

THE CABELL HUNTINGTON HOSPITAL REGIONAL PAIN MANAGEMENT CENTER (PMC)

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This case asks the general question, “How should the physicians and managers of the Cabell Huntington Hospital Regional Pain Management Clinic (PMC) structure their medical practice, from the standpoint of a business, to create the greatest amount of well being for their stakeholders?” Data on the founding and current operations of the PMC is provided so that the reader can conduct an analysis of its business operations.

INTRODUCTION

In 1991, an observer in the Operating Suite of Cabell Huntington Hospital (CHH) would have observed the ordered chaos of patients awaiting surgery. The anesthesiologist on call was tired and weary in his sweaty scrubs, his feet dragging like lead in his white sabots. His pager rings incessantly, calling him simultaneously to both the Operating Room (OR) and the recovery room. He remembers that day knowing that there was a patient in the holding area waiting for an epidural injection referred by an orthopedic colleague. He also remembers that if he performed the epidural he would not be able to supervise the OR, his primary duty. Such was a typical day at CHH in 1991.

If necessity is the mother of invention, it seems reasonable that such a chaotic day might be the catalyst for a new business venture. On reflection, he remembers it clearly. In recent months, referrals for pain controlling epidural blocks had increased to 3-5 per week. These blocks were generally for patients suffering from lumbar radiculopathy, i.e. leg pain due to sciatic nerve irritation from a ruptured or bulging disc. The cases paid about \$300 per block. One problem was these procedures usually were scheduled during that same time as he was busy monitoring the OR. Another problem was that, when scheduled randomly across the week, the cost of resources, personnel, and facilities exceeded \$300. Yet this was a necessary and vital procedure for patient well being. What could he do to ensure the procedure was provided without putting the CHH at risk?

At the time, he wondered if he could do all the blocks at one time, such as at the end of the day, so that his OR duties will not be impacted. He also wondered if he could find a more efficient way to perform the procedure, using resources, personnel, and facilities more efficiently, so that the revenues consistently exceeded the costs. A simple calculation told him that doing these blocks would take nearly half day per week. Therefore, he instructed his office manager to schedule all blocks in one afternoon after his shift in the OR. By doing all the blocks at one time, he would be able to focus on that single task and perform it both efficiently and quickly.

After the scheduling was organized, he approached a CHH administrator with a request for a nurse to help him with the blocks. Each epidural paid an average of \$300 for facility fees across the various insurance groups, including Medicaid. He suggested to the Hospital administrator that if the hospital dedicated a part-time nurse for him for the blocks, the hospital would collect the facility fee. Since the hold-area was generally underutilized after the morning rush to the OR, the otherwise empty hold-area of the OR could be used without incurring additional facilities expenses. The Hospital administrator learned that by providing an additional nurse and doing the pain blocks in the empty hold-area, the Hospital would be able to perform the pain blocking procedures so that revenues consistently exceeded expenses.

The CHH administrator and anesthesiologist come to a mutual understanding that the Hospital would charge the facility fee for future pain blocking procedures, would provide a nurse for the procedures, would pay the anesthesiologist his professional fee, and the physician would perform pain blocks on an agreed upon schedule. The hospital would save by using the OR hold-area. Thus, the first Pain Service based on a physician hospital partnership in West Virginia was established in Huntington at the CHH. In a short time it became a separate provider of services to CHH and the local region and was named the Cabell Huntington Hospital Regional Pain Management Center (PMC).

In a market characterized by scarce medical resources, finite numbers of medical practitioners, consumers with a voracious appetite for medical care, and third party payers, the physicians and managers of the PMC have continued to provide the highest quality, cost effective, pain management care in their power. This case details many of their accomplishments. It is up to the reader to determine what else they can do to improve upon their past successes.

THE MEDICINE OF PAIN MANAGEMENT

The following is a short summary of the medicine of pain management. Your instructor may elect to provide more extensive information.

Pain is an important sense and helps us to protect our body integrity. When a body tissue is insulted pain starts. Normally as tissue heals, the pain subsides and eventually stops. Pain is defined as “an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage, or described in terms of such damage (Merskey & Bogduk, 1994). Pain is a subjective experience and cannot be objectively measured. Pain measurement scales based on different principles by nature all are subjective. There are 4 components of physiology of pain perception: reception, propagation, processing, and perception.

Reception

The body recognizes potentially damaging assaults to its integrity as “pain” and creates a very strong response in the individual so that tissue damage can be avoided. Damage to the body is usually encountered first at the skin. Skin and other outer surfaces of the body are equipped with receptors capable of distinguishing between non-harmful (non-noxious) contact and harmful (noxious) insults. These pain perceiving receptors (nociceptors) detect three different types of insults: mechanical insults related to touch and pressure, thermal insults related to heat, and chemical insults related to inflammation of the tissue.

Nociceptors differentiate between non-noxious and noxious stimuli by intensity: For example a mechanical receptor with low stimulation threshold will initially perceive squeezing of the skin as “touch”. If the pinching intensity increases, different mechanical receptors with a high stimulation threshold will interpret the pinching as “pain”.

Propagation

The nociception that is recognized by the pain receptors is transmitted by the peripheral nerves to the spinal cord.

Processing

When the nociception arrives at the central compartment (spinal cord and brain), it is first split and then processed. In the spinal cord the nociception is transmitted basically in two different pathways: the, paleospinothalamic (PST) track, and the neospinothalamic (NST) track. PST tract is a nerve conduction system which is evolutionarily old (such as found in reptiles) and transmits the nociception in a slow manner making multiple synapses within the spinal cord on its way to the

brain. NST track, on the other hand, is phylogenetically newer and accounts for rapid and relatively unaltered transmission of the nociception to the brain. Both PST and NST converge onto the thalamus at the midbrain where the nociception is further processed and diverted to different terminals.

Perception

In the thalamus, the nociception which arrived through the PST is reorganized and diverted to the basal ganglia. Basal ganglia encompass the emotional center of the brain, hence the nociception transmitted by the PST account for the “emotional” component of the “pain experience”. In essence, no pain experience can be devoid of an emotional component. Nociception transmitted by the NST track is diverted to the sensory cortex by the thalamus. The nociception arriving to the sensory cortex accounts for the physiologic pain, which tells us the exact location of the tissue damage and its nature, such as burning, electric shock, pinching etc.

What is chronic pain?

