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Pain Management

The Experience of Pain:
A Comprehensive Review of Pain and Pain Management

Introduction

It has been estimated that 100 million Americans suffer from some type of pain[1]. Pain has become so widespread, it is often referred to as one of the primary reasons individuals seek health care[1]. With the prevalence of pain on the rise, health care professionals must possess a clear understanding of pain and pain management. This course will review the essential concepts of pain and pain management, while providing health care professionals with information to help them safely and effectively administer health care to patients experiencing pain.

Section 1: Pain

A team of health care professionals meet first thing in the morning to conduct their interdisciplinary rounds. Their patient load is quite full so they begin their rounds without delay. The health care team's first patient is a 26-year-old male who has recently suffered multiple rib fractures and minor internal injuries due to a motor vehicle accident. Upon entering the patient's room, the patient immediately informs the team that he is in a lot of pain. He then requests "stronger pain meds" because he claims he is in constant pain. A member of the health care team asks the patient to rate his pain on a scale from 0 to 10. The patient responds and tells the health care team that his pain is about a 7 or an 8. The patient then goes on to explain that his pain increases to a 9 when he "moves a lot." The team examines the patient and reviews the patient's current medication list, which includes both Percocet and acetaminophen as needed for pain. Before the health care team leaves the patient's room, the patient goes on to explain that he is nervous about his upcoming discharge because he is in pain and he wants to make sure he has "enough pain meds" to take upon his discharge. As the health care team exits the patient's room, the patient's mother approaches the team. She follows them away from the patient's room and begins to discuss her concerns about her son's current condition. The patient's mother informs the team that her son has a "drinking problem" and she is pretty sure he has used "drugs" in the past. The patient's mother then goes on to say that she has

observed her son when his friends have come to visit him. The patient's mother reports her son does not appear to be in pain when he has visitors. He often smiles, jokes and moves around his bed with ease. The mother then questions how much pain her son is actually in and asks the health care team what medications they plan on prescribing her son upon his discharge.

After speaking to their first patient's mother, the health care team move on to their second patient. The health care team's second patient is an 85-year-old female with a history of insulin dependent diabetes, hypertension and osteoporosis. The patient was recently diagnosed with multiple vertebral compression fractures of her spine and diabetic foot ulcers. Upon entering the patient's room, members of the health care team observe the patient sitting in, what appears to be, a very uncomfortable upright position. Members of the health care team attempt to adjust the patient's position but before they can do so the patient stops them because she claims her current position is the only comfortable position she can lie in due to her pain. Unfortunately, when asked to rate her pain on a scale from 0 - 10, the patient is unable to do so. The patient simply says her pain "hurts and is bothering her like it has been." The patient is not able to provide the health care team with any additional information regarding her pain. However, the patient's husband does express that he believes his wife is in "more pain than usual." After speaking to the patient and her husband the team reviews the patient's medications, which include MS-Contin 15 mg every 12 hours and lorazapm 0.5 mg every 12 hours as needed.

The health care team then moves on to their next patient, a 64-year-old female who has undergone colon surgery. Members of the health care team assess the patient. The patient is laying very still and expresses a lack of interest in moving. The patient's blood pressure is 134/86. When asked to rate her pain on a scale of 0 - 10, the patient reports her pain is close to a 4 or a 9. The patient also reports she is having trouble breathing and is feeling anxious about how much worse her pain is going to get. The health care team reviews the patient's medications, which include a morphine patient-controlled analgesia (PCA) pump.

After completing the rest of their rounds, the health care team meets to discuss their patients. The team is able to work through their patient load and develop a course of treatment for each patient in a relatively straightforward manner. However, the three patients highlighted above pose a significantly more complex challenge for the health care team and require additional attention. The reason the aforementioned patients require additional attention from the health care team is due to their reported pain. Each of the three patients in the above cases reports they are in significant pain and require treatment to ease their current states. However, as

highlighted by the above cases, treating and managing pain can be a difficult challenge for health care professionals due to a wide range of complicated factors.

Pain is the body's reaction to actual or potential damage and/or destruction[2]. When the body is being harmed from internal or external forces, pain lets the body know it is in danger so it can react in order to protect itself from any harm that may be done to it. In essence, pain is the body's warning system or alarm system. When a warning system or an alarm goes off, individuals are alerted to potential danger. When an individual hears a warning system or an alarm they immediately react and adjust their behavior to avoid any harm from being done to them. The same may be said for pain and the human body. When the body feels a sensation of pain, it instantly reacts to avoid harm. The following example will highlight the previous concept. An individual is walking barefoot in a parking lot. After walking through the parking lot for a few minutes, the individual inadvertently steps on a 2 inch piece of broken glass which gets imbedded deep into the left foot. Upon stepping on the piece of broken glass, the individual immediately feels an extreme sensation of pain radiating from the left foot. Due to the pain, the individual stops walking and seeks medical attention to remove the glass shard and clean and close the wound. In the previous example pain acted as a warning system. It let the individuals' body know it was in immediate danger so it could react and avoid further damage or destruction. If the individual in the previous example did not have the ability to feel pain, the individual may have continued walking with the shard of glass in the left foot for a long period of time, which may have lead to potentially irreversible damage to the foot. In the previous example, pain alerted the individual to danger before an extreme amount of destruction was done to the foot. In short, pain saved the individual from serious injury. For some of us, pain may be an unpleasant part of life; however, as the previous example illustrated, it is a necessary part of the human body's process to avoid trauma.

In order for the human body to feel pain it relies on nociceptors[2]. A nociceptor is a peripherally localized neuron which is sensitive to noxious stimulus[2] such as tissue damage, intense pressure and extreme temperature fluctuations. When a nociceptor is stimulated by noxious stimulus it sends messages to the spinal cord[2]. Once the messages are received by the spinal cord, they travel to the brain via the spinothalamic tract[2]. The spinothalamic tract can refer to the sensory pathway, which takes pain information from nociceptors through the spinal cord and up to the thalamus[2], a small structure within the brain located above the brain stem. When the pain information reaches the thalamus, it is then relayed to the somatosensory cortex[2]. The somatosensory cortex is the part of the brain responsible for processing somatic sensations such as pain. Once the pain information reaches the somatosensory cortex it is processed and interpreted. The body then reacts based on the

interpretation of the pain information. The aforementioned process occurs extremely fast and allows the human body to react almost instantly to various pain sensations. For example, a 12 year-old boy places his hand on a stove top, which happens to be on and very hot. As soon as the boy places his hand on the stove, nociceptors are activated and send pain information to the spinal cord. The pain information then travels up to the brain where it is processed and interpreted. Based on the interpretation of the pain information the body reacts and the boy quickly removes his hand from the stove top before it is severely burned. The whole process outlined in the previous example occurs within a second or less, preventing serious injury to the 12 year-old boy. The human body feels pain and reacts in a relatively straightforward manner. Unfortunately, treating and managing pain is not as straightforward as the previously outlined process. There are many factors which contribute to the complexity of managing pain.

The Experience of Pain

Pain, as it relates to health care, can refer to an unpleasant sensory and emotional experience arising from actual or potential tissue damage[3]. The experience of pain can include more than just a biological reaction. An individual's experience of pain can also be influenced by psychological factors which make up the full gamut of human emotion. Essentially, what the previous definition of pain is proposing and highlighting is that every person possesses the potential to experience pain in a different and unique way due to his or her particular biological and psychological makeup. The potential for individually different and unique experiences of pain is one of the major factors which contributes to the complexity of managing pain.

As previously mentioned, the human body experiences pain when the nociceptors react to noxious stimulus. Messages from the nociceptors are then sent to the spinal cord where they travel up to the brain via the spinothalamic tract[2]. Once pain messages reach the brain they are received by the somatosensory cortex, where they are interpreted[2]. At that point, during the interpretation of pain messages, individual psychological factors such as perception and consciousness may begin to play a role in the experience of pain.

It has been said that every individual has a unique perception and consciousness. Perception can refer to the process of interpreting stimuli. In other words, perception can refer to the process the human brain uses to organize stimuli and turn it into useful information the body can then use to effectively react to its environment. For example, an individual enters an office building. Upon entering the building the

individual smells smoke, feels heat and sees flames. Immediately the individual's body takes in the aforementioned stimuli. Once the individual's body takes in the stimuli, the individual's perception organizes the stimuli, interprets it and turns it into useful information. The useful information in the previous example is that there is a fire in the building the individual just entered. As a result of the quick perception of fire, the individual turns around and quickly exits the building before any harm is done. In the previous example, a rapid interpretation of stimuli allowed the individual to almost instantly perceive fire and appropriately react before any serious injuries occurred.

On the other hand, consciousness can refer to an individual's awareness of self and his or her environment. Human consciousness allows individuals to take in a multitude of information and stimuli from a myriad of different sources, simultaneously, in order for that information to be organized and interpreted. Many have thought of consciousness as light, which illuminates whatever it shines on in order for individuals to see the world around them. Consciousness is essential to human existence because without it, individuals would be completely unaware of themselves or the world around them, making it nearly impossible for survival. Essentially, consciousness is the force behind Self and how individuals think, learn and react. Furthermore, consciousness and perception are linked and develop over time. In part, an individual's perception and consciousness are comprised of his or her own personal life experiences as well as external factors such as: family, friends, community, culture, stress and trauma. As an individual's perception and consciousness are constructed, they take in information and store the information in order to interpret internal and external stimuli. In short, an individual's perception and consciousness may influence how he or she experiences the world as well as different sensations. In essence, perception and consciousness may dictate biological and psychological reactions to internal and external stimuli. The following example will highlight the previous concepts.

Child 1 lives on a street near a very busy intersection. Often vehicles speed through the intersection. Over time, Child 1 learns and observes that speeding vehicles can be dangerous. As a result, Child 1 associates speeding vehicles with danger and that information is stored in Child 1's consciousness. As Child 1's consciousness continues to develop, Child 1 becomes increasingly aware of speeding vehicles. When Child 1 plays outside near the street, Child 1 is aware of traffic and the sound of speeding vehicles. Every time Child 1 hears or perceives a speeding vehicle traveling on the street or going through the intersection, Child 1's senses are heightened, Child 1's body tenses up and Child 1 becomes slightly anxious. Essentially, Child 1 experiences a biological reaction from what is perceived or acknowledged by the consciousness as a potential for harm. In this case, Child 1's body is reacting to the conscious awareness that a

speeding vehicle has the potential to cause injury and even death if it were to hit a person. Due to Child 1's perception and conscious awareness, which are based on learned and stored information, Child 1 has a biological and psychological reaction to the sensation and experience of a speeding vehicle traveling through an intersection. One day Child 1 has a friend, Child 2, over to play. Child 2 lives in a house which is very isolated. There is little to no vehicle traffic near or around Child 2's house. Child 2 often plays near the road without ever seeing or hearing a vehicle speeding. Child 2 grows up with very little fear of street traffic or busy intersections. Upon arriving at Child 1's house, Child 2 requests to go outside and play catch with a ball. Child 1 likes to play catch, so Child 1 and Child 2 proceed to go outside and play catch, which inevitably leads them near the street. Eventually, Child 2 misses the ball and the ball rolls into the street and towards the busy intersection. Child 2 immediately runs into the street after the ball. However, Child 1 makes no movements towards the street or the rolling ball. As Child 2 approaches the intersection, Child 1 hears and perceives a speeding vehicle. Child 1 immediately tenses up and feels anxious. Child 2 is not in tune to the sounds of the speeding vehicle and is unaware of the impending danger. Therefore, Child 2 proceeds towards the intersection. Just as Child 2 gets closer to the intersection, Child 1 emphatically yells at Child 2 to get out of the street. Child 2 hears Child 1 yelling and proceeds to quickly get out of the street. The ball rolls through the intersection and gets hit by the speeding vehicle. Child 1 and Child 2 are not injured in any way. In the previous example, Child 2 had not learned significant information regarding speeding vehicles and the potential of harm prior to playing with Child 1. Therefore, Child 2 did not have enough relevant information stored in the consciousness to react appropriately or safely when the ball rolled into the street. As a result, Child 2 ran into the street and towards the intersection without regard for safety. On the other hand, Child 1 had learned about the danger of speeding vehicles. The relevant information regarding speeding vehicles and the potential for harm, was stored in Child 1's consciousness. Therefore, when Child 1 perceived the speeding vehicle and became consciously aware of the potential for danger, Child 1 experienced a biological and psychological reaction. Child 1's body tensed up and Child 1 began to feel anxious. Luckily, Child 1 was able to warn Child 2 of the potential for danger before any harm was done. In the previous example, Child 1 and Child 2 experienced the same situation of a ball rolling into the street towards an intersection. However, Child 1 and Child 2's experiences and reactions were very different when compared to each other. Child 1 and Child 2 experienced different biological and psychological reactions to the same situation due to their own perception and consciousness. When the ball rolled towards the intersection and a speeding vehicle was heading right for it, Child 1 felt tense and anxious while Child 2 felt carefree enough to keep running after the ball. In short, due to a host of different factors, Child 1 and Child 2 had unique experiences to the same event. The

aforementioned concepts which apply to the previous example may also be applied to pain. Just as Child 1 and Child 2 had unique experiences to the same event, different individuals may have unique experiences to the same type of pain.

