain. It is the standard against which all other opioid drugs are measured. The pure agonist opioids include morphine, hydromorphone, methadone, and fentanyl. As the doses are increased, the effect increases in a log-linear function until either analgesia is achieved or somnolence occurs. In practice, the efficacy of a drug is determined by the degree of analgesia produced following dose escalation. Side effects include confusion, delirium, hallucinations, and myoclonus.



If morphine is not tolerated or not effective, the ideal second-line opioid is one with a pharmacokinetic profile that is both short-acting and long-acting, with no toxic metabolites, high potency, and low cost. I have found methadone to be a good alternative to morphine in American Indian patients. Methadone has a lower abuse potential than morphine, is inexpensive, and has an 85% bioavailability, which is significantly higher than that of morphine. It often works well for patients with alcohol or heroin abuse histories. Methadone has a similar onset of analgesia as morphine, and plasma concentrations peak in about two hours after oral administration. It is extensively metabolized in the liver, and the half-life is long although highly variable (12-190 hours).³⁷ The analgesic duration of action is also variable and is thought to be between 4 to 8 hours.³⁸ Methadone will take a long time to reach a steady state after dosing is initiated or changed. I have often found it to work well with neuropathic pain in American Indian patients.

Successful patient outcomes will be improved if patients are educated about the unique properties of their medications. Advise patients to give new medications a reasonable chance for success before judging them a failure. Cross-tolerance in opioid-tolerant patients is incomplete when switching between opioids and methadone and highly variable between patients. It is crucial to pay close attention to individual titration because conventional conversion factors underestimate the potency of methadone. It is advisable to start lower and go slower than the calculated equianalgesic dose.

The patient who presents with prolonged back pain and sciatica is a possible candidate for epidural steroids. The character of the pain is usually deep and aching, with numbness, tingling, or shooting pain. Patients who respond best to steroid injections are those who are carefully selected, with a shorter duration of pain (less than a year), those with no previous surgeries, those who have had an accurate diagnosis of nerve root inflammation, those with no affective complications, and those who receive proper steroidal placement.³⁹ Patients with nerve root symptoms are best referred to pain medicine specialists who do procedural interventions.

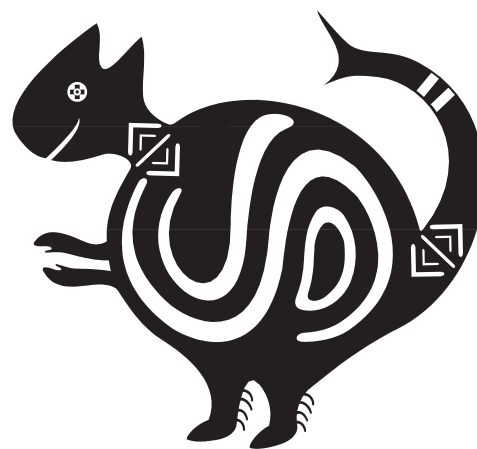
Side Effects

A common barrier to using adequate doses of opioids in patients with moderate to severe CP is the fear of respiratory depression. In studies by Ashburn, Love and Pace,⁴⁰ in over 11,000 patients, the risk of respiratory depression was low. Problems were found to be less than 0.1%. Severe pain is the best agonist to the sedating effects of opioids. Usually, when patients become sleepy, it is an indication they may be reaching pain relief. Contrary to popular belief, patients in moderate to severe pain do not get a "high" from their medications. Usually, patients are exhausted by pain and go to sleep once pain intensity falls to tolerable levels.

Patients with malignant pain or CP who are on chronic opioids can be expected to have some side effects. If opioids

are effective in relieving the pain, they should not be stopped. Instead, side effects need to be recognized and controlled. The most common side effect of opioids is constipation. Patients do not develop tolerance to constipation, and they will need constant prophylaxis. Patients should be proactively started on a stimulant laxative at the outset. Bulk laxatives, such as Metamucil, should be discontinued and should be avoided because they may cause difficult and risky impactions. Diabetic patients have particularly high risk for serious impactions because of gastrointestinal autonomic neuropathies that can retard gut motility while muting pain. The risk of problematic impactions in IHS patients is higher due to the high numbers of patients who present with long-standing diabetes. Lactulose can be used in difficult cases of constipation, and it is acceptable for use in diabetic patients. It can be titrated to effect; start at 4 tbs every four hours until the patient has a bowel movement.