Most pain subsides as the body heals. However, in certain conditions, pain continues after the tissue has healed. If the pain continues more than 3 months, we call this condition chronic pain. The nature of pain changes when it becomes chronic. Chronic pain causes the spinal cord and brain neurons associated with pain processing to undergo a change causing an intensification of the pain sensation as well as perception of non-noxious stimuli as painful. The person in pain starts to feel touch as “pain”.

When pain becomes a disease itself:

Pain is usually a side effect of an ailment. When the pain becomes chronic, it becomes the main ailment. The underlying etiology of chronic pain becomes a moot issue. Since the original cause of the pain is gone, the remaining chronic pain is either vague or untreatable. This especially occurs in painful spinal conditions where the disease of the spine clinically is of little importance or the condition is not amenable to surgery or conservative treatment. This condition is usually termed as Chronic Non-Malignant Pain (CNMP) Syndrome, to differentiate it from the pain associated with cancer.

Incidence of chronic pain:

One out of five Americans is in chronic pain. Chronic pain can be an unfortunate consequence of injuries or physical disorders, even with the best of medical care. Long term management of chronic pain carries great medical and socio-economic importance in contemporary medicine. On one hand, uncontrolled pain is an unacceptable source of suffering for the victims of pain. On the other hand, the

cost of pain is large in terms of lost work time and medical expenses. In general terms, the socio-economic cost of chronic pain treatment is described as follows.

Economic costs of chronic pain:

The cost of treating injured employees with chronic pain has risen. Chronic pain in injured workers has become a big component in workers compensation costs. Employers are struggling to cut those costs while making sure workers are properly treated and fit to return to work. Research is scarce in the cost of treatment of chronic pain. A 1992 study cited by the Journal of Occupational and Environmental Medicine put the yearly costs of chronic pain to the workers compensation system at around \$100 billion per year including work days (Bradford, 2002).

The cost to insurers and employers for drugs alone to treat chronic pain is estimated to be as high as \$1 billion per year in recent years. Further increasing the cost of chronic pain cases are expenses associated with physical therapy, psychological counseling, detoxification to wean some workers from narcotics, frequent office visits and multiple surgery. An estimated 25,000 new compensable lost time injuries occur per year involve chronic pain.

Non-economic costs of chronic pain:

Many significant problems occur when someone suffers from nearly constant pain for an extended period of time. Fatigue and irritability are common due to lack of sleep; loss of muscle tone and weight gain occurs as a result of lack of physical activity; others may lose weight due to loss of appetite and depression. Family lifestyles change and marital relationships become strained. Significant legal and financial problems often arise. Many who suffer from chronic pain become discouraged, depressed, withdrawn, and demoralized.

The spouse is typically required to take on the role of family leadership, becoming the sole provider. He or she must adjust to the additional financial burdens from ethical cost and loss of family income, as well as loss of emotional support from their partner who is now consumed by pain. This increased burden on the spouse frequently results in the caregiver developing stress related medical and emotional problems.

Multidisciplinary Pain Management Team:

CNMP Syndrome is a complex disease with a significant psychological component, therefore, its treatment necessitates a team approach, with different specialists including a pain medicine physician, a psychologist, a physical therapist and others if needed. This pain management team approaches the problem in an interdisciplinary fashion, consulting each other often and making group decisions.

Treatment Modalities for Chronic Pain:

Interdisciplinary management of chronic pain is complex and necessitates simultaneous and coordinated use of different treatment modalities. The treatment modalities utilized at the PMC are pharmacological management, adjuvant drugs, physical therapy, interventional management, psychotherapy, and ancillary modalities.

Pharmacological Management

Opioids are derivatives of morphine indicated for control of pain. In the U.S. opioids all are controlled drugs, as Schedule II or III. Opioids are the primary medication in treatment of pain. However opioids must be used carefully because they may cause addiction and may be diverted for illegal use.

Adjuvant drugs

Chronic pain management necessitates use of diverse drugs for control of different kinds of pain and associated conditions. For example, for the treatment of neuropathic pain, drugs such as tricyclic antidepressants, anticonvulsants and oral local anesthetics have proven effective. Sometimes other drugs are used for the treatment of conditions frequently associated with chronic pain and complicate management of the syndrome. Among such drugs, selective serotonin reuptake inhibitors for the treatment of depression, benzodiazepines for anxiety and insomnia, and major tranquilizers for mood control can be used.

Physical Therapy

Physical therapy and exercise are essential components of treatment for CNMP syndrome. A custom designed and supervised exercise and physiotherapy program trains patients to help control pain. Since the treatment of CNMP syndrome aims primarily to restore the patient's physical function, pain control helps increase the patient's functionality when combined with pain reduction. The aim of such a program is to increase the individual's pain tolerance in terms of both intensity and duration. Unfortunately many patients do not like the exercise because it temporarily increases the pain. Encouragement during physical therapy and judicious use of pain killers may motivate the individual to become and stay active.

The modalities of physical therapy include a range of passive motion exercises, cold and heat application, massage, myotherapy, ultrasound and Transcutaneous Electrical Nerve Stimulation (TENS). These adjuvant treatments can be added to a baseline exercise program and are intended for specific purposes. It is important to understand that a physical therapy program mainly employing modalities and

excluding exercise is counterproductive to the treatment of chronic pain. Interventional management involves the use of medical procedures that block pain. Pain controlling blocks can be done within the context of a comprehensive approach but are not regarded as a suitable treatment for the chronic pain.

The primary reason for blocking a pain center is diagnostic. Diagnostic blocks are done to identify the underlying pain generator. If the pain stops after blocking the nerve that comes from the presumed pain generator, one can conclude that the element blocked is the actual pain generator. If not, the element blocked is ruled out. Most blocks for diagnosis are done under x-ray control to assure accuracy. During diagnostic blocks, the physician should always take into consideration the placebo effect of the procedure as a side effect. Placebos may account for as much as 30% of pain relief after an ineffective intervention.

Therapeutic blocks are used for controlling or reducing pain coming from a specific region innervated by a distinct nerve or dermatome. One must realize the pain control, no matter how good, is temporary and when the block wears off, the patient will again perceive the pain and sometimes as more than before the block. This fact must be explained and fully understood by the patient.