The Biopsychosocial Model of Pain

It has been said every individual possesses the potential to react to pain in a unique way. In other words, every individual can experience the same type of pain in a different way. For example, one individual accidently cuts his right hand. The cut is painful, however the individual calmly acknowledges the pain from the cut and slowly walks over to a sink in order to clean and bandage the wound. A second individual accidently cuts his right hand in a similar fashion to the first individual. The pain from the cut, felt by the second person is comparable to the pain felt by the first individual. However, when the second individual acknowledges the pain from the cut, the individual becomes hysterical. The second individual proceeds to grab the right hand and scream for help. When help arrives the second individual is inconsolable and has to be escorted to a first aid kit, where others have to clean and bandage the wound. In the previous example, both individuals experienced the same type of cut and the same type of pain; however, their reactions where very different. One individual remained calm while the second became hysterical. One individual was able to clean and bandage the wound without any assistance while the other individual was, essentially, incapacitated. Each individual's experience of pain was unique. The question is, why? Why did each individual in the previous example have such a different experience to the same type of pain and why do individuals, in general, react differently to the same type of pain? Perhaps the biopsychosocial model of pain can provide the answers to the previous questions.

The biopsychosocial model of pain suggests pain is a dynamic interaction among biological, psychological and social factors unique to each individual4. Furthermore, the biopsychosocial model of pain suggests the forces which drive human biology as well as the forces behind individual perception and consciousness contribute to the individual's experience of pain. Basically, the biopsychosocial model of pain puts forth the following theory: individually distinctive human biological factors such as tissue health, psychological factors such as memory and social factors such as specific cultural traditions possess the potential to create distinct experiences of pain, specific to the individual4. In short, individuals may have the ability to experience the same type of pain in their own unique way. The previous example highlights the concepts of the biopsychosocial model of pain. In the previous example each individual cuts the right hand in the same way, which resulted in a comparable type of

pain. However, each individual's experience of pain was recognizably different, which prompted the following question: why did each individual in the previous example have such a different experience to the same type of pain? According to the biopsychosocial model of pain, the answer to the question may be relatively straightforward. The reason each individual in the previous example had such a different experience of pain when they cut their hands may be, at least in part, due to their personally distinct biological, psychological and social factors. In other words, each individual's biological, psychological and social factors converged to create a unique experience of pain.

Each individual is different, especially when it pertains to psychological and social factors. When pain occurs it may begin on the biological level; however, along the way of pain interpretation, psychological and social factors play majors roles in shaping and forming each individual's experience of pain. Subsequently, each individual possesses the potential to experience pain in a unique way, which significantly impacts the complexity of treating and managing pain. Often when individuals are receiving health care their biological, psychological and social factors are in a state of flux, meaning they may change or evolve over time. As patients' biological, psychological and social factors fluctuate so may their interpretation or experience of pain, making it difficult for health care professionals to effectively administer pain therapy. The biopsychosocial model of pain provides great insight into why experiences of pain may vary. It also reveals another major factor which contributes to the complexity of treating and managing pain: the experience of pain is subjective.

The Experience of Pain is Subjective

When something is subjective, it is an opinion or point of view. Subjectivity derives from one's own view point, meaning subjectivity is an interpretation based on individual perspective. For example, one individual may believe an object is beautiful while another individual may completely disagree and find the same object repulsive. The object remains the same independent of the individual's view point; however, the interpretation of the object differs depending on the individual's point of view/ perspective. Subjectivity as it relates to clinical pain may be interpreted as follows: clinically, pain is whatever the patient says he or she is experiencing whenever he or she says it occurs5. In other words, pain is whatever the patient reports it to be. In essence, the experience of pain is subjective because pain is an opinion. Pain is experienced from an individual's point of view. The individual is the only one experiencing his or her pain, therefore the experience of pain is unique to the

individual. Furthermore, the reaction to pain belongs solely to the individual experiencing the pain. A reaction to pain is determined by the individual's perspective of what he or she is experiencing. If an individual is experiencing extreme pain from a physical injury there is no way to definitively conclude whether or not the individual is experiencing extreme pain from an injury because the experience of the pain from the injury belongs solely to the individual. No other individual is experiencing the pain felt from the injury, thus it is unique to the individual and, ultimately, whatever the individuals says it is. If an individual reports pain from an injury is extreme, then the pain from the injury is extreme. On the other hand if an individual reports minimal pain from the same type injury than the pain is minimal. The following example will highlight the previous concepts. Basketball Player 1 and Basketball Player 2 are playing in two separate games. During their games Basketball Player 1 and Basketball Player 2 each jam their right index finger and fracture it. Both players experience the same type of index finger fracture. Basketball Player 1 reports the injury is somewhat painful, but the pain is minimal. Basketball Player 1 simply tapes the index finger to the middle finger and continues playing the game until it ends. Basketball Player 2 reports extreme pain from the injury and wants to be transported to a hospital immediately. Both players in the previous example experienced the same type of injury, however their reactions and overall experience of pain was much different. Basketball Player 1 was able to finish the game, while Basketball Player 2 was not. Basketball Player 1 reported minimal pain from the injury, while Basketball Player 2 reported extreme pain from the same type of injury. Each experience of pain in the previous example was unique to each individual. Subsequently, the reactions to the pain were distinct. Each reaction belonged solely to the individual basketball player, the reason being that each basketball player had a different point of view or perspective on the pain. Basketball Player 1 believed the pain was minimal, therefore the pain was minimal and Basketball Player 1 was able to continue playing in the game. Basketball Player 2 believed the pain form the injury was extreme, thus the pain was extreme and Basketball Player 2 was not able to continue playing. The experience of pain from the fractured index finger was determined by each individual player. It was the player's opinion of the pain which drove their individual experiences. Their opinions differed, therefore, their experience of pain differed.

Pain is subjective, it is based on personal experience. It is opinion driven and belongs only to the individual experiencing it. From one perspective pain can be excruciating. From another perspective the same type of pain can be hardly noticeable. It all depends on the individual experiencing the pain. In short, the experience of pain is determined by the individual from his or her perspective. Pain is whatever the individual or patient says it is. With that said, how does the subjectivity of pain impact the treatment and management of pain? The subjectivity of pain impacts the

treatment and management of pain a great deal. Essentially, because pain belongs solely to the individual experiencing pain, health care professionals have to rely on patient reporting to determine the severity of pain and ultimately the treatment and management of pain. The concepts in the previous statement reveal the next major factor which contributes to the complexity of treating and managing pain: patient reporting.

Patient Reporting

The experience of pain is determined by the opinion and perspective of the individual experiencing pain. The reaction and experience of pain belong solely to the individual experiencing pain. No individual can experience the pain of another individual, therefore only the individual experiencing pain can determine the severity of his or her pain. In other words, only the individual experiencing pain can determine the extent of his or her pain, which is why pain treatment and management relies so heavily on patient reporting. Patient reporting, in regards to pain, can refer to the process in which patients communicate their experience of pain to health care professionals. Patient reporting can include a description of pain experienced by the patient as well as the location of pain, activities which increase or decrease pain, pain intensity over a period of time, signs and symptoms of inflammation, any changes to mobility, the degree of pain and an overall rating of pain. Although patient reporting can be helpful to health care professionals in regards to gathering information related to pain, it can also add to the complexity of treating and managing pain.

Patients receive therapy from health care professionals when they are experiencing pain. However, as previously mentioned, the experience of pain is based on personal opinion from the perspective of the patient. When a patient experiences pain it is the patient's opinion that he or she is in pain. Furthermore, the severity of the experience of pain is also determined by the patient. Therefore, when a health care professional develops a course of therapy or treatment regimen to manage a patient's pain, it is largely based on opinion as opposed to more tangible evidence such as test results. Additionally, the course of therapy is based, at least in part, on the patient's opinion versus the health care professional's opinion. The previous concepts related to the management of pain are in contrast to the treatment of other conditions, diseases and/or illnesses. For example, if a patient presents with signs and symptoms of an infection, a health care professional can order and evaluate several tests which can, in many cases, definitively identify if the patient has an infection. Furthermore, a health care professional can often then figure out what exactly is causing the patient's

infection. Based on the test results, the health care professional can then select a course of therapy to treat the infection. Once the therapy is concluded, a health care professional can even order additional testing to verify if the patient's infection has been eliminated. Basically, in the previous example, test results, patient evaluation and health care professional opinion drove the treatment. However, in the case of pain management that treatment scenario may not necessarily always be the case. There are tests health care professionals can use to evaluate pain; however the tests cannot definitively assess the extent of pain or exactly define the experience of pain from the perspective of the patient. Therefore, health care professionals must take patient reporting into account. Consequently, the patient indirectly, and in many cases directly, influences and/or determines his or her own course of pain therapy. If pain is whatever the patient reports it to be, then health care professionals must, at least in part, base their pain therapy for the patient on what the patient reports. That is where the complexity of patient reporting can be observed. As highlighted by the three cases at the beginning of this course, obtaining accurate, reliable, concise information from a patient regarding his or her own pain can be a challenge.

As previously mentioned, biological, psychological and social factors possess the potential to influence the experience of pain. Along those same lines, biological, psychological and social factors also possess the potential to impact patient reporting. Factors such as gender, age and culture can greatly influence how an individual communicates, especially when it relates to health care. For example, in one culture it may be inappropriate for a male individual to display weakness from pain, while in another culture it may be inappropriate for a female individual to express the severity of her pain. As a result, patients from the aforementioned cultures may find it difficult to report the extent of their pain, articulate themselves when reporting pain or even admit to another individual they are in pain. Every individual possesses distinct personality traits and methods of communication which are formed from the fusion of biological factors, along with psychological and social constructs. When merged, unique patterns of communication and behavior can develop, which can distort patient cases and make it difficult for health care professionals to clearly understand their patients' pain and overall experience of pain. Looking back at the patient case studies at the beginning of this course can shed additional light on the previous concepts.

The first patient case involved a 26-year-old male. When questioned by members of the team of health care professionals, the patient reported his pain was approximately an 8 on a scale from 1 - 10. However, according to the patient's mother, when the patient's friends were visiting, the patient did not appear to be in any kind of severe pain at all. The conflicting reports left the health care professionals with questions regarding the patient's actual pain. In regards to the 26-

year-old male patient, other factors may have been at work. Perhaps the patient was in pain when his friends visited; however, due to social factors, he was acting as if he was not in pain.

The second patient case involved a 85-year-old female with a history of insulin dependent diabetes, hypertension and osteoporosis. When questioned by members of the team of health care professionals, the patient was only able to provide very little information regarding her pain and could not rate her pain on a scale from 1 - 10. Perhaps in this case, the women was not feeling well at the time of the health care professionals' visit or simply did not want to talk about her pain to anyone other than her husband.

The third patient case involved a 64-year-old female that recently underwent colon surgery. When questioned by the health care professionals, the patient reported her pain was anywhere from 4 - 9 on a scale from 1 - 10, which provided a wide pain range for interpretation. Again, perhaps the women did not feel like talking to the health care professionals or simply, due to cultural reasons, did not want to provide a more specific pain rating to the team of health care professionals. Whatever the reasons were, the patient reporting, behavior and communication in the previous three cases made it difficult for the team of health care professionals to obtain a clear understanding of each patient's unique experience of pain. Consequently, treating and managing the patients' pain became increasingly complex and challenging.

Obtaining viable information from patient reporting may be difficult; however, it is essential to pain therapy. Health care professionals must take patient reporting into account when developing pain care. That being said, due to a host of ever-shifting factors, patient reporting possesses the potential to add to the overall complexity of treating and managing pain.

Types of Pain

Lastly, there a many different types of pain. The vast range of pain types can also contribute to the complexity of treating and managing pain. Many different forms of pain exist; however, the two most common types of pain are acute and chronic pain. Acute pain can refer to the type of pain which is sudden and intense in nature that arises from an acute injury or disease process and persists only as long as the tissue pathology itself[6]. In other words, acute pain can refer to the type of pain that is directly related to an injury or a disease that only lasts as long as the injury takes to heal or the disease takes to be treated. Typically, acute pain gradually dissipates and

resolves as the precipitating tissue pathology/damage heals. For example, if an individual slipped on a wet surface and sprained his or her ankle, then the individual would suffer from an intense acute pain from the ankle sprain. However, as the ankle sprain heals, the individual's pain would slowly decrease in intensity until it eventually disappeared. Simply put, acute pain may be understood as follows - if a patient has an injury, tissue damage or a disease, he or she may be in acute pain; however, the patient's pain fades away once the patient's body heals and the patient is able to return to his or her normal level of functionality. However, when acute pain continues beyond the normal healing period for the human body, which is approximately 3 - 6 months, then acute pain can become chronic pain.