Tolerance to sedation usually develops in 4-5 days of regular use. Some patients go into a deep sleep that is worrisome to the family, but most patients who have had inadequate pain relief are exhausted and need deep, restful sleep. Many times, the family will need as much education as the patient to promote improved outcomes.



For patients who complain of somnolence, caffeine can be increased in the diet or OTC stimulants can be added. Caffeine is a well-known analgesic with a long and safe pharmacologic history. Itching is a fairly common side effect of opioids that can also be treated with hydroxyzine or ceterizine if persistent. Most itching remits within 2-3 days of treatment initiation. Nausea can be treated with promethazine or prochlorperazine. Tolerance to nausea usually develops in two days.

Urinary retention sometimes occurs and tolerance usually develops in 2-3 days. Urecholine can be used if necessary. Myoclonic jerks are a normal side effect, and most patients and families need reassurance. Clonazepam or diazepam help suppress myoclonal jerks. The best advice to follow when managing side effects is to continue to use medications that are effective in pain control while proactively treating constipation and treating other bothersome effects.

Patients on long-acting opioids need close, collaborative management if and when they need surgical treatment. Patients must be maintained on background doses of opioids at the same level, and they will need additional pain medication, just like any patient who goes to surgery, over and above the regular medication regimen. If patients are not carefully managed, in a collaborative manner, they may go into withdrawal during or after surgical procedures. All patients who have surgery while on treatment for CP need careful post-operative monitoring.

Acceptance

When all available resources and treatments fail to control CP, research shows that those persons who strive for understanding and acceptance achieve a better overall adjustment and ultimately report less pain.⁴¹ Acceptance means that the patient gives up unproductive attempts to control pain and focuses energy on living a satisfying life. Acceptance can be a paradoxical concept to both patients and providers (regaining control over life by first giving up control) but when acceptance is achieved, patients experience fewer negative emotional consequences and report less pain.

Addiction treatment specialists have observed that there are certain patient behaviors that exemplify the enough-is-enough state (EES). These behavior patterns and lack of insight are commonly shared with patients with addictions.⁴² They are as follows:

- Loss of control.
- Preoccupation with pain; the pain becomes the center of the patient's universe.
- Denial: "I know that there must be a good surgeon who can fix my back"; "There must be something else you can do!" (from the patient who has already had five surgeries).
- Rationalization: "I can't exercise because . . ."
- Projection: "It's _____'s fault I have this pain. If they would have only . . ."
- Repression and suppression: the patient who refuses

to deal with reality.

- Failure to take personal responsibility; the patient does not comply with treatment recommendations and keeps making the pain the providers responsibility. "When are you guys going to do something about my pain?"

Patients at EES usually have had multiple surgeries, treatments, injections, evaluations, therapies, and providers. They often travel from one clinic to the next. The main modality for coping with pain usually narrows to a focus on drugs and/or alcohol. These patients become locked into the idea that their pills are their link to sanity and survival. They look upon others who use these drugs as addicts while they see themselves as different. "I have to have these drugs because of my pain."

The Twelve Step program of Alcoholics Anonymous is useful treatment modality for these patients. It is predicated on the patient first accepting helplessness over addiction (pain), and then, in a process of psychological evolution (12 steps), learning to live with the pain while regaining control of their lives. The advantage to a Twelve Step program is that it can be started anywhere by anybody with few resources, and it leads patients into learning how to accept living with pain.⁴²



Recommendations for Practice

Patients with CP need to have documented treatment plans with contingency recommendations for when, where, and how they will get treatment in the event that the primary care provider is not available. The drug treatment contract needs to specify others who may write for pain medications if necessary. Patients with substance use/abuse histories should always have a signed drug contract initiated and filed in the chart.