Neurolytic blocks are done to destroy a nerve in order to provide long term pain relief. Such blocks are always done after a trial with a temporary diagnostic block. For neurolysis, historically the most commonly used drug has been alcohol, which destroys the nerve tissue irreversibly. Today, alcohol and its derivative phenol are seldom used. Most commonly employed neurolytic in the PMC is radiofrequency (RF). RF utilizes microwave heat to destroy a nerve, which leaves the trunk of the nerve intact but coagulates the contents of the axon. The advantage of RF nerve ablation is its accuracy and lack of serious side effects, such as neuroma formation, when administered properly. Its main disadvantage is that it provides long term, on average one or two years, but not permanent pain relief.

Implants: Surgically implanted devices may be used in control of certain types of pain. The two most commonly utilized implants are spinal cord stimulator (SCS) and intrathecal microinfusion pumps (Waldman & Winnie, 1996). SCS works using the same principle as TENS unit. SCS is a device consisting of an electrode implanted in the epidural space near the nerves that transmit the pain, and a pulse generator battery implanted under the skin. The pulse generator is a computerized electric source which sends signals to the implanted electrode, which penetrates to spinal cord and intercepts the nociception within the dorsal column of the spinal cord. This innocuous stimulation prevents the pain message coming from the

periphery to ascend further in the spinal cord and replaces the pain with a mild, pleasurable sensation. Implanted spinal pump serves to deliver morphine or other pain controlling drugs directly into the cerebrospinal fluid. Morphine when administered intrathecally into the spine is 300-600 times more effective compared to oral administration. Pumps are used when the pain is not controlled adequately with oral medications or the side effects of the pain medications prevent dose titration. Pumps can be implanted for control of cancer pain as well as non-malignant pain.

Psychotherapy is the treatment of the emotional and mental effects of chronic pain. Psychotherapy involves psychological profiling, counseling, behavior modification, and other psychological modalities.

Psychological problems are prevalent among chronic pain patients. Pain itself may cause psychological disturbance by disrupting the sleep and rest, causing anxiety, eating aberrations and by affecting the work capacity and family relations. A chronic pain patient may become dependent on help from others, including family members, healthcare system and the welfare system. Among the chronic pain patients the incidence of actual and perceived disability is very high. One goal of chronic pain treatment is to enable patient to be independent in all aspects: physically, socially and vocationally. Hence, nearly all patients accepted to the Chronic Pain Program undergo psychological personality testing. It has been shown that certain personality characteristics, such as hysteria and somatization, are related to chronic pain (Turk & Melzack, 1992). It is also important to identify the malingerers and symptom magnifiers.

When the patient is in the program part of the interdisciplinary approach consists of psychological counseling. Counseling is done, among other reasons, to overcome the psychological barriers that may interfere with the pain relief. A relatively high percentage of chronic pain patients are engaged in harmful behavior, among which inactivity, tobacco abuse, alcohol and substance abuse may be cited. Addiction and drug abuse can complicate pain treatment. To address these and other similar issues, behavior modification is attempted as part of the psychological counseling. Psychological modalities such as biofeedback, hypnosis, guided imagery, relaxation techniques may be incorporated into the psychological program as indicated.

Ancillary modalities, such as social services, dietary services, pastoral care, and acupuncture may be required in certain cases. Many patients with chronic pain need social service assistance, such as in securing government assistance or pay-

ment drug expenses. Social services is also called for when there is suspected abuse of the individual in the family. Many chronic pain patients suffer from obesity and other eating disorders. A well balanced diet being part of pain treatment, such patients are referred to the dietary service. Spiritual needs of the pain patients are addressed within the context of the multidisciplinary management. Although PMC does not employ acupuncture intra-murally, this service is contracted when warranted.

Brief History of Pain Medicine:

In the traditional allopathic medicine, pain is regarded as a symptom of a disease and expected to be self liming as the underlying disease is treated. Due to this prevalent mentality, chronic pain was not properly treated over the centuries. Most chronic pain patients dealt with pain through the use of illegal drugs and/or by consuming alcohol.

The first time pain was recognized as a disease by itself was in the aftermath of the Second World War with many war veterans suffering from ongoing pain. The pioneering work was done by Bonica in Seattle (Bonica, 1990). Bonica established the comprehensive interdisciplinary approach as the norm for chronic pain treatment.

Currently there are many pain centers throughout the North America offering many diverse treatment options (Living with Pain, 2005). Because of this diversity, choosing a pain specialist and pain center can be difficult (CNN, 2005). One reason for this difficulty is the lack of standard classifications for pain centers and standard qualifications for pain specialists.

Most pain specialists are trained initially in Anesthesiology. Some Anesthesia residency programs offer pain fellowship. Other pain specialists include Physical Therapy and Rehabilitation physicians, Neurologists and others. The American Board of Anesthesiology (ABA) offers Board Examination for the Anesthesiology, Physical Medicine and Rehabilitation, and Neurology residents properly trained in an accredited institution. Other than ABA, American Board of Pain Medicine offers Board Certification to those physicians who are already board certified in their specialty and who sit for a peer review examination (Still, 2000). World Institute of Pain recently established a hands-on examination for the interventional pain specialist, granting title of Fellow in Pain Practice degree after a vigorous examination including written, practical and cadaver tests.

In conclusion, Pain Medicine is a new specialty as yet without standard training and certification. Same can be stated for the pain centers. For this reason organizations such as International Association for the Study of Pain (IASP) are developing guidelines for the Pain Treatment facilities (IASP, 2005).

MISSION AND GOALS OF THE PMC (PMC, 2007)

Mission of the PMC is to provide best diagnostic and therapeutic pain management in the Tristate region in an individualized, multidisciplinary fashion with the intent of returning the persons served to their maximum level of physiological, psychological, social, and vocational function.

Our Goals:

- Help control the pain
- Optimize the use of medication, with emphasis on limiting opioid use
- Increase level of physical function
- Enable person served to be more independent
- Increase level of psychological function, social adjustment
- Vocation rehabilitation with return to work whenever possible
- Involve family and other stakeholders in pain management of the person served
- Render treatments in the most cost effective fashion.
- Assist the primary care physician (PCP) and other physicians in pain management of their patients
- Reduce the healthcare utilization and contain treatment costs

MISSION, VISION, VALUES OF CHH (CHH, 2008)

Cabell Huntington Hospital views its “Mission” as “our reason for being; our purpose.” As a result, its Mission Statement has been constructed with an outward focus directed toward patients in a personalized way—“To meet your lifetime health care needs.” The hospital sees its mission as providing the entire spectrum of health care services which may be required at any stage in the patient’s life. Thus, the language of the Mission statement addresses the “*lifetime* health care needs” of those they serve. CHH sees as its responsibility to meet the health care needs in an “atmosphere of service, quality, and efficiency”. They also see it their responsibility to put “emphasis on health care education”.