Chronic pain can refer to the type of pain which persists beyond the normal healing period for an acute injury or disease[6]. Basically, chronic pain is the type of pain which is not directly related to tissue damage. Chronic pain can last for months, years or in some cases, indefinitely. Unlike with acute pain, it is difficult for health care professionals to definitively identify the source of a patient's chronic pain. As previously mentioned, the normal healing time for the body is 3 - 6 months, meaning any pain resulting from damage to tissue, muscles, bones, ligaments and/or discs should resolve within a 3 - 6 month period. However, the pain associated with chronic pain exceeds the 3 - 6 month period. When pain persists well beyond 6 months, the reason for its existence becomes more complicated and increasingly difficult to explain. Many health care professionals and researchers have theorized and concluded that chronic pain results more from psychological and social factors than it does from biological factors. Due to the concept that pain is interpreted by the human mind, it is a logical theory that psychological factors influence and, in some cases, lead to chronic pain. If the human body can heal itself within 3 - 6 months, and after that time, a health care professional cannot determine a biological reason for persisting pain that may only leave one source for the persistent pain, the mind and its constructs. Factors such as stress, trauma and cultural influences may play major roles in the extent and duration of chronic pain.

The following example will highlight the aforementioned concepts. A 29-year-old male patient presents with a broken left leg and arm. The patient reports he broke his left leg and arm in a traumatic accident. The patient reports he has not had any major injuries prior to his recent accident. The patient also reports he is in a lot of pain. The patient's team of health care professionals examine the patient's arm and leg and treat them accordingly. Ten months later after completing the recommended treatment, the patient presents to his team of health care professionals for a checkup. The patient reports he is still in pain. The patient's team of health care professionals examine the patient. They cannot find anything structurally wrong with the patient's left arm and leg. Furthermore, the team of health care professionals find

nothing biologically wrong with the patient. The patient is healthy and his arm and leg are healed. However, the patient is still in pain. Due to the fact that the patient's pain has exceeded 6 months, it is considered chronic pain. There is nothing physically or biologically wrong with the patient, but he is still in pain. The team of health care professionals treating the patient pose the theory that the patient's chronic pain may be result of the trauma of his accident and recurrent stress. In the previous example the patient was in a traumatic accident, which led to injuries. The patient's injuries healed within 3 - 6 months, but the patient's pain continued. The patient's pain transitioned from acute pain to chronic pain and unfortunately, there was no biological reason for the patient's pain, leading his treating team of health care professionals to conclude the chronic pain was related to psychological factors. When there are no biological reasons for pain, it may be highly plausible that psychological factors are contributing and leading to pain. If the brain interprets pain and continues to interpret pain well past the natural healing time period, it may be possible that psychological and/or social constructs are fueling the continued experience of pain.

Acute and chronic pain may be different - however, they both contribute to the complexity of treating and managing pain. Both acute and chronic pain present their own unique challenges for health care professionals, and distinguishing between each type of pain further complicates the treatment process. A lack of understanding of the intricacies of each type of pain along with the precipitating factors of each type of pain can lead to the mismanagement of pain and additional complications. Overall, pain is difficult to treat and manage. Considering the different types of pain and their generating factors can only add to the complexity of treating and managing pain.

Section 1: Summary

Pain is the body's reaction to actual or potential damage and/or destruction2. When the body is in the process of being harmed from internal or external forces, pain lets the body know it is in danger so it can react in order to protect itself from any harm that may be done to it. In essence, pain is the body's warning system or alarm system. Pain, as it relates to health care, can refer to an unpleasant sensory and emotional experience arising from actual or potential tissue damage3. The experience of pain begins when the human body's nociceptors become stimulated by noxious stimulus such as tissue damage, intense pressure and/or extreme temperature fluctuations2. When the body's nociceptors become stimulated they send pain messages to the spinal cord, which then travel up to the brain via the spinothalamic tract2. Once pain messages reach the brain they are received by the somatosensory cortex where they are interpreted2. During the interpretation of pain messages, many factors contribute

to the overall experience of pain, which create unique, individual experiences of pain. The biopsychosocial model of pain suggests pain is a dynamic interaction among biological, psychological and social factors unique to each individual4. The biopsychosocial model of pain also suggests reasoning for each individual's potential to have a distinct experience of pain. In addition, the biopsychosocial model of pain also may assist in the comprehension of the subjectivity of pain.

Pain is subjective. The experience of pain is an opinion from the point of view/ perspective of the individual. For that reason, clinically, pain is whatever the patient says he or she is experiencing, whenever he or she says it occurs5. The varying individual experiences of pain, along with the subjectivity of pain, contribute to the complexity of treating and managing pain. Other factors which contribute to the complexity of treating and managing pain include patient reporting and the differing types of pain. Overall, pain is difficult to treat and manage. Health care professionals must be aware of the nuances of treating and managing pain in order to safely and effectively administer care to those experiencing pain.

Section 1: Key Concepts

- Pain alerts the human body to any actual or potential damage in order to protect itself from harm.
- The spinothalamic tract is responsible for carrying messages from the nociceptors to the thalamus located within the brain.
- The biopsychosocial model of pain suggests pain is a dynamic interaction among biological, psychological and social factors unique to each individual[4].
- Pain is subjective.
- Clinically, pain is whatever the patient says he or she is experiencing whenever he or she says it occurs[5].
- Factors which contribute to the complexity of treating and managing pain include the following: the potential for individually distinct experiences of pain, the subjectivity of pain, patient reporting and the varying types of pain.

Section 1: Key Terms

Pain - the body's reaction to actual or potential damage and/or destruction[2]; an unpleasant sensory and emotional experience arising from actual or potential tissue damage[3]

Nociceptor - a peripherally localized neuron which is sensitive to noxious stimulus[2]

Spinothalamic tract - the sensory pathway, which takes pain information from nociceptors through the spinal cord and up to the thalamus[2]

Patient reporting - can refer to the process in which patients communicate their experience of pain to health care professionals

Acute pain - the type of pain which is sudden and intense in nature that arises from an acute injury or disease process and persists only as long as the tissue pathology itself[6]

Chronic pain - the type of pain which persists beyond the normal healing period for an acute injury or disease[6]

Section 1: Personal Reflection Question

What factors contribute to the complexity of treating and managing pain?

Section 2: Pain Assessment and Goal Setting

Pain is difficult to treat and manage - however it is both the clinical and ethical responsibility of health care professionals to do so. If left untreated, pain may lead to a host of complications including: decreased mobility, muscle atrophy, obesity, decreased cardiovascular health, sexual, hormonal and cognitive dysfunction, as well as insomnia, depression and even suicide[7]. Essentially, untreated pain possesses the potential to completely alter and/or devastate a patient's overall health, well-being and quality of life. Untreated pain can transform a well adjusted, healthy, active individual into a depressed, inactive, cognitively impaired individual that does not enjoy life. Therefore, it is the clinical responsibility of health care professionals to acknowledge and address their patients' pain. To ensure pain is acknowledged and addressed, organizations such as The Joint Commission have recognized pain control as an important part of the quality of health care administered to patients[8]. According

to the recommendations made by The Joint Commission, organizations must have policies and procedures in place which preserve the effective assessment and treatment of patients' pain[8]. These policies and procedures further the clinical responsibility health care professionals have to treating and managing pain.

Health care professionals also have an ethical responsibility to treat and manage pain. Health care professionals have an obligation to adhere to the ethical concepts of beneficence and nonmaleficence while administering health care to patients. Beneficence and nonmaleficence have specific meanings when applied to health care. Beneficence can refer to the act of doing what is best for the patient, while nonmaleficence can refer to inflicting no harm to patients; do no harm to patients[9]. When health care professionals take their respective oaths, they agree to abide by the aforementioned ethical concepts when administering health care. Therefore, health care professionals must do what is best for the patient and do no harm to the patient while administering health care. As previously mentioned, pain can be very harmful to patients' overall health, well-being and quality of life. Pain, if left untreated, can ravage patients' lives and leave them with long-term complications, which can rob patients of their ability to enjoy life. Thus, if health care professionals fail to address their patients' pain, they are not doing what is best for the patient nor are health care professionals doing what they can to avoid harm being brought to the patient. As a result, health care professionals must address patients' pain in order to uphold beneficence, nonmaleficence and, ultimately, their professional oaths. In short, due to both clinical and ethical obligations, health care professionals must address patients' pain. Unfortunately, at times, addressing patients' pain is easier said than done. It has been well established that treating and managing pain can be a complex challenge for health care professionals. The good news is, there are ways health care professionals can reduce the overall complexity of treating and managing pain. With that said, how can health care professionals ease the process of treating and managing pain?

Pain Assessment

One of the most powerful ways a health care professional can ease the process of treating and managing pain is to conduct effective pain assessments. Pain assessment, as it relates to pain and health care, can refer to the process health care professionals use to obtain relevant information from a patient regarding the individual patient's experience of pain. Effective pain assessment can be invaluable to the overall process of treating and managing pain. Effective pain assessment can bring the health care professional closer to understanding the individual patient's

experience of pain as well as provide tremendous insight into the patient's point of view/perspective. It can also shed light on the severity of the patient's pain. Essentially, effective pain assessment can provide the foundation on which the process of treating and managing pain is built upon. Furthermore, it has been said that without effective pain assessment, there can be no effective pain treatment/ management. Thus, how can a health care professional effectively assess a patient's pain? The straightforward answer is as follows: health care professionals can use patient observation and active listening skills to effectively assess a patient's experience of pain.

Effective pain assessment begins and ends with patient observation. Patient observation, as it relates to pain assessment, can refer to the process in which a health care professional examines and monitors a patient in order to obtain information regarding the patient's experience of pain. Patient observation is paramount to effective pain assessment. In theory, patient observation can be one of the most useful means in which a health care professional gathers information about a patient's pain. The following example will illustrate the value of patient observation.

A 78-year-old male resident of a nursing facility reports he is experiencing pain. However, when initially questioned by a team of health care professionals, the patient cannot provide any information regarding his experience of pain. The only piece of information the patient does eventually provide to the team of health care professionals, after additional questioning , is that he quite simply does not "feel right." As a result, the team of health care professionals immediately begin to examine and observe the patient. The first major observation made by the team of health care professionals is the patient is having trouble adjusting himself and moving around in his bed, especially when he attempts to use his right leg. Due to the aforementioned observation, the team of health care professionals examine the patient's right leg. The team focuses on the patient's right knee, which reveals the following signs of inflammation: redness, heat and swelling. The team also observes that when the patient's right knee is lightly palpated, the patient's body becomes tense and stiffens. The patient also clenches his teeth and grimaces upon light palpation. Further observations reveal the patient is not eating or sleeping as much as he did prior to his report of pain. In addition, the team of health care professionals observe the patient's usually cheerful mood and demeanor have deteriorated since the report of pain. Based on the health care team's observations, a treatment strategy is initiated to address the patient's pain. After the initial treatment strategy is implemented, the team of health care professionals examine and observe the patient. Upon examination of the patient's right knee, it is observed that the signs of inflammation have slightly dissipated. However, the health care professionals observe that the patient in still having trouble using his right leg. The team also observes that

upon palpation of the patient's right knee, the patient grimaces, although the health care professionals are able to apply more pressure to the patient's right knee upon palpation when compared to previous exams. Additional observations reveal the patient is eating more and the patient's mood has slightly improved. Upon completion of the previous observation process, the team makes slight adjustments to the patient's pain therapy. After the patient's treatment is adjusted, the team of health care professionals follow up with the patient. This time when the team observes the patient, a marked improvement is noted. The patient's signs of inflammation have dissipated. The patient can easily move around his bed. The patient is eating more and sleeping better. Additionally, the patient's mood has dramatically improved. The patient appears to have returned to his more cheerful demeanor and is even interested in speaking with the team of health care professionals. The patient actively engages the team and is willing to discuss his experience of pain. The patient is further monitored and observed by the team of health care professionals. No further observations are made which indicate the patient is experiencing pain. In the previous example, the patient was not willing, or simply unable, to provide the team of health care professionals with useful information regarding his experience of pain. However, through close observation, the team was able to gather valuable insight into the patient's experience of pain. By observing the patient, the team was able to identify the potential origin of the patient's pain - the right knee - as well as the following principle signs of inflammation: redness, heat and swelling. The team was also able to gauge the extent of the patient's pain by observing the patient's reactions to a right knee palpation exam. Additional observations regarding the patient's mood, eating and sleeping habits provide further information regarding the extent of the patient's pain. Based on the team's patient observations, a treatment strategy was devised and implemented. Follow up patient observations provided the team with information regarding the treatment strategy's effectiveness. Adjustments were made to the team's treatment strategy based on their observations and subsequent patient observations revealed that the patient's pain was steadily decreasing. The team of health care professionals in the previous example effectively used patient observation throughout the entire process of treating the patient. When the patient was unable to provide the team with information regarding his experience of pain, the team employed patient observation to obtain the necessary information to develop a treatment strategy. The team then used effective patient observation to assess their treatment strategy's effectiveness and the overall outcomes of their treatment strategy. Effective observation allowed the team to adequately treat the patient, which ultimately improved the patient's mobility, functionality, mood and quality of life. Much like in the previous example, at times patients will be unable to provide health care professionals with the information they require to treat and manage patients' pain. When those instances occur, health care professionals can use effective

patient observation to obtain the viable information needed to address the individual patient's experience of pain. On the other hand, at times, patients may provide a copious amount of information regarding their experience of pain. In those occasions, health care professionals can use observation as a means to filter through the information provided by patients in order to determine what details are viable to their pain management. In short, patient observation can be used as a means to obtain the vital information required for health care professionals to effectively assess the individual patient's experience of pain, and ultimately to treat and manage the patient's pain.