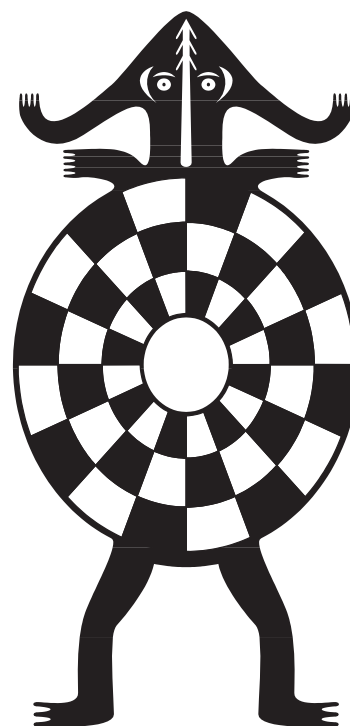
When providers treat patients with opioids who have pain and addictions, routine, regular chart reviews need to be done by quality assurance reviewers, pharmacy staff, and medical reviewers with a requisite level of understanding of pain medicine and addiction medicine. Besides having a complete history and physical, with a pain assessment, and the medical indications for the use of an opioid, the written treatment plan should state the objectives that will be used to judge treatment a success (goals). The providers should also document discussion of the risks, benefits, and side effects of and alternatives to the use of opioids with the patient. Patients with psychiatric comorbidities should have a psychiatric consult completed and filed in the chart.

Compliance with treatment should be monitored and referrals made whenever appropriate. Patients should always be followed at reasonable intervals with constant reassessments documented. It is helpful and appropriate to give patients a copy of their treatment plan so that in any emergency, they have a copy of pertinent information to share with other providers or agencies if necessary. These measures help to protect both the provider and the patient when issues arise. Patients who have severe episodes of CP, as in sickle cell crisis, need to have laminated treatment plans that they can carry with them should they need to report to an emergency room for treatment. In cases where one provider is ordering high doses of opioids, legal risk can be reduced by asking for a consultative opinion from another provider. Pain providers are often those professionals in a community ordering the most opioids. Such providers are often targeted for regulatory scrutiny. Seasoned pain providers have learned that lawsuits or regulatory problems rarely arise where two providers agree upon and advise the same treatment regimen. □

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Anemia and Chronic Kidney Disease

This is the sixth in the series of articles about chronic kidney disease.

Andrew S. Narva, MD; and Theresa A. Kuracina, MS, RD, CDE, both from the Indian Health Service Kidney Disease Program, Albuquerque, New Mexico

Diseased kidneys can't make enough erythropoietin

Healthy kidneys make erythropoietin, a hormone that stimulates bone marrow to make red blood cells. Anemia generally develops in chronic kidney disease due to an erythropoietin deficiency. Diseased kidneys cannot make enough erythropoietin, resulting in normocytic, normochromic anemia.

Who should be worked-up for anemia?

- Start checking for anemia at Stage 3 and above (GFR ≤ 60 mL/min/1.73m²)
- Or if Hgb < 11 g/dL in pre-menopausal women and pre-pubertal patients
- Or if Hgb < 12 g/dL in adult men and post-menopausal women
- At altitudes > 6000 feet increase the thresholds for evaluation by 1g/dL for both men and women.

Use hemoglobin to quantify the level of anemia.

- Hemoglobin is the preferred lab test for anemia assessment in CKD. Hemoglobin is measured quantitatively and is not greatly affected by plasma water; length of time stored prior to analyses; nor is it falsely elevated in hyperglycemia as is the calculated hematocrit

Anemia evaluation

- Check Hgb; red blood cell indices; and reticulocyte count
- Check iron status: serum iron; total iron binding capacity (TIBC); percent transferrin saturation (TSAT); and serum ferritin
- Test for occult blood in the stool

If serum creatinine is greater than 2 mg/dL, and no other cause for anemia is found, the anemia is most likely due to an erythropoietin deficiency. Routine determination of erythropoietin level is not recommended.

Target hemoglobin

- $< 6000'$ elevation: 11 - 12 g/dL
- $> 6000'$ elevation: 12 - 13 g/dL

Iron status

Inadequate iron in CKD is multifactorial. Low protein diets; blood loss; infection and inflammation; hyperparathyroidism; aluminum toxicity; and coexisting disease can all contribute to iron deficiency in CKD. No single lab value will

definitively diagnose functional iron deficiency in CKD.