Cabell Huntington Hospital has views its “Vision” as what they want to become, and what they want to become is the “hospital of choice . . . in the communities we serve”. To emerge as the preeminent hospital of choice in the communities served, they must, again, focus on meeting the “lifetime health care needs” of

their patients.

Organizational values are those beliefs that are critical to organizational success. CHH's "CIRCLE of Core Values" describe the six values deemed most important. The "circle" acronym represents the values of caring, integrity, respect, commitment, loyalty, and equality.

PMC SERVICES

PMC provides the following specific pain management services to its patients:

Acute Pain Service

Acute Pain Service is the first established component of the Pain Center, providing pain control mainly to the postoperative patients. Acute pain service also covers other inpatient painful conditions such as acute pancreatitis. It is an inpatient service and works in conjunction with the CHH anesthesiology department.

Consultations

Primary care providers may refer their patients to the PMC for consultations or second opinions. Consultations are usually for inpatients suffering from acute or chronic pain. Inpatient consultations may be for second opinion, diagnostic work up, or for management of pain. Outpatient consults are mainly for second opinions, in which case the patient is seen and a report is generated that goes to the referring physician, who may or may not agree with the recommended course of treatment. If the referring physician is agreeable to the proposed treatment plan patient is referred back for treatment.

Block Clinic

Referring physicians have an option to refer patients to the PMC for either diagnostic or therapeutic blocks. These patients complete a condensed History and Physical Examination (H&P) after which, unless there is a contraindication, the requested block is performed and a report is sent back to the referring physician. Block clinic patients do not establish a long term relationship with the PMC.

Chronic Pain Program

Chronic Pain Program (CPP) is the main service of the PMC. CPP offers treatment to chronic pain patients in a comprehensive multidisciplinary fashion. These patients are accepted for long term treatment during which the pain is addressed from a medical, rehabilitative, and psycho-social perspective.

Terminal Pain Program

As the name implies Terminal Pain Program (TPP) accepts patients who are expected to be in pain for the rest of their life. Although initially structured to accept cancer patients, TPP also serves patients with non-malignant but incurable pain. Multidisciplinary approach is usually modified in the TPP. TPP does not address such issues as return to work and vocational rehabilitation. Most TPP patients are under chronic opioid therapy (COT).

Pain Rehabilitation and Education Program (PREP)

PREP is the only CARF accredited outpatient pain treatment program of its kind in West Virginia. Council for Accreditation of Rehabilitation Facilities is a credentialing body that bestows the CARF approval to rehabilitation facilities in different Categories that fulfill stringent qualifications. The main goal of PREP is to treatment pain in patients with a potential to return to work. PREP works in cooperation with the PMC. Patients who have completed the CPP at PMC may be candidates for PREP.

PAIN MANAGEMENT – A FOCUS ON THE MARKET

Markets for health care are very different from markets for most consumer goods. Markets for consumer goods vary in competitiveness with few deviating enough that the benefits of the competitive market are eroded. Markets for health care tend to be mixed markets. Specifically markets for health care tend to be characterized by cooperative networks of physicians working together, regions of localized competition between larger health care providers, extensive government regulations that increase both the supply of and demand for medical care. These are conditions which ultimately erode some of the benefits of competitive markets.

Government regulations that protect or mandate participation by third party payers, such as Medicare and large insurance providers, distort prices in the market for healthcare from those that would be found in competitive markets (Walters, 1993). These distortions result in inefficiencies in the production and allocation of healthcare within society. These inefficiencies have both economic and ethical implications.

Markets for healthcare are characterized by localized pockets of information and a general lack of information outside these pockets. This lack of information includes all major information items used to determine the value of goods: e.g. the pricing of various goods, the range of goods available, the providers of the various goods, the efficacy of the goods, and the talent of various healthcare providers. In essence, virtually all information essential to the process of valuing healthcare is absent this market. The information may be held by some entity in the healthcare

network but it is not possessed by consumers. Consumer cannot make informed choices.

This lack of information is even felt by the producers of healthcare. As the Director of PMC found out in the early days of operation some healthcare providers don't have sufficient information. When concerned about the lack of referrals from the VA medical center, the PMC Director paid a visit to the VA Director. The following paraphrased comments of the VA Director is informative.

"Thanks for dropping by to introduce yourself. I probably would have used your services over the last couple of years, but I didn't know your center existed."

And this was after the PMC had been in operations for several years in Huntington. Equally telling was the criteria for a continued relationship with the VA. The VA Director continued:

"I'll ask you to evaluate and treat a patient and then evaluate you performance. I won't tell you what I want from you or how I am going to evaluate your work. If I like what I see, I will send you more work. If I don't like what I see, you won't hear from me again."

The PMC Director's continued relationship with the VA suggests that efficiency is a driving force in cooperative healthcare networks. In spite of barriers to information flows, some medical providers are able to use their own expert evaluation of the results of other providers to make efficient partnering decisions. In so far as individual consumers hire these efficiency oriented health care providers, they can gain those benefits without needing the amount of knowledge needed in competitive markets.

The PMC is part of a network of healthcare providers as is illustrated in Figure 1. These providers either contract with the PMC to provide their patients with medical services or the PMC contracts with local medical providers to provide their patients with services. These providers may be large hospitals and HMOs or smaller clinics. These providers either supply patients to the PMC, procure pain management services from the PMC, or supply services to the PMC. There are also a small number of individuals that contract with local medical providers without going through the large third-party gatekeepers. These individuals frequently have no healthcare insurance and are unable to fully realize the benefits of the healthcare system.

Medicare

The influence of actors with market power in this industry will have the same undesirable effects as the typical monopolist or monopsonist would in an otherwise competitive market. Governmental actors, such as Medicare and other large third party payers, have enormous bargaining power because of their size ability to manipulate the market, and willingness to manipulate the market.

Few medical providers can afford to disassociate themselves from Medicare without losing a majority of their patients. Those that can afford to avoid Medicare benefit by being able to operate without some of the direct market distortions caused by larger organizations with market power but pay for that independence by being dependent on many fewer patients. The indirect market distortions will exist as long as organizations with market power remain.