In addition to patient observation, active listening can also assist health care professionals in patients' pain assessment. Active listening, as it relates to pain assessment, can refer to the process in which a health care professional gathers information from a patient by engaging in a style of two-way communication which fosters a clear and mutual understanding of information[10]. In other words, active listening is the process of listening with the intent to obtain meaning[10]. Nevertheless, how can health care professionals ensure they are actively listening to their patients when they are reporting their individual experiences of pain? There are several steps health care professionals can take to ensure they are effectively engaging in active listening when a patient is reporting his or her experience of pain. The first step health care professionals can take towards active listening is to give their patients their full attention when they are reporting pain[10]. Often when individuals engage in conversation, one individual speaks while the other simply waits for their turn to talk about themselves. The words are being heard, however individuals are not focused on what is being said. Instead, they typically are thinking about what they want to say next. That style of listening can be referred to as passive listening. Two people are engaged in conversation, however neither one of them is focused on what the other person is saying. There is little to no intent to obtain meaning when two individuals are engaged in passive listening. Therefore, the first step towards active listening should always be to focus and concentrate on what the other individual is saying. Making a concerted effort to focus on what the other person is saying when engaged in a conversation can increase the ability for both parties to understand the meaning of what is being communicated. It can also help both individuals improve their recall of the conversation. If an individual is focused on what another individual is saying, he or she is more likely to remember what is said. Health care professionals should always make an effort to avoid passive listening when their patients are reporting their individual experiences of pain. The next step towards active listening is to make eye contact[10]. Eye contact can let an individual know you are really listening to what he or she is saying. It can foster trust and encourage individuals to open up and fully articulate what they want to say. The third

step to active listening is to provide individuals with the opportunity to say what they would like to express[10]. Limiting interruptions when patients are speaking and allowing for periods of silence can further open up the conversation to allow for a greater expression of ideas. The next step to active listening is to respond to what is being said[10]. From time to time, health care professionals should respond to what their patients are saying. Repeating what the patient says or paraphrasing the patient's words can reinforce that they are truly being heard and listened to, which can make them more likely to further engage in conversation. After all, everyone likes to know they are being heard. Making an effort to understand the emotions behind the patient's words can be another step towards active listening. Talking about one's pain can be an emotional experience. It can open up the stress and horrors of past trauma and can leave patients feeling vulnerable. Being empathetic to the difficult emotions behind the words can make patients feel at ease and allow them to continue to discuss their experience of pain. Asking open-ended questions and clarifying what is said can also be steps to active listening[10]. At times, health care professionals will need to ask their patients questions about their individual experiences of pain. Keeping questions open, as opposed to closed, can allow information to flow more freely. Therefore, at times, it may be advantageous to avoid yes and no questions and focus on how, what where and why questions. For example, instead of asking a patient, "does sitting up make your pain worse" a health care professional may ask, "what makes your pain worse?" The second version of the question is open ended and possesses much more potential, when compared to the first question, to allow for a free-flowing exchange of ideas. Yes and no questions can limit the expression of idea, while open ended questions can expand the expression of ideas, which can be very to helpful health care professionals when they are trying to get their patients to open up about their pain. In addition, health care professionals should not be afraid to clarify what is said during a pain related conversation with their patients. A patient may quickly pass over an important detail about his or her pain. Slowing down the conversation to clarify what is said can benefit both parties in the long run. Finally, to fully achieve active listening, health care professionals can provide words of encouragement to their patients. As previously mentioned, talking about pain can be difficult for a patient. Using words of encouragement such as "you are being very brave" or "you have been courageous during this difficult situation" can go a long way to motivate patients to express themselves in regards to their individual experiences of pain. Additionally, words of encouragement bring a human aspect to the process of assessing pain. They can let patients know and understand that the health care professionals administering their care are empathetic to their situation and always have their best interests at hand. In essence, active listening is a process that promotes understanding, recall and clarity. It is a way for individuals to obtain

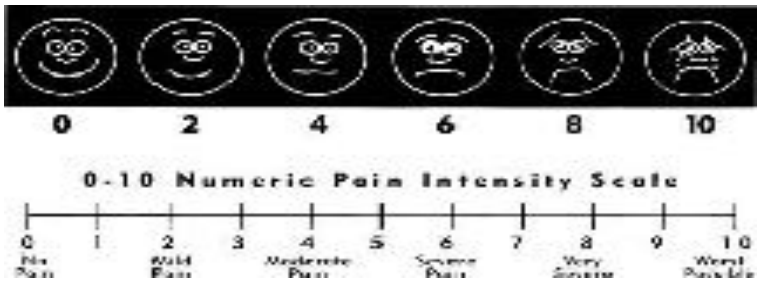
meaning. Used by a health care professional, active listening, can be a means to effectively assess a patient's pain.

Individually, patient observation and active listening can be used by health care professionals to obtain information from their patients. However, when used in conjunction, patient observation and active listening skills can exponentially increase a health care professional's abilities to effectively assess a patient's experience of pain. With that said, patient observation and active listening are skills, skills which can only be obtained over time and with practice. Unfortunately, health care professionals must put in a considerable amount of work and effort to achieve the level of patient observation and active listening necessary to use them together to effectively assess a patient's experience of pain. The good news is, there are tools available which can be used by health care professionals to refine their patient assessment skills and to actively assess patients' pain. The first of such tools is the Wong/ Baker faces rating scale.

The Wong/ Baker faces rating scale, Figure 1, is a pain assessment tool that can be used by health care professionals to help their patients rate the intensity/severity of their own experience of pain[11]. The Wong/ Baker faces rating scale uses a combination of 6 faces, all of which possess different simplified facial expressions, and a numerical rating scale ranging from 0 - 10. Each face is associated with a numerical value and an expression of pain. To use the scale efficiently, a health care professional only has to show the scale to his or her patients and ask them to select a face which best represents how their experience of pain is making them feel. The Wong/ Baker faces rating scale can be ideal for younger patients, older adults, patients with language barriers and patients that simply have trouble associating a numerical value with their experience of pain[11]. By simply pointing to an easy to understand picture of a face in pain, patients can provide their health care professionals with a pain rating from 0 - 10 as well as valuable insight into their individual experience of pain. In other words, a patient's simple act of pointing to a face which best represents how he or she is currently feeling in regards to pain can provide health care professionals with a wealth of information, which can then be used to treat and manage the individual patient's experience of pain. For example, an 89-year-old female patient, admitted to a nursing facility, is experiencing pain. Upon examination, a team of health care professionals attempts to assess the patient's pain. A member of the team asks the patient to rate her experience of pain on a scale from 0 - 10, 0 meaning no pain; 10 meaning severe pain. Unfortunately, the patient cannot associate a numerical value with her experience of pain. The team asks additional questions to the patient regarding her pain, however the patient cannot provide the team with any viable information about her experience of pain. The team then acquires a Wong/ Baker faces rating scale to assist them in their pain

assessment. A member of the team presents the scale to the patient and proceeds to explain it. The health care professional informs the patient that she can use the scale to help her articulate her experience of pain to the team of health care professionals. The health care professional then goes on to explain that each face on the scale represents an individual that has no pain, some pain or is in a lot of pain. The first face represents no pain, the second face represents just a little pain, the third face represents a little more pain, the forth face represents pain that hurts even more, the fifth face represents pain that hurts a whole lot and the sixth face represents the worst pain[11]. After the explanation of the pain scale the health care professional asks the patient to point to the face that best depicts the pain she is experiencing. The patient does not hesitate and immediately points to the forth face, instantly providing the team of health care professionals with viable information about her current experience of pain. The forth face informs the team of health care professionals that the patient's pain rating is approximately 6 out of 10. Based on the information provided by the patient, the team is able to make adjustments to her pain therapy. Upon a follow-up examination with the patient, the team once again employs the Wong/ Baker faces rating scale to further assess the patient's pain. This time the patient points to the second face, which informs the team that the patient's pain has decreased since the adjustments were made to her pain therapy. In the previous example the Wong/ Baker faces rating scale was used to obtain pain information from a patient that was unable to associate a numerical value with her experience of pain. Initially the team was experiencing some difficulty obtaining information from the patient regarding her pain. However, by using the Wong/ Baker faces rating scale to assist the patient in communicating her experience of pain, the team was able to effectively assess the patient's pain and make the necessary adjustments to her pain therapy. Clear communication between patients and health care professionals is essential to pain assessment. As previously mentioned, the treatment and management of pain relies heavily on patient reporting and communication. If patients are unable to efficiently communicate their individual experiences of pain to health care providers, then health care providers should use tools like the Wong/ Baker faces rating scale to help ease the communication process, whenever possible, to ensure effective pain assessment. Along those same lines, another tool which can be used by health care professionals to effectively assess patient's pain is a WILDA approach assessment guide.

Figure 1: A Version of the Wong/ Baker Faces Rating Scale[12]



A WILDA approach assessment guide, Figure 2, can refer to the pocket-sized template, which can be used by health care professionals as a guide to effectively assess patients pain[12]. The WILDA approach assessment guide outlines the following 5 key components to an effective patient assessment: a pain description, intensity rating, location identification, duration and an indication of what factors aggravate/alleviate pain[12]. It is suggested that effective patient assessments include all of the aforementioned key points. Therefore, by following the WILDA approach assessment guide, health care professionals can ensure they cover every key point.

The **W**ILDA approach assessment guide begins with "**W**ords to describe pain." An effective patient assessment should, typically, begin with the patient's description of his or her pain. The health care professional should ask his or her patient open-ended question about pain and encourage the patient to use words indicated on the template to describe the pain he or she is experiencing at the time of the assessment. There are many types of pain, and each type of pain may require a different pain therapy. Thus, it is important for the health care professionals to determine what type of pain their patients are experiencing. Words like: aching, stabbing, tender, throbbing, exhausting, unbearable, squeezing and pressure[12] can help health care professional determine what type of pain their patients are experiencing and, ultimately, their pain therapy.

The W**I**LDA approach assessment guide then moves on to pain "**I**ntensity". It is important for health care professionals to obtain a pain rating, on a scale from 0 - 10, 0 meaning no pain, 10 meaning the worst pain imaginable[12]. If a patient is unable to associate a numerical value with his or her pain, then the Wong/ Baker faces rating scale can be employed by health care professionals to assist the patient in quantifying his or her pain.

The next patient assessment point on the WI**L**DA approach assessment guide is "**L**ocation". It is important for health care professionals to attempt to identify the location of a patient's pain. Health care professionals can ask patients "where is your pain" and they can they can also ask patients to directly point to where their pain is coming from[12].

Next, on the WIL**D**A approach assessment guide is pain "**D**uration". Patients can suffer from continuous pain and/or breakthrough pain. Continuous pain can refer to pain that does not leave the pateint[12], while breakthrough pain can refer to pain which occurs in flare-like exacerbations while the patient is being treated for pain[13]. Patients should be asked the following questions to help determine which type of pain the patient is actually suffering from: "Is the pain always there," "Does the pain come and go[12]?" It is possible for patients to suffer from both types of pain simultaneously. Therefore, health care professionals should also ask patients, "Do you have both types of pain[12]?"