Transferrin saturation (TSAT) and serum ferritin are both used to assess iron status in CKD. Transferrin saturation reflects iron that can be used to make red blood cells. Serum ferritin reflects iron stored in the liver, spleen, and bone marrow.

Target TSAT and Ferritin, needed to maintain target Hgb

- TSAT $> 20\%$ (not to exceed 50%)
- Ferritin > 100 ng/mL (not to exceed 800 ng/mL)

How to treat the anemia of CKD

1. Use synthetic erythropoietin substitutes: epoetin alpha "EPO" (Procrit, Ortho Biotech; or Epogen, Amgen) or darbepoetin alfa "DPO" (Aranesp, Amgen)
 - Subcutaneous administration is preferred over intravenous administration
 - For adults, start treatment when Hgb is below target
 - EPO: 10,000 u subcutaneous every week
 - DPO: 60 mcg subcutaneous every 2 weeks (due to its longer half-life)
 - Rotate injection sites between upper arm, thigh, and abdominal wall areas
2. Use iron (intravenous or oral) if indicated
 - 200 mg of elemental iron per day divided into 2 - 3 doses is recommended when using oral iron supplements
 - Oral iron supplements should be given one hour before or two hours after a meal for best absorption
 - For patients unresponsive to oral iron (i.e., unable to achieve and maintain ferritin >100 and TSAT $>20\%$), intravenous iron supplementation should be considered. Iron dextran can be given in doses up to 500 mg but a test dose is required, the dose must be infused slowly, and the incidence of serious acute reactions is 0.7 %. New injectible iron formulations do not appear to pose the same risk for anaphylaxis as iron dextran and can administered more rapidly, although in lower doses. Test doses are not recommended for iron sucrose injection (Venofer), and it can be administered by slow IV push (100 mg over 5 minutes). We have found this to be a convenient way to administer intravenous iron in a busy outpatient setting

Monitoring of anemia

- Check Hgb every two weeks until stable, then monthly
- Check TSAT and ferritin at least once every 3 months

High Frequency of Asthma in Native American Children Among the Assiniboine and Sioux Tribe of Northeast Montana

Roman M. Hendrickson, MD; James Bresette, PharmD; and Julie Bemer, RN, MPH; all from the Fort Peck Service Unit, Poplar, Montana

Abstract

Objective: To estimate frequency of childhood asthma in American Indians living in northeastern Montana.

Design: A retrospective study.

Setting: The Fort Peck Indian Health Service Unit is located in northeastern Montana and serves a population of more than 8500 Native Americans who are predominantly Assiniboine and Sioux tribal members. Approximately 3700 are under the age of 19.

Method: The electronic medical record database was searched to identify all individuals under the age of 19 years with one or more visits for asthma. Twenty percent of the medical records of those so identified were reviewed to assure concurrence between coded diagnosis and the diagnosis entered by the treating medical provider. Patients with at least one visit to the service unit from January 1, 1996 to February 22, 1999 were eligible for inclusion in the study.

Results: 15.5% of children under 19 enrolled in the clinic during the study period had a diagnosis of asthma.

Introduction

English, et al define asthma as “a disease characterized by chronic inflammation and episodic obstruction of the airways leading to difficulty in breathing, which is potentially fatal if untreated. The etiology of asthma is thought to be multifactorial, with environmental, genetic, familial, and socioeconomic influences playing a role.”¹ Asthmatic symptoms may increase with exposure to high levels of air pollutants including tobacco smoke, agricultural pesticides, and indoor allergens.²

The Medical literature is replete with articles on asthma in children. Only recently however, have reports appeared that explore the variation in asthma prevalence in differing ethnic groups.³ Asthma is a major problem for children. It is the leading cause of chronic disease in childhood.⁴ Asthma leads to significant functional impairment and school absences, as well as increased utilization of health care services for the affected children.

In the US, the prevalence of asthma increased 39% in children under 18 years of age between 1981 and 1988.⁵ Over

the past 15 years, the number of US children with asthma has doubled, to about 6 million. Asthma now afflicts 6.7% of children in the US.^{1,6} However, the prevalence of asthma in Native Americans is not well defined.