Those that cannot afford to bypass Medicare will be subjected to market and price distortions. For instance, any medical providers that works with Medicare is legally bound to offer medical services to Medicare at the lowest prices charged. At first glance this seems beneficial to consumers because, as Medicare argues, they can prevent excessive profits and keep costs low. The problem is that monopsonist consumers force prices down by refusing to pay producers a competitive price. Given a medical providers stated price for a medical service, Medicare may pay only a percentage of the total price, which may be less than the cost of treatment. Medical providers have no alternative but to take Medicare's percentage reimbursement. In order to cover the shortfall in the revenues for treatment, producers raise prices on all consumers. If Medicare keeps the percentage reimbursement the same, the new price charged will cover the medical providers total cost. If Medicare responds by further reducing the percentage, the resulting sequence of price increases and percentage decreases will eventually equilibrate at a price where the full cost is covered by charging a different prices to Medicare and non-Medicare consumers and where non-Medicare consumers subsidize Medicare consumers.

The implication of these price setting regulations is that if an uninsured person desired an epidural block that cost \$100 to provide, could only pay \$150, and that the provider charged \$1000 to Medicare because that procedure was reimbursed at 15% of the total price, the medical provider legally could not charge less than \$1000 to the walk-in patient. The patient would effectively be disenfranchised from the medical system because of anticompetitive actions of Medicare. The antitrust laws, which would otherwise restrict the actions of power wielding monopolist businesses, do not apply to the actions of governmental actors such as Medicare. While these market distortions tend to be the norm in the medical community, the real victims

are those who are uninsured under Medicare.

Local Demographics

The primary target market, geographically, is defined as the Huntington – Ashland, West Virginia – Kentucky – Ohio Metropolitan Statistical Area. This area encompasses Cabell and Wayne counties in West Virginia, Boyd, Carter and Greenup counties in Kentucky, and Lawrence County in Ohio. These counties take in the major cities of Huntington, WV; Ashland, KY; and Ironton, OH.

Cabell County has the largest population, with an estimated 95,682 persons; Lawrence County, an estimated population of 62,009; and Boyd County an estimated population of 49,727. As is readily apparent from Table 1, the Huntington/Ashland area has experienced stagnant, if not declining, economic and population trends during the last decade. The target market age cohort, of 25 – 44, accounts for 27.8% of the population.

A large percentage of the population over 5 years of age has a disability in the local area. Nationally, 17% of people have some disability compared to 24.7% in the MSA. Wayne County has a disability rate of 28.3%.

Median household income in the MSA is \$26,427 which is 37% below the national average of \$41,994. Boyd County is reported with a higher median income than Cabell County. The percentage of the population below the poverty line is almost 50% higher than the national average, with Carter County at 79% below.

Directly east of Cabell County is Putnam County. Historically, not included in the Huntington – Ashland MSA, Putnam has trends and values which mirror national averages, and exceed several key wealth/health indices (See Table 1). Putnam County is part of the Charleston MSA. As such, specific, targeted efforts would be required, to establish awareness and a physical-referral network within the Putnam County area.

The Medical Market for PMC

The primary service area for the PMC is comprised of Cabell, Lincoln, and Wayne counties in West Virginia, and Lawrence County Ohio. 82% of all patients live in these counties. Other key counties include Boyd County, Kentucky, and Putnam County, in West Virginia.

PMC has a total patient population of nearly 3000 individuals with active charts. The male: female ratio is nearly 50%. All patients are accepted except pediatric age group (Table 2). PMC does not discriminate according to the pay source and all

insurers are accepted, including a number of charity cases (Table 3). Most patients have more than one diagnosis therefore the total diagnoses add up to more than 100% (Table 4). Most frequent treatment reason seems to be muscular pain (Myofascial Pain Syndrome), but this should be regarded with caution because Myofascial Pain Syndrome often results from another source. In actuality most treatment are done for spinal pain.

The target market of the PMC can be divided into the consumer market and the professional market. The individual consumer market includes those individuals who suffer an injury or illness resulting in a chronic pain condition and have the potential to return to work. These medical consumers contract directly with the PMC for medical services. The second market segment is comprised of medical professionals who refer their patients to the PMC. These medical professionals essentially subcontract pain controls services for their patients to the PMC.

The preferred demographic for the consumer market are chronic pain patients who have reached maximum pain management improvement and are interested in going back to work. These patients are both male and female, of productive working age, typically between the ages of twenty five and fifty five. Typically these patients work in vocations involving manual labor. Common examples include coal mining, service workers such as nurse's aids and cooks, construction workers, and truck drivers. These patients are generally located within a 50 mile radius of Huntington, West Virginia.

The typical professional market companies are Workers Compensation (in Ohio, Kentucky, West Virginia), HMOs and case management companies, Physician referral sources including neurosurgery, orthopedics, and primary care physicians, and Personal injury lawyers in the target market region. According to available sources, there are fifty nine personal injury lawyers in the Huntington West Virginia region.

RESOURCES

Changes in the Physical Layout of the PMC Over Time

PMC views its facilities and equipment as investments and demands a rate of return sufficient to justify the cost of those investments. The cost can be minimized by efficient utilization such as by using office space efficiently, sharing desks and other equipment when not in use, hiring people who can do several different jobs over the course of a day, reducing the size of workspaces to the minimum amount necessary, investing in the minimum amount of inventory and equipment.

PMC started with very modest accommodations. Initial office was a single room which also served as the examination room. Blocks were done in a designated area near the recovery room. In 1992 Pain Clinic was given 2 more offices, one for the program manager and one for the secretaries. Patients were seen in 2 examination rooms. In 1999 the space of the Pain Center increased to include whole East wing, consisting of offices for the program manager, secretaries, psychologist and 4 examination rooms. The doctor's office was located nearby but outside the suite. At the same time space is allocated for PREP adjacent to the Pain Center (Figure 2).

In 2004 the Pain Center is moved to a new building located immediately across from the ER at CHH. This is a 2 story building and each floor has 3 physician's offices. The first floor was given to the Pain Center, and one the units above was designated for the PREP. In this new location the Pain Center became a self contained unit with physician, administrative, and nursing offices together. Also the block room and the support system for the block room, including outpatient admission and recovery space. It contains a waiting area for 20 patients. Nurse practitioners and psychologist's offices are included. There are 5 examination rooms, 2 of them large enough for minor procedures (Figure 3).