Finally, the WILD**A** approach assessment guide covers "**A**ggravating and **A**lleviating factors". Patients should, typically, be asked what aggravates their pain and what alleviates their pain. The patient's answers can help health care professionals determine pain therapy and give them additional insight into the patient's pain. The WILDA approach assessment guide concludes with some additional questions and reminders to help the health care professional determine if the patient is experiencing any side effects from his or her pain/pain therapy such as nausea, vomiting, and decreased mood[12]. Overall, the WILDA approach assessment guide is ideal for health care professionals looking for a template and/or blue print to ensure they are effectively assessing pain. It covers the 5 key components to an effective patient assessment and the WILDA approach can be used on a wide range of patient populations. However, health care professionals should remember the WILDA approach assessment guide is just that, a guide. Every patient possesses the potential to be unique and different and, as a result, health care professionals may have to implement different strategies and techniques, along with the WILDA approach assessment guide, to effectively assess patients' pain.

Figure 2: WILDA Approach Assessment Guide[12]

The Wong/ Baker faces rating scale and the WILDA approach assessment guide are valuable tools which can be used by health care professionals, across many different patient populations, to ensure they are effectively assessing patients' pain. However, health care professionals may require additional/specific tools when assessing critically ill patients. Critically ill patients often suffer from a great deal of pain due to the critical nature of their condition, which is why it is essential for health care professionals to maximize their pain assessment efforts.

Assessing a critically ill patient's pain can be a difficult challenge for health care professionals. Unlike with other patients, often critically ill patients are unable to communicate their experience of pain to health care professionals due to a myriad of different reasons such as sedation and/or intubation. Consequently, pain assessment tools, which rely heavily on patient interaction and communication, are typically ineffective when used by health care professionals to assess critically ill patients' pain. Even so, there are tools available for health care professionals to use to ensure they are effectively assessing critically ill patients' pain. One of these such

tools is the Critical-Care Pain Observation Tool (CPOT). The CPOT can refer to the pain scale which relies on the observations of health care professionals to assess critically ill patients' pain[14]. The CPOT rates/scores pain on a scale form 0 - 8 and is broken down into the following 4 categories: facial expression, body movements, compliance with a ventilator for intubated patients or vocalization for extubated patients and, finally, muscle tension[14]. Each of the aforementioned categories receives its own score. After the completion of each category the scores can then be added up to provide the final pain rating/score. When using the CPOT, health care professionals should first observe a patient while he or she is laying at rest to obtain a baseline CPOT score[14]. The health care professional should observe the patient's face and body for at least one minute to note any reactions[14]. At the end of one minute, the health care professional should score all categories of the CPOT, with the exception of the muscle tension category[14]. To complete the muscle tension category of the CPOT, health care professionals should hold one of the patient's hands with one hand, while placing the other hand at the patient's elbow[14]. The health care professional should then perform passive flexion and extension of the patient's upper limb, noting any resistance and scoring the results based on muscle tension criteria[14]. When the first CPOT assessment is completed, health care professionals should repeat the CPOT scoring process during a nociceptive procedure[14] such as patient turning or patient wound care. During the second assessment, muscle tension can be scored by noting the patient's resistance to movement[14]. The two scores can then be compared to obtain an understanding of the patient's experience of pain.

Another patient population which may require an additional/specific pain assessment tool is older adults with advanced dementia. Much like with critically ill patients, health care professionals may find it very difficult to efficiently communicate with older adults with advanced dementia. As a result, health care professionals may require a pain assessment tool primarily based on observation and specific for older adults with advanced dementia. The Pain Assessment in Advanced Dementia (PAINAD) scale, Figure 3, was developed for that very reason. The PAINAD scale can refer to the tool which can be used by health care professionals to assess pain in patients with advanced dementia[15]. The scale can be used to rate pain from 0 - 10, with 0 meaning no pain and 10 meaning severe pain[15]. The PAINAD scale is divided into the following 5 categories: breathing independent of vocalization, negative vocalization, facial expression, body langue and consolability[15]. Each of the previous categories has specific criteria which are associated with numerical values. The scale requires health care professionals to observe advanced dementia patients for 5 minutes prior to beginning the pain assessment[15]. At the conclusion of a 5-minute period, health care professionals should then begin the pain assessment and score each category based on what is observed[15]. For example, if a health care professional is assessing an advanced

dementia patient's pain and observes the patient exhibiting noisy, labored breathing, then the health care professional would give the patient a score of 2 in the breathing independent of vocalization category. Once each category is scored, the independent values can then be tabulated to provide the final pain rating[15]. The PAINAD scale can be completed by health care professionals relatively quickly and with minimal disturbance to patients.

Figure 3: PAINAD Scale[15]

Items*	0	1	2	Score
Breathing independent of vocalization	Normal	Occasional labored breathing. Short period of hyperventilation.	Noisy labored breathing. Long period of hyperventilation. Cheyne-Stokes respirations	
Negative vocalization	None	Occasional moan or groan. Low-level speech with a negative or disapproving quality.	Repeated troubled calling out. Loud moaning or groaning. Crying.	
Facial expression	Smiling or inexpressive	Sad. Frightened. Frown.	Facial grimacing	
Body language	Relaxed	Tense. Distressed pacing. Fidgeting.	Rigid. Fists clenched. Knees pulled up. Pulling or pushing away. Striking out.	
Consolability	No need to console	Distracted or reassured by voice or touch.	Unable to console, distract or reassure.	
			Total**	

It has been well established that treating and managing pain can be a difficult challenge for health care professionals. There are many factors which contribute to the complexity of treating and managing pain and health care professionals must make a concerted effort to ease the process and ensure they are effectively administering pain care to patients in need. By developing observation and active listening skills as well as the ability to use the aforementioned pain assessment tools, health care professionals can become better equipped to assess pain and ultimately treat and manage pain.

Establishing Pain Management Goals

Another method health care professionals can use to reduce the complexity of pain management is to establish pain management goals. When beginning any new

endeavor, it is important for individuals to set goals. A goal can be a means for individuals to describe and/or visualize what they want to achieve. Goal setting can also help individuals prioritize, stay focused, build motivation and establish self-confidence. In essence, goal setting can help individuals get from where they are to where they want to be, especially when it comes to health care and treatment. When a patient enters health care/treatment, he or she is attempting to achieve a better state of health. In essence, the patient is trying to transition from where they are - a place of poor/compromised health, to where they want to be - a place of improved health. Unfortunately, the aforementioned transition is not always an easy one. A successful transition from poor/compromised health to improved health often takes a great deal of hard work, focus, time, energy and effort from both the patient and his or her team of health care professionals. At times, health care/treatment can be challenging, tiring and demoralizing. One day a patient may be doing quite well and the next day he or she may not. Quite simply put, sometimes the road to recovery or improved health can be a long and difficult one for patients and health care professionals alike. That could not be more evident than with the treatment and management of pain, which is why it important for health care professionals to establish pain management goals for patients. Given this, how can health care professionals help patients set pain management goals?

The development of pain management goals begins with communication. Health care professionals should have open-ended conversations with patients undergoing pain treatment to find out exactly what they would like to accomplish through their therapy. Every patient possesses the potential to have distinct goals. For example, a father of four experiencing severe pain may want to limit his pain enough to regularly play and/or be active with his children, while an older adult patient may simply want to limit his or her pain enough to get a good night sleep. Whatever the case may be, communication is essential to pain management goal setting. Each patient should have his or her own customized set of goals based on his or her own unique desires and circumstances. Once the patient's personal goals have been well established, health care professionals should then help the patient arrange his or her own goals into both long-term goals and short-term goals. Long-term goals can help patients create an objective to work towards. As previously mentioned, for some patients, the road to reduced pain can be a long and difficult one. Long-term goals can motivate patients to keep striving and moving towards accomplishing what they set out to achieve. Long-term goals can also help patients maintain motivation and the will to succeed in their treatment. Short-term goals, on the other hand, also have value. Short-term goals can prevent patients from becoming overwhelmed by their treatment and/or pain situation. By helping patients establish short-term goals, health care professionals can provide patients with the small, less overwhelming,

steps they need to take in order to obtain their long-term goals. In essence, short-term goals can work as stepping stones to get the patient closer and closer to achieving his or her long-term goals. For some patients, it may be easier for them to take small steps as opposed to what may seem to be giant, stressful steps. Once long-term and short-term pain management goals have been firmly established, health care professionals should make sure each patient goal is specific, measurable and realistic[16].

Pain management goals should be specific - meaning the objective of each goal should be clear and well-defined[16]. Specific goals can help health care professionals fully understand what patients hope to achieve through pain therapy, while non-specific goals can lead to ambiguity and confusion. For example, when asked by a health care professional, what their pain management goals are patients may say "I would like to increase my mobility." That is a great goal, but it is not specific. The objective of the goal is not well-defined, and it can be open to interpretation. When patients say "I would like to increase my mobility" they may mean they would like to increase their mobility enough so they can walk a mile a day. However, the health care professional may interpret "I would like to increase my mobility" as the patients would like to increase their mobility enough to be able to walk around their house. Due to a lack of a clear objective, the goal is misunderstood. A specific goal related to increased mobility would be "I would like to eventually walk without a cane" or "I would like to be able to walk up a flight of stairs." Each of the aforementioned goals is related to the patient's desire to increase his or her mobility, however the goals are specific and an objective is well-defined. As a result, the health care professional can fully understand what the patient would like to achieve through therapy. There is no interpretation necessary because the objective is clear. Essentially, a lack of goal specificity can lead to ambiguity, miscommunication and a misunderstanding of information, all of which possess the potential to negatively affect patient treatment outcomes. Specific goals, on the other hand, can decrease ambiguity, increase communication outcomes and lead to a clear understanding of information. In addition, specific goals are important because they can clearly identify treatment milestones, which are important markers of pain treatment progression. If a patient has a pain management goal to walk without a cane, it is important to mark that milestone when it is achieved. Marking or recognizing treatment milestones can help patients understand their pain therapy is improving their health. It can also reinforce the importance of pain therapy and increase patients' motivation to continue with therapy. Furthermore, specific goals can help health care professionals develop patient-centered treatment strategies. If health care professionals know exactly what patients would like to achieve through pain treatment, then they can be better equipped to design pain therapies to suit their patients' needs. It has been said that

the more specific a patient's pain management goal is, the more likely he or she will be able to achieve it. When health care professionals are developing patients' treatment plans, they should assist patients to clearly identify their goals. Additionally, if patients do have goals in mind, health care professionals should take the time to help patients fully develop their goals and phrase them in such a manner so they are specific and clearly identify the patient's desired treatment objectives.

When developing specific goals, health care professionals should also note the type of pain the patient is experiencing. As previously highlighted, there are different types of pain, such as acute and chronic pain. Each type of pain has different duration periods and effects on patients. As a result, it may be necessary for the patient to adopt goals that are specific to his or her type of pain[16]. For example, if a patient is suffering from acute pain, a goal for the patient may to be recover from the condition or injury that is causing him or her pain[16]. If the patient is suffering from chronic pain, a goal for the patient may be to develop skills to emotional and/or mentally cope with the long-term pain[16]. Whatever the case may be, it is imperative that health care professionals understand what type of pain the patient is suffering from and design goals that are specific for the patient's unique experience of pain.

Pain management goals should also be measurable[16]. Measurable goals possess criteria which can be used to measure progress and, often, have a defined beginning and end[16]. An example of a non-measurable patient goal is "I want my pain therapy to go well." The aforementioned goal is positive and expresses a desire, however it is not measurable. There is no specific criteria which can be measured to identify progress, nor does it have a beginning or an end. An example of a measurable goal is, "I would like to be able to walk around my block for 45 minutes by next May" The latter goal is measurable because it possesses specific criteria which can be measured to identify progress. If the patient is able to walk around his or her block by May, then the patient will know progress has been made. Measurable goals can further clarify what patients are hoping to achieve through pain therapy as well as help patients identify what they are working towards.

Finally, and perhaps most importantly, patients' pain management goals should be realistic[16]. A patient may say "I would like to have no pain at the end of my therapy." Again, that is a great goal; however, due to the patient's condition, age, baseline functionality and comorbidities that may not, and most likely is not, a realistic goal. For many patients "no pain" is not a realistic pain management goal[16] nor should health care professionals encourage patients to set that as one of their primary goals if it is not possible. Many patients, especially older adults, may have limited baseline functionality and preexisting conditions that may prevent them from ever becoming truly pain free. It is important for health care professionals to acknowledge that point

and be more realistic when helping patients set their personal pain management goals. A health care professional must take into account the medical history of each patient as well as the workable treatment time table and the personal abilities of each patient to set realistic, attainable goals. For example, a more realistic goal for a patient would be "I would like to be able to get a full night's sleep" or "I would like to be able to walk 6 blocks in 5 months time." The patient may never be pain free. However, through pain therapy, the patient may able to achieve a level of functionality that may increase his or her quality of life. Sleeping through the night or obtaining the ability to carry out light exercise may be enough to improve the patient's treatment outcomes, overall well-being and perhaps most importantly, their quality of life. It would be quite the milestone for a patient to become totally pain free, and for some patients that may be an option. However, for most patients it is not. When setting goals, it is better for health care professionals to be honest with themselves and their patients. Pain therapy can go a long way to improve a patient's quality of life. By focusing on realistic, attainable goals, patients can work towards things they can actually obtain, which may be all that is necessary to keep the patient committed to future pain treatment options that may further increase his or her ability to enjoy life.