Several national and international surveys report no difference in prevalence of asthma by ethnic group. Other authors do show significant differences.⁶ In the US, minority children are disproportionately affected by asthma. The CDC reported a slightly higher prevalence rate of asthma for African Americans than non-Hispanic Caucasians (9.4% vs 6.2%).^{3,7}

Several recent reports find much higher prevalence rates of asthma among children of Puerto Rican descent. A study of Asian immigrants in Australia found asthma prevalence to be significantly associated with length of stay in the country, suggesting that environmental factors may be important contributors to the higher prevalence of asthma in minority populations.³ However, one investigator found asthma susceptibility genes in the groups of Caucasians, African Americans, and Hispanics studied.³ The only article in the medical literature describing asthma prevalence in Native American children reported a prevalence rate of 12.3% in the children of the Jemez Pueblo.⁸

The authors first became interested in the prevalence of asthma in Native Americans because in March 1999 the pharmacy department of the Indian Health Service Fort Peck Service Unit in Poplar, Montana observed a high volume of inhaled beta-2 agonists prescribed at that facility for children. This observation was confirmed by using a drug utilization report and raised concerns as to the apparently high prevalence of asthma in the patient population served. A literature review revealed little about asthma in Native American Children.⁸ A multidisciplinary team was convened to assess the nature and prevalence of asthma in the population of the service unit.

The Fort Peck Service Unit is an isolated medical community, located in the extreme northeast corner of Montana, and serves 8500 Native Americans, primarily the Assiniboine and Sioux tribe. The staff includes seven physicians and five midlevel practitioners located in two clinic sites.

Methods

The data for this historical cohort were obtained from Fort Peck Service Unit's RPMS (Resource and Patient Management System) computer database. The RPMS is the

computer software utilized by the entire Indian Health Service system. It uses network communication hardware and software so that information can be exchanged between local area networks (LAN) and wide area networks (WAN) and thus, with other facilities. The data were reviewed by a multidisciplinary team including a family physician, a public health nurse, and a pharmacist. Every fifth chart was reviewed to verify concurrence between the coded diagnosis and the diagnosis entered by the treating medical provider.

Results

From 1/1/1996 through 2/22/1999, there were 3762 active patients ages 0-18 years registered at the service unit. Of those, 663 had at least one clinic visit with the diagnosis of asthma as the purpose for the visit, including primary and secondary diagnoses. However, the chart review demonstrated that 12% of the charts had the diagnosis miscoded. Those visits where the purpose of visit was identified by ICD-9 (International Classification of Diseases) codes 493.0 - 493.9 were counted as patients with a diagnosis of asthma for purposes of this study. These data indicated an asthma prevalence of 15.5% in the pediatric population of the Ft Peck service unit. Of this cohort, 260 were female (39%), and 403 were male (61%).

Discussion

National data reflect asthma prevalence rates in the general population of children in the US to be 6.7%. In some minority groups in the US, rates in children have been reported to be as high as 20%.⁹ The only other study of Native American children reported an asthma prevalence rate of 12.3%.⁸ The Montana Medicaid program reported that for 1997-1998 there were 58,561 children ages 0-20 years old enrolled in that program. Of those children, 1,536 received services for asthma, indicating a prevalence rate of 2.3% in this comparable geographic and socioeconomic group.¹

An apparent asthma prevalence rate of more than double the national average and more than six times the rate of a comparable geographic and socioeconomic group found in our pediatric patient population warrants additional study to determine the appropriateness of these preliminary findings. Clearly nonstandard diagnosis, diagnostic transfer, and unknown data retrieval errors may invalidate some of our data. However, the paucity of data describing Native American asthma, the increasing prevalence of asthma nationally, and the need for more appropriate targeting of chronic diseases in high risk populations all justify further investigation of this problem in our patient population.