There is adequate parking space immediately by the center. PMC uses CHH's ancillary services which are convenient due to the proximity. The ancillary services most used is radiology and second, laboratory. To a lesser degree home health care is utilized.

Financial Resources

The PMC is a joint venture between CHH and Pain Care, PLLC. Pain Care, PLLC is a for profit company with Dr. Ozturk as the president. CHH is a non-profit company under Mr. Marsteller, President and CEO. PMC pays CHH for the use of CHH's building, facilities, and support services. Pain care PLLC provides medical services in exchange for revenues from previously mentioned medical consumers. All organizations transact in compliance with the various State and Federal laws governing the medical industry.

Human resources

The PMC performs its own staffing separate from CHH and Pain Care PLLC. The staff for Pain Care PLLC is:

Director physician	1
Business manager	1
Office manager	1
Billing and collection officer	1

Nurse practitioner	2
CRNA (Anesthetist)	1
The staff for CHH is:	
Program manager	1
RNs	7
Secretaries	4
PCA (Patient Care Assistant)	2
Case coordinator	1
Radiology technician	1

The staff for PREP is:	
Clinical coordinator	1
Physical therapist	1

Collection for CHH is done at their facilities, as well as Medical Records. Since the PMC shares human resources with CHH, these personnel do not show in the staff roster.

Reputation

PMC is the oldest comprehensive pain center in the Tristate area, actually in West Virginia. Over the years PMC made a favorable impression on the referral sources and gained respect of area physicians

DAILY OPERATIONS

Patient Population:

The Monday through Thursday week is the base unit for evaluating organizational performance. Each week blocks and follow up evaluations are performed and average numbers are reported below. The only activity performed on Fridays is new patient history. Patient distributional a typical week is as follows:

Period	Procedure	Patients Seen
Weekly Total	Blocks	120 per week
Weekly Total	Follow-ups	160 per week
Weekly Total	New patients	25 per week
Weekly Total	Persons Served	375 per week

Scheduling policy:

PMC accepts only referrals from qualified healthcare professionals, such as, physicians, chiropractors, physical therapists etc... The wait time varies from several

weeks for a chronic condition to immediate attention in case of acute or cancer pain. Patients arrive first for a history. Later they come for physical examination at which time the physician decides if the patient needs comprehensive evaluation and treatment. If so the patient is scheduled with the other modalities, including psychology and physical therapy

Medical Management:

Pharmacological management of chronic pain entails opioid medications. Opioid medications can be classified as long acting and short acting depending on their half-life. Among the long acting opioids only methadone is naturally long acting, all the others have a long action because they are pharmaceutically processed to release the medicine slowly. Tables 5 through 7 summarize the frequency with which the various pain medications are prescribed at the PMC.

Procedures Performed:

Four out of five working days procedures are performed at the PMC, including diagnostic and therapeutic blocks. Other procedures include the implantation of medical equipment. A summary of these procedures and their CPT codes are presented in tables 8-10.

Physical therapy

Physical therapy sees all the patients designated for comprehensive treatment. On average a physical therapy program lasts 4-8 weeks with patient seen 1 -2 times a week. Physical therapy also follows the PREP patients on a daily basis. There are 2-4 PREP patients at a given time. Physical therapy is also responsible for return to work testing called Residual Functional Capacity Testing, which is a simplified version of Functional Capacity Testing (FCT). Physical therapy also performs FCT as an additional service.

Counseling

A psychologist sees all the patients under comprehensive treatment. The psychologist also arranges family meetings. At PMC all the psychological services mentioned above are provided. Another service of the psychologist is to perform pre-procedure clearing before implantables, which is required by many third party payers.

Case Management

Case management is an important part of the services provided at PMC. Case management aims to unify and organize the care to maximize cost effectiveness of the services.

Billing and Collection Policy

Billing is done separately for individual caregivers. CHH bills for the facility charges. Pain Care bills for the professional physician charges. The Psychologist bills separately. Physical therapy and PREP bill under CHH. Charges are documented at time of the service and go out next morning.

Collection services are also separate between the caregivers. Each has its policy about collection times and conditions. Patient is given the billing and collection policy as he/she starts treatment in writing.

REFERENCES

- Bonica, J. J. (1990). *The Management of Pain*, Ch. 1. Malvern, PA, USA: Lea & Feiger.
- Bradford, M. (2002). Costs of Chronic Pain Rising. Retrieved Oct 26 2008, from *Business Insurance (Web Version)* , 36 (18), p. 1.
- CHH. (2008). *About Us*. Retrieved Oct 28, 2008, from Cabell Huntington Hospital: http://cabellhuntington.org/about_us/
- CNN. (2005). *Pain Centers and Clinics: Turn to the Specialist*. Retrieved Aug 7, 2005, from CNN: <http://www.cnn.com/HEALTH/library/PN/00047.html>
- IASP. (2005). *Desirable Characteristics for Pain Treatment Facilities*. Retrieved Oct 26, 2008, from International Association for the Study of Pain: <http://www.iasp-pain.org/desirabl.html>
- Living with Pain*. (2005). Retrieved Aug 7, 2005, from ChronicPainCanada.org: <http://chronicpaincanada.org/nacpac04a.htm>
- Merskey, H., & Bogduk, N. (1994). *Classification of Chronic Pain*. Seattle, WA, USA: IASP Press.
- PMC. (2007). *Cabell Huntington Hospital - Pain Management Center*. Retrieved Oct 28, 2008, from Cabell Huntington Hospital: http://cabellhuntington.org/services/pain_management
- Still, A. C. (2000). Pain Medicine: Untangling the Web of Certification. *ASA Newsletter* , 64 (11).
- Turk, D., & Melzack, R. (1992). *Handbook of Pain Assessment*. New York: Guilford Press.
- Waldman, S. D., & Winnie, A. P. (1996). *Interventional Pain Management*. Philadelphia, PA, USA: W. B. Saunders.
- Walters, S. J. (1993). *Enterprise, Government and the Public*. McGraw Hill.