Helping patients set pain management goals is an important step to initiating a patient's pain therapy. However, health care professionals should keep in mind that a patient's goals may have to be revisited and/or evaluated throughout the course of therapy[16]. At times, patients' goals may need to be adjusted or even changed as a result of a host of different factors. Thus, it is vital for health care professionals and patients to maintain a level of flexibility and an ability to adapt to the ever changing potential of therapy. How many times have individuals started a project or an endeavor with certain goals in mind, only to alter or change those goals over time due to shifting timetables and/or unpredictable factors? The answer is: often. The same can be true for pain therapy. Every patient is different and possesses the potential to react to therapy in varying ways. What works for one patient may not necessarily work for another patient. A recovery period that was estimated to take 6 weeks may take up to 8 weeks or as little as 4 weeks. Simply put, pain therapy possesses the potential to be unpredictable. Consequently, health care professionals and to some extent, patients, must be capable and mentally prepared to adapt to the results of pain therapy. Goals may have to be temporally altered or varied depending on how the patient is progressing through therapy. Although, just because a patient's goal is altered does not mean it cannot be reached. If something changes one day, that does not mean measures cannot be taken to get back on course or that things will not change again to improve the situation. It may just mean the desired end result may take more time and/or effort to obtain. Patients should be reminded to take each day

as it comes. Through the course of pain therapy, patients may have days where they make outstanding progress and days where they take a giant step backwards. For some patients, pain treatment may be a marathon as opposed to a sprint. It may take them a long time to reach the finish line of their pain therapy. However, through perseverance, flexibility and adaptability patients may realize their goals and hopes for their pain management.

Section 2: Summary

Pain, if left untreated, may lead to a host of complications including: decreased mobility, muscle atrophy, obesity, decreased cardiovascular health, sexual, hormonal and cognitive dysfunction, as well as insomnia, depression and even suicide[7]. Therefore, it is both the clinical and ethical responsibility of health care professionals to treat and manage patients' pain. The management of pain can be a difficult challenge for health care professionals - however, there are methods health care professionals can employ to limit the complexity of treating/managing pain as well as ensure they are effectively treating pain. One method is for health care professionals to conduct effective pain assessments. Pain assessment, as it relates to pain, can refer to the process health care professionals use to obtain relevant information from a patient regarding the individual patient's experience of pain. The goal of a pain assessment is for the health care professional to obtain as much viable pain information from the patient as possible, in order to develop/adjust the patient's pain therapy. Health care professionals can effectively conduct pain assessments by developing their observation and active listening skills as well as their abilities to use pain assessment tools such as the Wong/ Baker faces rating scale, WILDA approach assessment guide, CPOT and the PAINAD scale. Along with pain assessments, health care professionals can establish pain management goals to ensure they are effectively managing patients' pain. The development of pain management goals begins with communication. Health care professionals should have open-ended conversations with patients undergoing pain treatment to find out exactly what they would like to accomplish through their therapy. Additionally, health care professionals should work to create patient goals that are specific, measurable and realistic[16]. Specific, measurable and realistic goals can help patients maintain treatment focus, desire and motivation as well as identify what they are working towards. Each patient's experience of pain may be different and complex - however, if health care professionals work to design patient-centered treatment strategies which are based on patients' insight and desired outcomes, they will be more likely to meet their clinical and ethical obligations of effectively managing patients' pain.

Section 2: Key Concepts

• Health care professionals have a clinical and ethical responsibility to treat/mange patients' pain.

• Managing pain can be difficult - however, health care professionals can conduct pain assessments and establish patient goals to limit the complexity of managing pain and to ensure they are effectively managing patients' pain.

• Patient observation and active listening are key to conducting effective pain assessments.

• Patients' pain management goals should be specific, measurable and realistic[16].

Section 2: Key Terms

Beneficence - the act of doing what is best for the patient[9]

Nonmaleficence - inflicting no harm to patients; do no harm to patients[9]

Pain assessment - the process health care professionals use to obtain relevant information, from a patient, regarding the individual patient's experience of pain

Patient observation (as it relates to pain assessment) - the process in which a health care professional examines and monitors a patient in order to obtain information regarding the patient's experience of pain

Active listening - the process in which a health care professional gathers information from a patient by engaging in a style of two-way communication which fosters a clear and mutual understanding of information; the process of listening with the intent to obtain meaning[10]

Continuous pain - pain that does not leave the pateint[12]

Breakthrough pain - pain which occurs in flare-like exacerbations while the patient is being treated for pain[13]

Section 2: Personal Reflection Question

How can observation and active listening skills help health care professionals effectively manage pain?

Section 3: Pain Management

Pain can be devastating to an individual's overall health, well-being and quality of life. As previously highlighted, pain possesses the potential to transform a well adjusted, healthy, active individual into a depressed, inactive, cognitively impaired individual that does not enjoy life. Quite simply put, pain can rob an individual of their ability to independently function and live, which is why pain must be effectively managed. Pain management can refer to the process of using non-pharmacological, pharmacological and/or other means to prevent, limit and treat pain[17].

Modern pain management has its origins in the 1800's. In 1842 Dr. Crawford Williamson Long, an American surgeon, was one of the first individuals to use inhaled ether as a general anesthetic to control a patient's pain during a surgery18. Dr. Crawford Williamson Long's efforts marked one of the first times in the history of modern medicine where medical means were used to safely and effectively control patients' pain. Prior to the 1800s, little was known about the far reaching effects of pain and even less was known on how to effectively manage pain. Consequently, the use of anesthetics were not common during surgery and modern medicine offered little in the form of well researched methods to limit patients' pain. All too often pain was not properly acknowledged and patients were left to their own devices to control and limit their pain. Thanks to the efforts of Dr. Crawford Williamson Long and other medical pioneers, much has changed in the comprehension of how individuals' experience pain as well as how pain can be effectively managed. Modern medicine's knowledge and understanding of pain has grown exponentially and it is now almost unanimously accepted that pain is a dynamic, multidisciplinary experience that occurs on both the physical and psychological level4. Due to the advancements in the understanding of pain, health care professionals now recognize that pain must be effectively managed through a combination of therapeutic strategies that are just as dynamic and multifaceted as the experience of pain itself. For that reason, the current scope of pain management has transcended from its humble begins with Dr. Crawford Williamson Long's efforts and has developed into a comprehensive, multidisciplinary approach which blends a wide variety of therapeutic options to meet the needs of the individual patient.

In the current health care climate, pain management typically begins with pain assessment and patient goal setting. Once health care professionals gain an understanding of a patient's pain, a pain management plan can be designed and developed for the individual patient. A pain management plan can refer to the strategy health care professionals use to prevent, limit and treat an individual patient's pain through a combination of varying therapeutic options[16,17]. In the past, pain management plans may have just included generic written prescriptions.

However, that type of pain management is no longer widely accepted. Health care professionals are now being encouraged to forge unique pain management plans that include a variety of different non-pharmacological and pharmacological treatment options to meet the individual needs and goals of each patient. With that in mind, what are the common non-pharmacological and pharmacological treatment options currently being used to manage patients' pain?

Non-pharmacological Treatment Options

One of the first non-pharmacological treatment options that may come to mind for the management of pain is physical therapy. Physical therapy can refer to the practice of treating a disease, condition, injury and/or pain through physical means[19]. The goals of physical therapy are to preserve, enhance and restore movement and physical function[19]. In order to achieve those goals, physical therapists use a combination of active and passive treatment options. Active treatment options encourage patients to actively participate in therapy, while passive treatment options promote full body relaxation. An example of an active treatment option is therapeutic exercise[19]. Therapeutic exercises include a variety of physical activities which are designed to enhance and maintain patients' flexibility, strength, balance, range of motion and functionality[19], with the goal of decreasing pain. Physical therapists design unique therapeutic exercises programs for each patient based on his or her needs and personal pain management goals. Through therapeutic exercise programs, physical therapists hope to engage the patient in physical activities which will build strength and increase function. In addition, therapeutic exercise programs aim to educate the patient on how to efficiently and effectively move their bodies to promote health and well-being. In essence, therapeutic exercise programs can assist patients in establishing a foundation for active healing to decrease pain and increase their quality of life.

Passive treatment options, on the other hand, aim to relax patients' bodies in order to promote rest and restoration. Passive treatment options bring balance to physical therapy. After a period of physical activity the human body often requires rest to grow, develop and restore itself. Rest and relaxation offer the body an opportunity to recover. Without rest and relaxation, the human body can become strained or over-exerted. Once the human body becomes strained or over-exerted injuries can occur or preexisting injuries can become worse. Passive treatment options are designed to avoid that. Passive treatment options offer the human mind and body an opportunity for relaxation and restoration in order to promote further healing. Passive treatment options also help to reduce factors which may lead to pain such as: inflammation,

muscle tension and poor circulation. Examples of passive treatment options include: transcutaneous electrical nerve stimulation (TENS), ultrasound and hot and cold therapies. TENS and ultrasound can release pressure, tension and stiffness to aid in circulation and the prevention of muscle spasms, while hot and cold therapies can further promote increased circulation and help treat inflammation. The physical therapist will often use a combination of the previous passive treatment options to give the patient a full assortment of means to reduce factors which can lead to pain. Despite this, physical therapy remains one of the most common and effective non-pharmacological treatment options for the management of pain. It promotes movement and restoration to heal the human body and provide it with an opportunity to grow and develop. Physical therapy does not mask pain, but instead it works to reduce or eliminate pain when possible. Through the use of active and passive treatment options, physical therapists can assist patients in their attempts to live an active, healthier, happier lifestyle, free of debilitating pain.

The next non-pharmacological treatment option that may come to mind for the management of pain is massage therapy. Massage therapy can refer to the practice of treating a disease, condition, injury and/or pain through the physical manipulation of soft tissue[17]. One of the goals of massage therapy, when used to manage pain, is to relax the human mind and body in order to encourage healing and decrease pain[17]. Often when patients are experiencing pain, especially intense pain, they become stressed, tense and highly anxious. High levels of stress, tension and anxiety possess the potential to increase pain and slow recovery by limiting patients' ability to sleep, move and breathe deeply[17]. Through the manipulation of soft tissue, massage therapy can release patients' stress, tension and anxiety in order to reduce pain and increase patients' ability to recover[17]. High levels of stress, tension and anxiety can be detrimental to a patients overall health, well-being and experience of pain. Massage therapy can be an effective means to reduce patients' stress, tension and anxiety and ultimately manage pain[17].

Another non-pharmacological treatment option which may be used to manage pain is psychotherapy. Psychotherapy may not be the first thing that comes to mind when thinking about non-pharmacological methods to manage pain - however, it can be incredibly effective. It has been well documented that much of the experience of pain occurs in the individual's mind. Pain may start off as a physical reaction to external stimuli such as extreme pressure or temperature fluctuations. However, pain is interpreted by the individual' brain and thus psychological factors greatly influence how pain in experienced. Subsequently, it has been theorized, and widely accepted, that the experience of pain is more of a mental construct than it is a physical one. Therefore, it should be no surprise to health care professionals that psychotherapy can be an effective means to manage patients' pain. Psychotherapy can refer to the

use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits[20]. There are many different forms of psychotherapy, but one of the most effective forms of psychotherapy used to manage pain is cognitive-behavioral therapy.

Cognitive-behavioral therapy can refer to the type of talk therapy which can be used to help individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior[21]. In other words, cognitive-behavioral therapy is a method to help individuals replace unrealistically negative thinking with more realistic and/or positive thinking. With this in mind, what is an example of an unrealistic thought? An example of an unrealistic thought can be, "I am the most useless individual on the planet" or "I am completely worthless." Those types of thoughts are not only unrealistically negative but they also possess the potential to lead to negative behavior patterns and outcomes. The following example will highlight the previous concepts and how cognitive-behavioral therapy can help individuals in need.