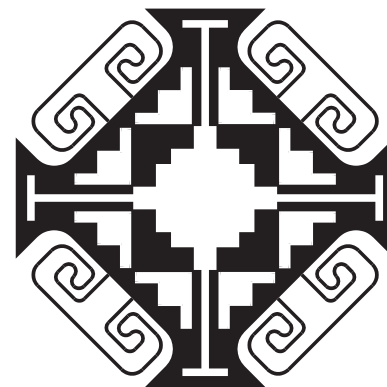
Summary

An apparent prevalence rate of asthma in the children of the Assiniboine and Sioux Tribe of northeast Montana was found to be 15.5%. This is more than 2.5 times the national average rate reported for the US pediatric population, and one of the highest reported for any minority group in the US. This

surprisingly high prevalence rate in our patient population for asthma, and the lack of studies in Native Americans with asthma, justify further investigation of the findings presented in this preliminary report. Further studies of risk factors for asthma in this group of patients should be implemented. □

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Artificial Hydration and Nutrition in the Dying Process

The following article is the fifth in an ongoing series in support of the development of a unified approach to palliative care services for American Indians and Alaska Natives. Each presents brief, concise facts and information for providers of palliative care.

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Nutrition is not equivalent to nurturing.

AHN does not prolong life, and may increase suffering.

No ethical or legal barriers to withholding or withdrawing AHN.

Artificial hydration and nutrition (AHN) is defined as nutritional and hydration support of an invasive nature requiring placement of a tube into the alimentary tract (enteral) or parenterally, via intravenous or subcutaneous means (hypodermoclysis).¹

Unfortunately, the role of AHN at the end of life frequently leads to controversy among physicians, patients, and families. Family members are concerned that the patient may “starve to death,” thus increasing suffering. In fact, a decrease in food and fluid intake at the end of life is normal and part of the natural physiology of dying. The most consistent symptom of the dehydration of the natural dying process is the complaint of a dry mouth. This symptom is not relieved by parenteral hydration, but is easily palliated by ice chips and lubricants. Nutritional deficiency resulting in ketonemia has been postulated to be responsible for a mild state of euphoria.²

Potential indications for AHN:

- AIDS and AIDS-associated enteropathy
- Acute delirium

Potential contraindications for AHN:

- Advanced dementia
- Potential for fluid overload

In summary, the burdens and complications induced by AHN frequently outweigh the benefits of intervention. Frederich writes, “A therapeutic trial of AHN (three days) to achieve clearly defined goals may be useful in cases of conflict.”³ This may lessen the guilt family members might experi-

ence during the bereavement period.

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PDA Software Available From The Internet

Scott Hamstra, MD, Whiteriver, Arizona; Chris Lamer, PharmD, CDE, Cherokee, North Carolina; and Carol Miller, BSN, MBA, McLean, Virginia; all with the Information Technology Support Center, Tucson, Arizona

This article is the third in a series of articles on Personal Digital Assistants (PDAs). Previous articles addressed the history and development of PDAs and a summary of the IHS PDA survey. This article will review and describe the various programs available for PDAs from the Internet. It also will provide a reference to different web sites to assist the provider in obtaining additional information about these programs, such as installation and download instructions, cost, memory needed, and responses to frequently asked questions. Information about the commonly used PDA programs, such as schedule, address book, etc. will not be reviewed in this article.

There are a vast number of clinical and non-clinical programs available to the provider. Many of the websites you will visit provide a free demo of how their program works. Since there are competitive programs and because some programs are sold in a combination package, it is wise to review each of the program's applications and capabilities.

In assessing software you should ask yourself:

- What do I need in my clinical practice to assist me with patient evaluations and medical-decision making?
- Does this program offer everything I need or does it only provide limited information and/or irrelevant data?
- How often are the programs updated, and are the updates readily accessible, at a cost or free?
- What other similar programs are available in the marketplace and what are the similarities and differences?
- Do I have enough storage capacity for this program and/or several programs?
- Do I have the appropriate hardware and Internet connection to utilize and update the software?