Figure 1: PMC Relationships Within the Local Market

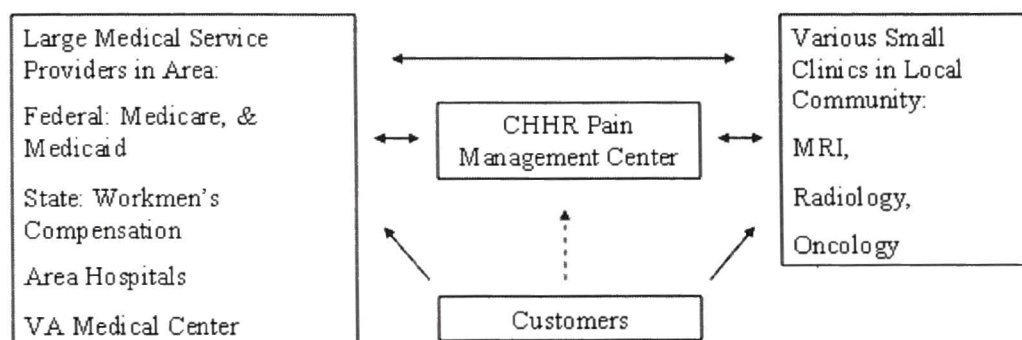
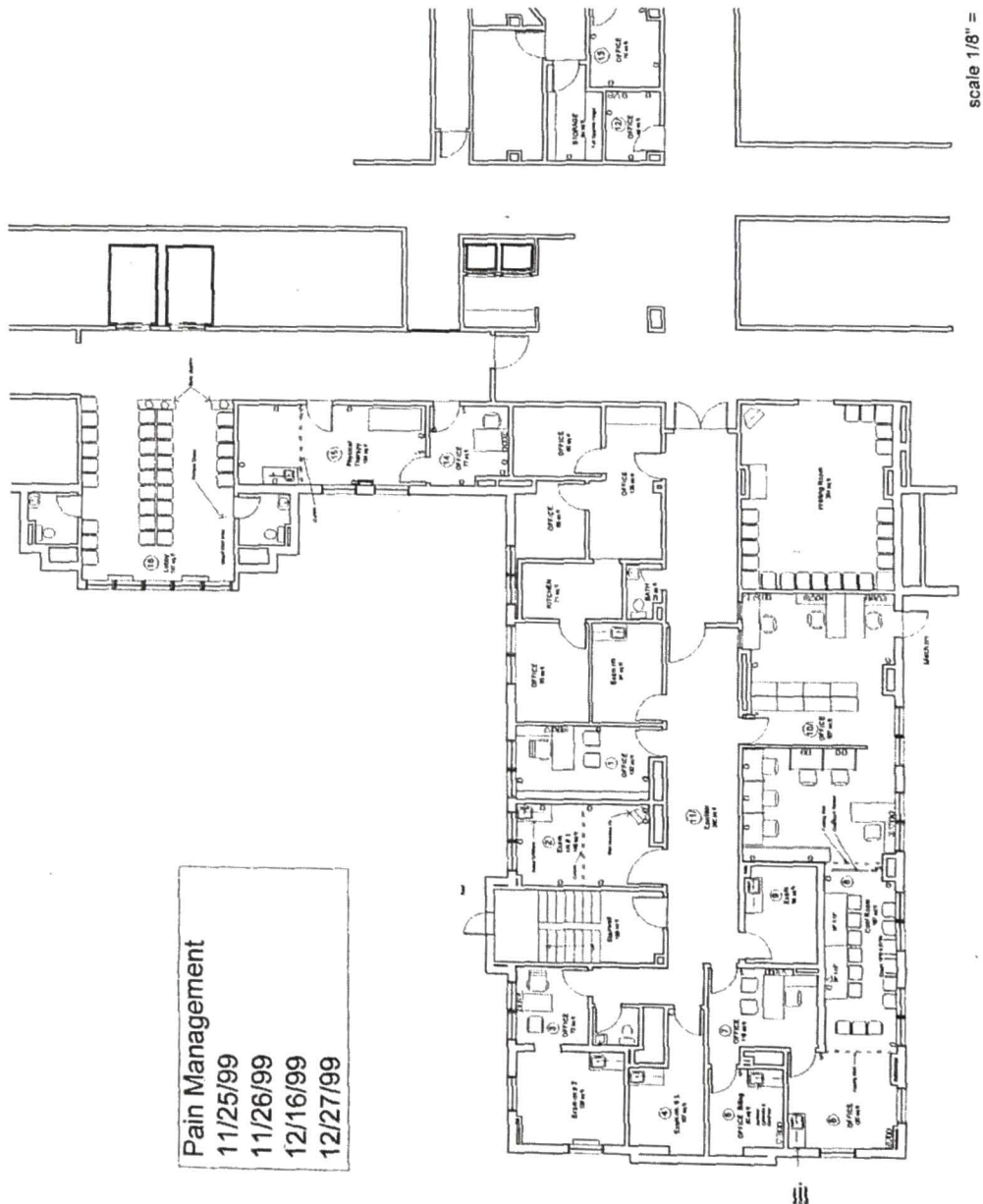