A 28-year-old male individual has low self-esteem. All day long he thinks unrealistically negative thoughts about himself such as he is worthless, useless and no one in the world would ever date him. Consequently, he feels horrible about himself, depressed and unmotivated. The individual's behavior also suffers from his negative thought patterns. Due to his thinking, the individual is often angry because he misinterprets other individuals' actions towards him. The young man's anger and consistent misinterpretations lead to problems with employment and an inability to get along with others. Feeling lonely, the young man would like to begin dating , however his negative thoughts are also negatively influencing his abilities to achieve his desires. One day, a young woman asks him on a date. However, because the young man thinks negatively about himself he believes the young women is only asking him on a date as a joke to make fun of him, when in fact it is quite the opposite. The young man refuses to go on a date with the young woman or engage in any type of relationship with her. The young man is very rude and mean to the young woman when she asks him out which upsets her - ruining any future opportunities with her. The incident with the young woman is a watershed moment for the young man, and as a result he seeks psychotherapy. Cognitive-behavioral therapy is used to treat the young man. Through various cognitive-behavioral therapy methods, the young man is able to realize his thoughts about himself are both unrealistic and incredibly negative. Through further cognitive-behavioral therapy the young man is able to understand that because his thoughts are unrealistic, they may be inaccurate. Over time and with additional help, the young man realizes he feels horrible and is acting horribly because of the way his is thinking. His unrealistically negative thoughts are directly impacting his feelings and his actions which are causing him to constantly experience

negative outcomes. With additional cognitive-behavioral therapy, the young man begins to alter his negative thought patterns. After some time, the young man is able to replace his unrealistically negative thought patterns with more realistic, positive thinking. As a result, the young man's self-esteem increases and he no longer thinks he is worthless, useless and unlovable. More and more, the young man begins to think positive, more realistic thoughts about himself. In a few months time, he feels better and is no longer angry or acting out towards others. His work-life becomes much improved and his personal life also takes a turn for the better. The young man is able to go out on dates and eventually meets a young woman with whom he would like to have a long term relationship. The young man is happier and is now experiencing positive outcomes. In the previous example, the young man was consistently thinking unrealistically negative thoughts about himself. Consequently, he felt negative and behaved in a negative manner. His thoughts and actions caused him to misinterpret the actions of others and prevented him from obtaining his desires and/or positive outcomes. The young man then entered psychotherapy and cognitive-behavioral therapy was used to allow the young man to understand how his negative thinking was harmfully shaping his life. Through cognitive-behavioral therapy, the young man was able to change his thoughts and behavior patterns to feel better and achieve positive outcomes. Essentially, through cognitive-behavioral therapy the young man began to think positive thoughts so he began to feel and act positively. The previous example not only highlighted how cognitive-behavioral therapy can treat those in need, it also highlighted how impactful thoughts can be. Human beings are greatly influenced by their thoughts and thought patterns. Thought patterns can determine how individuals act and, more importantly, how they feel. Thinking realistically and positive can help individuals feel more positive, while unrealistically negative, inappropriate and/or catastrophic thoughts can cause individuals to feel just as bad as their thought patterns, which may be the case with individuals experiencing pain.

Negative, inappropriate and catastrophic thoughts are often present in patients experiencing pain[21]. Due to what is perceived as a terrifying diagnosis or a lack of understanding of underlying conditions, individuals who suffer from pain, especially chronic pain, typically begin to develop negative thought patterns regarding their pain and overall health[21]. For example, a patient may receive a diagnosis regarding his or her condition from a health care professional and immediately think of the worst case scenario, or a patient suffering from chronic pain for several months may lose faith in pain treatment and begin to think his or her pain will never go away. Negative thinking regarding health and/or pain can be just as impactful as other types of negative thinking. If individuals think they are unhealthy, then they may feel unhealthy. Likewise, if individuals constantly think about long-lasting, excruciating pain then they may feel an altered or accentuated experience of pain. The

experience of pain is very much rooted in the mental interpretation of pain. Thus, negative thoughts regarding pain may lead to a more negative experience of pain. Put another way, negatively can beget negativity; negative thoughts of pain can lead to negative experiences of pain. When patients enter into negative thought patterns regarding pain it can be very challenging to break them out of those patterns. As patients fall deeper and deeper into their negative thought patterns, it can become increasingly difficult for them to understand the reality of their situation and accept the physiological truth about their health and pain.

As previously mentioned, the normal healing time for the human body is 3 - 6 months - meaning any pain resulting from damage to tissue, muscles, bones, ligaments and/or discs should resolve within a 3 - 6 month period. However, for some patients it does not. For some patients pain extends for longer than the human body's natural healing period. Some patients report experiencing pain years after an injury has occurred, even if there is no biological reason for their pain. When there are no biological reasons for pain, it may be highly plausible that psychological factors such as negative thought patterns are leading to patients' pain. Due to negative thought patterns, a patient's experience of pain may become warped or perpetual, leading to chronic pain. Another case may be that a patient may not be able to understand the reality of their health because of the way he or she is thinking about it, leading to an enhanced and/or distorted experience of pain. Whatever the case may be, cognitive-behavioral therapy can help patients manage their pain[21].

As previously outlined, negative, inappropriate and catastrophic thoughts are often present in patients experiencing pain[21]. Unfortunately, those types of thoughts are highly correlated to the intensity of pain[21] - meaning the more negative thoughts a patient has about their health/pain the worse their pain can be. When patients consistently think negatively about their health/pain, it can lead to both physical and mental stress. The more patients think negatively or worry about their health/pain the higher their stress levels. When patients reach the point when they are continuously preoccupied or consumed with their health/pain, their stress levels can perpetually remain high. When the human body's stress levels are pushed to their limits and remain high for long periods of time, the body and the mind can react in detrimental ways. Research has shown that high stress levels can lead to depression, anxiety and inflammation[21] all of which possess the potential to enhance or cause pain. Thus, by thinking unrealistically negative, inappropriate and/or catastrophic thoughts, patients can create a state of body and mind which can lead to pain. Regrettably, thinking about pain can lead to pain. Fortunately, cognitive-behavioral therapy can assist patients in breaking unrealistically negative thought patterns[21].

One of the primary goals of cognitive-behavioral therapy when it comes to the management of pain is to help patients replace unrealistically negative thought patterns with more realistic thinking[21]. When a patient is in pain, he or she may think, "this is the worst pain in the world" or, "my pain will never go away." Thoughts like those are common among patients experiencing pain. However, they are unrealistic. Cognitive-behavioral therapy works to remove thoughts like those from patients' regular thought patterns and replace them with more realistic thoughts like "my pain may be bad right now but it will be better in the future." By replacing unrealistically negative thought patterns with more realistic thinking, patients can gain a more realistic appraisal of their health/pain, making it easier for them to handle their condition or pain[21]. To establish more realistic thinking in patient's regular thought patterns, cognitive-behavioral therapy uses several different methods such as: relaxation, breathing exercises, meditation, positive affirmation, physical activity and discussion, to help a patient first identify his or her unrealistically negative thoughts and then educate the patient on how to rationally dispute his or her catastrophic cognitions[21]. Once the patient can rationally dispute his or her catastrophic cognitions, additional techniques are used to prevent a relapse in thinking and to reinforce a more positive, realistic thought process[21]. Realistic thinking can also help patients reduce stress and gain a sense of control over their overall health and well-being. Much of the experience of pain is based on an individual's mindset and thought process. After all, pain is interpreted by the mind. Therefore, it is only logical to use a method of therapy which can treat the mental aspect of pain. Cognitive-behavioral therapy can be an effective treatment method to manage pain[21]. It can help patients think more realistically, decrease stress and, when used in combination with other treatment options, it can help patients reduce their pain and increase their quality of life.

In short, non-pharmacological treatment options offer an effective means to manage patients' pain. They can be used individually or in conjunction with other methods. Non-pharmacological treatment options work to treat both the physical and mental aspects of pain. Health care professionals should always consider non-pharmacological treatment options when managing patients' pain.

Pharmacological Treatment Options

The reminder of this course will focus on the most common medications used to manage pain. This section will begin by reviewing individual medications and then highlight opioid medications as a class.

Acetaminophen

Medication notes: Acetaminophen is one of the most common medications used to manage pain. Acetaminophen belongs to a group of medications referred to as nonopioid analgesics. It is believed acetaminophen works by inhibiting prostaglandin (PG) synthesis[22]. It is also believed acetaminophen affects cyclooxygenase[22]. Common dosage forms of acetaminophen include: oral tablets, capsules and solutions[23]. Acetaminophen is also available as a rectal suppository and as an intravenous product[23]. Acetaminophen is typical well tolerated - however, common side effects include: nausea, vomiting and constipation[23].

Typical dosing interval: The typical dosing interval for acetaminophen is 4 - 6 hours[23,24].

Safety notes: The total daily dose of acetaminophen should not exceed 4000 mg[23,24]. Acetaminophen has a Food and Drug Administration (FDA) Boxed Warning highlighting the potential for severe liver injury and a warning highlighting the potential for allergic reactions (e.g., swelling of the face, mouth, and throat, difficulty breathing, itching, or rash)[23]. Health care professionals should always double check to make sure patients do not have a known allergy to acetaminophen before acetaminophen is administered. Health care professionals should also be aware that many medication products contain acetaminophen. Health care professionals should always calculate a patient's total daily dose of acetaminophen before a dose is given to avoid exceeding the recommended maximum daily dose of 4000 mg.

Considerations for special patient populations: Health care professionals should note the FDA Boxed Warning highlighting the potential for severe liver injury when administering acetaminophen to patients with compromised liver function. Health care professionals should also be aware of weight based dosing when administering acetaminophen to children or pediatric patients. Acetaminophen is often used to manage pregnant women's pain.

Aspirin

Medication notes: Aspirin belongs to a class of medications known as nonsteroidal anti-inflammatory drugs (NSAIDs). It is believed NSAIDs reduce inflammation and exert their analgesic effects by inhibiting prostaglandin (PG) synthesis[22]. Common dosage forms of aspirin include oral tablet, enteric coated tablet and suspension[23]. Aspirin is also available as a rectal suppository[23]. Aspirin is typical well tolerated - however,

common side effects include: dyspepsia, abdominal pain and gastrointestinal bleeding[23].

Typical dosing interval: The typical dosing interval for aspirin when used to manage pain in adult patients is 4 - 6 hours[23,24].

Safety notes: The total daily dose of aspirin should not exceed 4000 mg[23, 24]. Aspirin has an FDA warning highlighting the potential for allergic reactions[23]. Health care professional should check if patients possess an aspirin allergy before administration. Aspirin also has an FDA warning regarding serious bleeding[23].

Considerations for special patient populations: Health care professionals should note the FDA warning highlighting serious bleeding when administering aspirin to patients with bleeding disorders and when administering aspirin to patients on anticoagulant medications. Health care professionals should also note the following recommendation: pregnant women should avoid using aspirin in their third trimester[23].

Ibuprofen

Medication notes: Ibuprofen belongs to a class of medications known as NSAIDs. Common dosage forms of ibuprofen include oral tablet and suspension[23]. Ibuprofen is also available as an intravenous product[23]. Ibuprofen is typically well tolerated - however, common side effects include: nausea, abdominal pain, constipation and heartburn[23]. Ibuprofen may also lead to tinnitus[23].

Typical dosing interval: The typical dosing interval for ibuprofen is 4 - 8 hours[23,24].

Safety notes: The total daily dose of ibuprofen should not exceed 3200 mg[23,24]. Ibuprofen has an FDA warning highlighting the potential for allergic reactions. Ibuprofen should not be administered to patients with a known allergy to ibuprofen and/or aspirin. Ibuprofen also has an FDA warning highlighting the potential for stomach bleeding[23]. In addition, the FDA recommends that ibuprofen should not be administered to patients right before or after a heart surgery[23].

Considerations for special patient populations: Health care professionals should note the FDA warning highlighting the potential for stomach bleeding when administering ibuprofen to older adults as well as patients with a history positive for ulcers and/or bleeding problems[23]. Health care professionals should also be aware of weight based dosing when administering ibuprofen to children or pediatric patients. It is recommended that health care professionals avoid administering ibuprofen to women

starting at 30 weeks gestation because premature closure of the ductus arteriosus in the fetus may occur[23].

Naproxen

Medication notes: Naproxen is also an NSAID. Common dosage forms of naproxen include oral tablet and suspension[23]. Common side effects of naproxen include: nausea, abdominal pain, constipation and heartburn[23]. Naproxen may also lead to more serious side effects such as: bleeding, ulcers, kidney failure and liver failure[23].

Typical dosing interval: The typical dosing interval for naproxen when used to manage pain in adult patients is 8 - 12 hours[23,24].

Safety notes: Naproxen possesses the following FDA warnings regarding dose and duration of therapy: naproxen should be used at the lowest dose possible for treatment and for the shortest time period needed[23]. Naproxen should not be administered to patients with a known allergy to naproxen or other NSAIDs[23]. Also, naproxen should not be administered to patients right before or after coronary artery bypass surgery (CABG)[23].

Considerations for special patient populations: Health care professionals should note the FDA warning highlighting the potential for bleeding/ulcers when administering naproxen to older adults. Health care professionals should also note that naproxen may lead to kidney and/or liver failure when administering naproxen to patients with kidney or liver disease. Health care professionals should avoid administering naproxen to pregnant women in their third trimester [23].