The following provides a listing and abbreviated description of several of the programs available for the PDA. The list is not arranged in any priority order. Links to these applications may be found on the Indian Health Service Webpage at <http://www.ihs.gov/MedicalPrograms/CIR/cir-informatics.asp>.

ePocrates Rx – A drug reference program with over 2700 drug monographs and formulary information. ePocrates is used to confirm dosage and preparations, seek out generic preparations, check spelling, evaluate potential interactions, and assess cost. (Free)

ePocrates ID – An infectious disease reference with comprehensive information about over 300 diagnoses, 350 bugs, and 250 drugs. (Cost)

ePocrates Rx Pro – This product includes two applica-

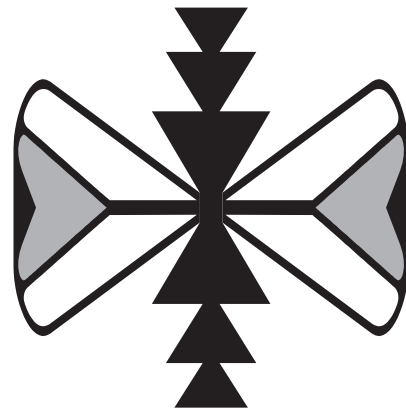
tions: the standard ePocrates free treatment package with the drug database and formulary information, and the “Pro” option (at a cost) that includes:

- Over 400 alternative medicine monographs, interactions, and reported uses. As an example, if the original selected drug is non-formulary or not prior authorized, comparable alternative drugs in the same drug class with their formulary codes can be selected.
- Synonym screen
- Includes ePocrates ID
- Clinical tables and guidelines
- MedMath clinical calculator, including thirty of the most commonly used formulas
- DocAlert messages for such things as FDA labeling changes, recalls, guidelines, and study abstracts

K2 LexiDrug Package – This includes Five Minute Clinical Consult (clinical aspects of the disease), LexiDrug (review of various medications for the disease) and Armamentarium (checks drug interactions with other drugs the patient is on). (Cost)

Tarascon – Pharmacopoeia with 47 reference tables; 9 medical formula calculators; instant drug look up by name, class, or indication; adverse effect and mechanism of action for each drug; and an integrated tool for checking multiple drug interactions. (Subscription fee as of January 2003)

Physician Drug Handbook (handheldmed) – This program includes 5000 brand and generic drugs, how supplied, indications, route and dosage, overdose, effects on diagnostic tests, adverse reactions, and other information. (Cost)



eDrug Database – This program includes over 12,500 drug names and dosage forms and 2500 generic listings plus brand names and dosage forms. Each drug listing gives a generic name, brand use or class, and pregnancy risk. Program also includes investigational drugs likely to be released by the FDA. (Free) Requires the database program *Jfile* for use.

John Hopkins Antibiotic Guide – Infectious diseases and antibiotic guidelines. Palm, PocketPC, and Blackberry versions. (Free)

MicroMedex – Provides drug information, complementary and alternative medicine (CAM), disease and toxicology information, patient education, and integrated point-of-care decision support. System requirements for the mobile windows and pocket system applications are listed on the web site at www.micromedex.com.

MedCalc – This medical calculator program contains the most commonly used equations such as age calculator, body mass index, heart rate, ideal body weight, pregnancy calculator, proteinuria, and LDL/cholesterol. Formulas come with bibliographic references and clinical use types. (Free)

PregCalc – This program estimates from the first date of the last menstrual period the following: date of conception, end of first trimester, end of second trimester, and delivery date. (Free)

PregDates – Calculates pregnancy dates. (Free)

MyOBWheel – This program calculates EDC, gestational age, and asks the question, “When will the patient be in X weeks.” (Free)

WeightCalc – This program calculates body mass taking into account weight and waist, hip and forearm circumference, to calculate ideal weight. (Free)

STAT Cholesterol (ATP III Cholesterol Guideline Tool) – This program detects, evaluates, and treats high blood cholesterol in adults. (Free)

FirstAid – This program provides guidelines from Mayo Clinic for common urgent and emergency care situations. (Free)

Full Physical – This program provides a complete review of the full physical exam.