Figure 2: Pain management floor plan 1999



11-4-11

scale $1/4" = 1'0"$

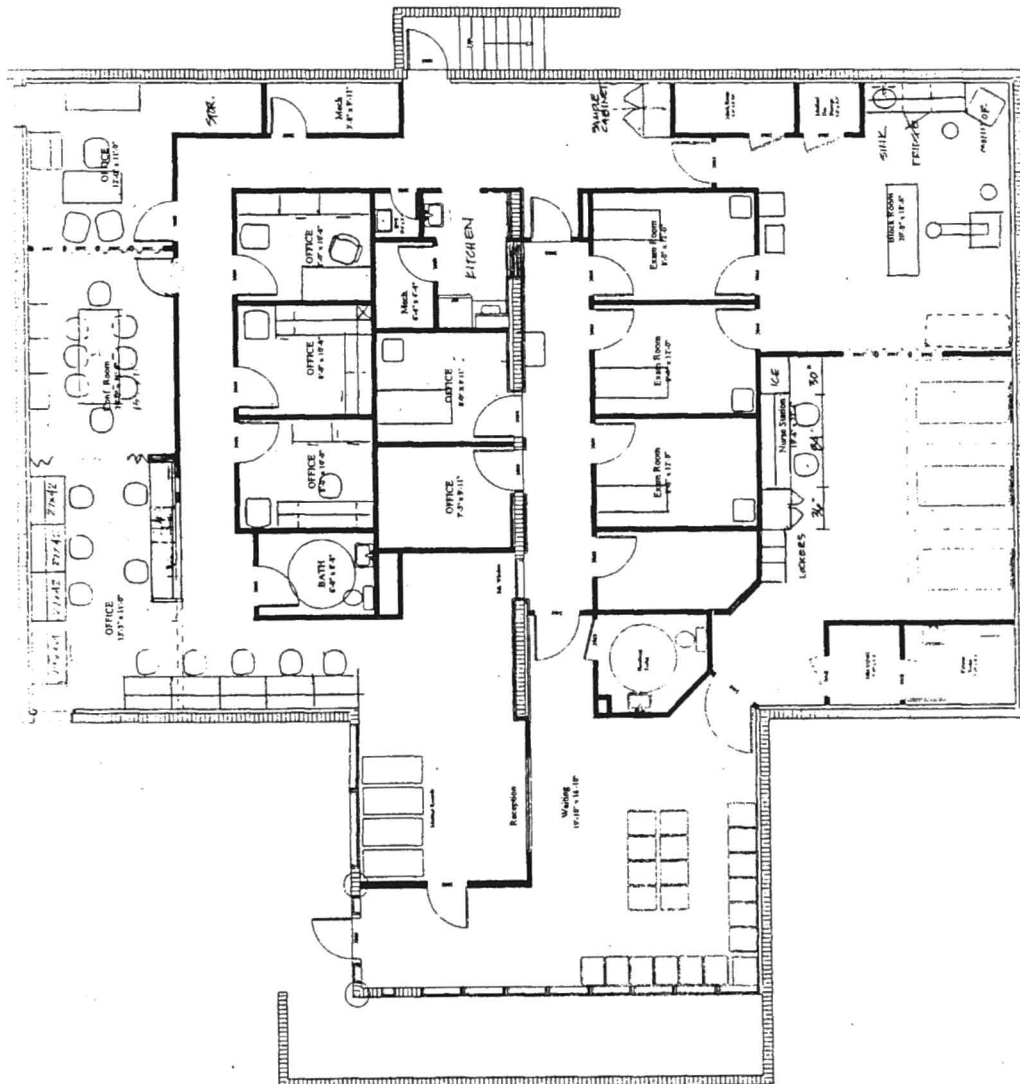


Table 1: Population and Economic demographic trends for local area

Huntington - Ashland, WV-KY-OH Metropolitan Statistical Area (MSA) and Putnam County								
Counties	Estimated Pop. 2001	% Chg. 90-2000	% Pop. 65+	% Pop. Under 18	% with a Disability	% Below Poverty '99	Med. House Income '99	% Pop. 25-44 yrs.
Cabell	95,682	0.0	16.0	20.0	22.9	19.2	28,479	26.7
Wayne	43,665	3.0	14.9	23.4	28.3	19.6	27,352	27.7
Lawrence	62,009	0.8	14.4	24.5	25.7	18.9	29,127	28.0
Boyd	49,727	-2.6	15.6	21.8	24.0	15.5	32,749	28.7
Greenup	36,823	0.3	14.6	23.6	25.8	14.1	32,142	27.9
Carter	27,024	10.5	12.5	24.5	22.0	22.3	26,427	28.4
MSA Total	314,930	0.4	15.0	22.5	24.7	18.2	\$26,427	27.8
Putnam	56,680	11.6	11.6	25.0	15.3	9.3	\$42,895	30.4
USA		12.4	12.4	25.7	17.0	12.4	\$41,994	

Figure data from www.fedstats.gov/qf/states

Table 2: Age Group of Patients

Age (years)	Percent
< 20	4.8
30-39	14.4
40-49	40.1
50-59	28.5
60-69	9.2
70-79	1.4
> 80	.9

Table 3: Insurance Coverage of Patients

Insurance	Percent
Hill-Burton	.2
No insurance	1.4
Medicaid	14.6
Medicare	19.8
Workers' Compensation & PEIA	45.8
Commercial	17.2

Table 4: Most Frequent Diagnoses

Primary Diagnosis	Percent
Myofascial Pain Syndrome	91
Chronic Mechanical Low Back Pain Syndrome	77
SI Joint Syndrome	65
Lumbar Facet Syndrome	60
Lumbar Discopathy	52
Cervical and Thoracic Facet Syndrome	34
Radiculopathy, all levels	32
Neuralgia, all etiologies	12
Headache	1

Note: Numbers add up more than 100% due to multiple diagnoses

Table 5: Long acting opioid usage

Medications	Percent
None	53.9
Slow release oxycodone	18.1
Methadone	15.2
Fentanyl patch	9.3
Slow release morphine	3.6

Table 6: Short acting opioid usage

Medications	Percent
None	14.5
Oxycodone	26.6
Hydrocodone	52.7
Morphine	1.2
Codeine	.5
Propoxyphene	2.1
Agonist/antagonist drugs	1.2
Fentanyl lozenge	.2
Tramadol	1.0

Table 7: Benzodiazepine usage in addition to the long or short acting opioids

Benzodiazepines	Percent
None	83.1
Clonazepam	8.6
Diazepam	3.6
Alprazolam	3.3
Oxazepam	.2
Zolpidem	1.2

Table 8: Top Ten Blocks

Procedure	Rank	CPT Code
Trigger Point Injections	1.	20552-3
Epidural steroid injection, all levels	2.	62318-9
Transforaminal steroid injection, Lumbar	3.	64479-80
Sacroiliac joint injection	4.	27096
Facet Nerve Block, Lumbar & cervical	5.	64470,2,5,6
Selective nerve root block, all levels	6.	64479-80
Lumbar Sympathetic Block	7.	64520
Stellate Ganglion Block	8.	64510
Joint injections, all except SI	9.	20600,5,10
Provocative Discography, all levels	10.	62290-1

Table 9: Neurolytic Blocks:

Procedure	Rank	CPT Code
RFFR, lumbar	1.	64622-3
RFFR, SI	2.	64622-3
RFFR, cervical	3.	64626-7
Disc denervation, all modalities	4.	62287
RF peripheral nerve	5.	64640
Ganglionotomy	6.	6281-2
Sympatholysis	7.	64681
Intercostal neurolysis	8.	64620

Table 10: Implantables:

Procedure	Rank	CPT Code
SCS-lumbar	1.	63650-60
IT pump	2.	62350
Epidural Port-A-Catheter	3.	62360
SCS Cervical	4.	63650-60