Mini Mental Status Exam – This program evaluates the cognitive function as well as screens for depression and/or monitors for progression. (Cost)

5 Minute Pediatric Consult – This program provides extensive information on common pediatric-specific complaints as well as specific physical exam findings section on treatment, follow up, and medication index. Program also includes common doses of medications for each diagnosis. (Cost)

Shots2003 – This is a quick reference guide on each vaccine that includes basic information, high-risk indications, adverse reactions, contraindications, catch-up, and administration for each vaccine. (Free)

MedRules – Clinical prediction rules taken from medical literature. Examples include acute sinusitis, croup score, fam-

ily practice incidence rates, UTI diagnosis, coronary disease risk, acute pulmonary edema, and pharyngitis evaluation. (Free)

ACLS 2001 – The latest ACLS protocols as of August 2001. Examples include fibrillation, tachycardia, acute pulmonary edema, and others. (Free)

Pocket Practitioner – This is an integrated patient tracking, coding, and billing system. Information includes patient list, diagnosis list, medication list, procedure list, and charge, procedure, and diagnosis capture at point of care. (Free)

Obesity Guideline Tool – National Institutes of Health guidelines based on “Clinical Guidelines for Overweight and Obesity in Adults.” (Free)

Allergies – A tracking system for allergies that includes pollen count and types as well as information on medications. (Free)

DiaBytes – This program stores blood sugar levels.

Blood Pressure Manager – This program tracks blood pressure and graphs results based on ideal, baseline, and hypertensive.

Stat Growth Charts – This program calculates accurate growth percentiles. It includes CDC growth charts and new body mass index for age charts. (Free)

Diabetes ADA 2002 – This program provides quick clinical documentation reminders for treating and diagnosing diabetes. (Free)

Marek's Primer of Differential Diagnosis – The online journal of immunology. (Cost)

Patient Tracker – This patient tracking system provides access to patient records including patient demographics, lab results, medication and allergy lists, test results, and radiology reports. System also includes note capability, checkout lists, and patient log.



In addition to the clinical and patient management software programs referenced above, the following programs can also be downloaded onto the PDA.

Medical Abbreviations by Krystoff – over 200 common and not so common medical abbreviations (Free)

Harrison's – A resource with practical detail on internal medicine (Cost)

Merck Manual – Symptoms and differential diagnosis (Cost)

Merck Manual of Geriatrics (Cost)

Taber's Medical Dictionary (Cost)

Stat E&M Coder– Easy to use interactive template to assist the provider in selecting the correct evaluation and management code. (Cost)

Stat ICD9 Coder – Includes a complete set of 15,000 codes to allow the highest level of specificity in diagnosis coding. (Cost)

Stat CPT Coder – CPT coding reference guide (Cost)

Website References

The following is a partial list of website references for the various programs.

www.pdamd.com

www.handspring.com

www.handheldmed.com (clinical reviews, news, and forums)

www.handango.com (comprehensive Palm top resource)

www.palmpilot.com

www.freewarepalm.com (site to order over 170 free software programs)

www.pocketinformatics.com (download files)

www.epocrates.com

www.tarsconpublishing.com

www.trgpro.com (memory upgrades)

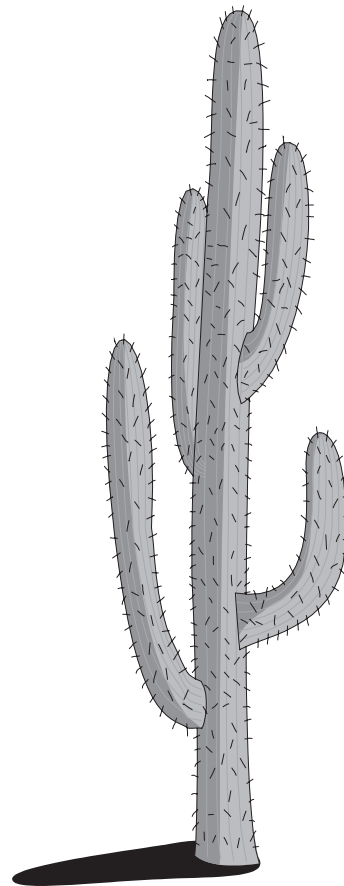
www.medicalsoftwareforpdas.com

www.pdacortex.com/palm (information and references to software programs)

www.fnotebook.com (Family Practice Notebook that provides unlimited downloads for all PDAs. There is a subscription cost.)

Next PDA Article

The next PDA article in this series in *The Provider* will provide information about the implications of HIPAA on hand held clinical applications.





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