Celecoxib

Medication notes: Celecoxib is also an NSAID. Celecoxib is often used to manage pain in patient populations suffering from arthritis. Celecoxib is available as an oral capsule[23]. Common side effects of celecoxib include: nausea, abdominal pain, constipation and heartburn[23]. Celecoxib may also lead to more serious side effects such as: high blood pressure, bleeding, ulcers, kidney failure and liver failure[23].

Typical dosing interval: The typical dosing interval for naproxen when used to manage pain in adult patients is every 12 hours[23,24].

Safety notes: Celecoxib should not be administered to patients with a known allergy to celecoxib or other NSAIDs[23]. Also, celecoxib should never be administered to patients right before or after coronary artery bypass surgery (CABG)[23].

Considerations for special patient populations: Health care professionals should note the FDA warning highlighting the potential for bleeding when administering celecoxib to older adults. Health care professionals should also note that celecoxib may lead to kidney and/or liver failure when administering celecoxib to patients with kidney or liver disease. Furthermore, health care professionals should note that celecoxib may lead to high blood pressure when administering celecoxib to patients with hypertension. Celecoxib falls into FDA pregnancy risk category C prior to 30 weeks gestation[23]. However, celecoxib falls into FDA pregnancy risk category D starting at 30 weeks gestation[23].

Lidocaine (topical)

Medication notes: Lidocaine is outlined in this section to highlight the use of topical medications in the management pain. Lidocaine belongs to a group of medications referred to as local anesthetics. Lidocaine (topical) is a numbing medication and it is indicated for the temporary relief of pain[23]. Lidocaine comes in many different strengths including: 2%, 4% and 5%[23]. Common side effects of lidocaine include: erythema, skin irritation and dry skin[23].

Typical dosing interval: Lidocaine (topical) is typically administered as needed up to 3 - 4 times per day, depending on the strength of lidocaine used to manage pain and specific patient factors[23].

Safety notes: Lidocaine (topical) is for external use only[23]. Health care professionals should be aware that lidocaine is contraindicated in patients with a known history of hypersensitivity to local anesthetics[23]. Lidocaine should not be used on patients with fungal lesions of skin vaccinia[23].

Considerations for special patient populations: Health care professionals should be aware that lidocaine (topical) doses may have to be adjusted for pediatric patients[23].

Gabapentin

Medication notes: Gabapentin is outlined in this section to highlight the use of medications from different medication classes in the management of pain.

Gabapentin belongs to a group of medications referred to as anticonvulsants. Gabapentin is often used to manage pain in patient populations suffering from postherpetic neuralgia[23]. Common dosage forms of gabapentin include: oral capsule, tablet and suspension[23]. Gabapentin may lead to the following side effects: dizziness, somnolence, and peripheral edema[23].

Typical dosing interval: The typical dose and dosing interval for gabapentin when used to manage pain in adult patients is 300 mg three times a day[23].

Safety notes: The recommended maintenance dose of gabapentin when used in adult patients is 1800 mg/day, although dosages over 1800 mg/day have been observed in select patient populations[23]. The use of gabapentin is contraindicated in patients with a known hypersensitivity to gabapentin or its ingredients[23]. Gabapentin may also lead to driving impairment[23].

Considerations for special patient populations: Health care professionals should note that dosage adjustments may be necessary when administering gabapentin to adult patients with compromised renal function[23]. Dosage adjustment in patients undergoing hemodialysis may also be necessary[23]. In addition, health care professionals should be aware that gabapentin may lead to suicidal behavior and ideation[23]. Furthermore, gabapentin may lead to neuropsychiatric adverse reactions in patients 3 - 12 years of age[23]. Gabapentin falls into FDA pregnancy risk category C[23].

Cyclobenzaprine

Medication notes: Cyclobenzaprine is outlined in this section to highlight the use of muscle relaxants in pain management. Cyclobenzaprine belongs to a group of medications referred to as muscle relaxants. Muscle relaxants can be used in pain management as adjunct therapy to relieve skeletal muscle spasms[23]. Cyclobenzaprine oral products are available in immediate-release and extended-release formulations[23]. Common side effects of cyclobenzaprine include: sedation, drowsiness, dizziness, blurred vision and dry mouth[23].

Typical dosing interval: The typical dosing interval for the immediate-release formulation is 3 times a day[23]. The typical dosing interval for the extended-release formulation is once a day[23].

Safety notes: Health care professionals should be aware the recommended duration of therapy for cyclobenzaprine is 2 - 3 weeks[23]. Health care professionals should also be aware the use of cyclobenzaprine is contraindicated in patients with a known hypersensitivity to cyclobenzaprine[23]. Cyclobenzaprine may not be used concurrently

with monoamine oxidase (MAO) inhibitors or within 14 days of their discontinuation[23]. Furthermore, health care professionals should note the following cyclobenzaprine warning regarding serotonin syndrome - the development of a potentially life-threatening serotonin syndrome has been reported with cyclobenzaprine when used in combination with other drugs, such as selective serotonin reuptake inhibitors (SSRIs)[23].

Considerations for special patient populations: Health care professionals should use caution when administering cyclobenzaprine to older adults due to the increased potential for adverse events[23]. The administration of cyclobenzaprine is often avoided in older adult populations. If cyclobenzaprine is administered to older adults, it is typically administered at lower doses and slowly titrated up as needed[23]. Health care professionals should also be aware of the following consideration - research has indicated the plasma concentration of cyclobenzaprine is increased in patients with hepatic impairment[23]. Lastly, cyclobenzaprine falls in pregnancy risk category B[23].

Opioids

Medication notes: Opioids are one of the most powerful and widely used pharmacological means to manage pain. It is believed opioids exert their analgesic effects by affecting opioid receptors within the human body[25]. Common opioids used to manage pain include: morphine, hydromorphone, oxycodone, hydrocodone, codeine, fentanyl, meperidine and methadone. The aforementioned medications are available in a variety of dosage forms including: oral tablets, transdermal patches as well as intravenous and intramuscular products[23,25]. The side effects of opioids are well documented and include sedation, respiratory depression[25], dizziness, nausea, vomiting, constipation, physical dependence and addiction[23].

Typical dosing interval: The typical dosing intervals of opioid medications vary by product and often depend on the product formulation as well as the needs of the patient.

Safety notes: Health care professionals should note the potential side effects of opioids, especially sedation and opioid-induced respiratory depression. Opioid-induced respiratory depression can refer to a decrease in the effectiveness of a patient's ventilatory function after opioid administration, while sedation can refer to a wide range of varying states of consciousness[25]. Sedation is the more common of the aforementioned side effects- however, opioid-induced respiratory depression may be the more dangerous of the two[25]. Many factors such as: opioid class, dose, formulation, route of administration, duration of therapy, concomitant medication

administration, and patient-specific characteristics can influence the occurrence of sedation and opioid-induced respiratory depression[25]. Health care professionals should monitor patients for both sedation and opioid-induced respiratory depression. In addition, health care professionals should be aware of the potential interaction between opioids and benzodiazepines. Benzodiazepines are a class of medications which act on the central nervous system to help reduce anxiety and other conditions[23]. Commonly prescribed benzodiazepines include: lorazepam, diazepam, clonazepam and alprazolam. When used concurrently, opioids and benzodiazepines may lead to increased sedation, respiratory depression, overdose and even death[23]. Both the FDA and the Centers for Disease Control and Prevention (CDC) have issued warnings regarding the potential interaction between opioids and benzodiazepines. Health care professionals should use caution and monitor patients for sedation, as well as respiratory depression, when administering opioids and benzodiazepines concurrently.

Considerations for special patient populations: Health care professionals should note the potential for sedation and opioid-induced respiratory depression when administering opioids to patients over the age of 55 years as well as obese patients and patients with a history of snoring[25].

Health care professionals should also be aware of opioids' potential for abuse and misuse. Abuse can refer to the act of taking a medication with the intent of achieving an euphoric sensation[23]. Misuse can refer to the act of taking a medication at one's own discretion, without following the directions of a health care professional[23]. The main difference between abuse and misuse is the intent of taking the medication. A patient may abuse an opioid to get "high," or a patient may misuse an opioid by intentionally ignoring the prescribed directions. Whatever the case may be, opioid abuse and misuse can be extremely dangerous to patients. They can lead to a host of complications, including overdose and even death. It is widely believed the U.S. is in the middle of an opioid epidemic with millions of Americans abusing and misusing opioids nationwide. As a result, both the FDA and the CDC have taken national initiatives to combat the growing opioid epidemic. With that said, the individual health care professional can also do his or her part to assist in the reduction of the incidents of opioid abuse and misuse by educating patients on the risks of abusing and misusing opioid medications. Health care professionals can also educate patients on the signs of medication abuse, which may include: using a medication more frequently or at higher doses without medical direction to do so, using a medication compulsively or not being able to carry out normal daily activities because of medication misuse[23]. Opioids can be an effective means to manage pain, although opioids do present unique and different challenges when compared to other medications used to manage pain. Health care professionals should be aware of those

differences to effectively and safely administer opioid medications to patients suffering from pain.

Section 3: Summary

Pain can be devastating to an individual's overall health, well-being and quality of life. Furthermore, pain can rob an individual of their ability to independently function and live, which is why pain must be effectively managed. Pain management, typically, begins with pain assessment and patient goal setting. Once health care professionals gain an understanding of a patient's pain, a pain management plan can be designed and developed for the individual patient. Pain management plans can include both non-pharmacological and pharmacological treatment options. Common non-pharmacological treatment options used to safely and effectively manage pain include: physical therapy, massage therapy and psychotherapy. Physical therapy and massage therapy work to restore and rebuild the human body, while psychotherapy, and more specifically, cognitive-behavioral therapy, works to help individuals solve problems and create positive outcomes by replacing unrealistically negative thought patterns with more realistic thought patterns[21]. Common pharmacological treatment options used to manage pain include medications such as: acetaminophen, aspirin, ibuprofen, naproxen, celecoxib, lidocaine, gabapentin, cyclobenzaprine and opioids. Each medication has its own unique dosing, dosing intervals, associated side effects, warnings and considerations. Health care professionals should be aware of each pain medication's characteristics in order to safely and effectively administer pain medications to patients in need.

Section 3: Key Concepts

• Pain management plans should meet the individual needs and goals of each patient.

• Pain management plans may include both non-pharmacological and pharmacological treatment options.

• Non-pharmacological treatment options for pain management include: physical therapy, massage therapy and psychotherapy.

• Pharmacological treatment options for pain management include a variety of different medications form various medication classes.

• Health care professionals should be aware of each pain medication's characteristics in order to safely and effectively administer pain medications to patients.

Section 3: Key Terms

Pain management - the process of using non-pharmacological, pharmacological and/or other means to prevent, limit and treat pain[17]

Pain management plan - the strategy health care professionals use to prevent, limit and treat an individual patient's pain through a combination of varying therapeutic options[16,17]

Physical therapy - the practice of treating a disease, condition, injury and/or pain through physical means[19]

Massage therapy - the practice of treating a disease, condition, injury and/or pain through the physical manipulation of soft tissue[17]

Psychotherapy - the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits[20]

Cognitive-behavioral therapy - the type of talk therapy which can be used to help individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior[21]

Opioid-induced respiratory depression - a decrease in the effectiveness of a patient's ventilatory function after opioid administration[25]

Sedation - a wide range of varying states of consciousness[25]

Abuse - the act of taking a medication with the intent of achieving an euphoric sensation[23]

Misuse - the act of taking a medication at one's own discretion, without following the directions of a health care professional[23]

Section 3: Personal Reflection Question

How can health care professionals safely and effectively manage patient's pain?

Case Review

The following cases were presented at the beginning of this course to highlight the complexity of managing pain. The cases will now be revisited to review the concepts presented in this course.

Case 1

A team of health care professionals meet first thing in the morning to conduct their interdisciplinary rounds. Their patient load is quite full so they begin their rounds right away. The health care team's first patient is a 26-year-old male who has recently suffered multiple rib fractures and minor internal injuries due to a motor vehicle accident. Upon entering the patient's room the patient immediately informs the team that he is in a lot of pain. He then requests "stronger pain meds" because he claims he is in constant pain. A member of the health care team asks the patient to rate his pain on a scale from 0 - 10. The patient responds and tells the health care team that his pain is about a 7 or an 8. The patient then goes on to explain that his pain increases to a 9 when he "moves a lot." The team examines the patient and reviews the patient's current medication list, which includes both Percocet and acetaminophen as needed for pain. Before the health care team leaves the patient's room the patient goes on to explain that he is nervous about his upcoming discharge because he is in pain and he wants to make sure he has "enough pain meds" to take upon discharge. As the health care team exits the patient's room, the patient's mother approaches the team. She follows them away from the patient's room and begins to discuss her concerns about her son's current condition. The patient's mother informs the team that her son has a "drinking problem" and she is pretty sure he has used "drugs" in the past. The patient's mother then goes on to say that she has observed her son when his friends have come to visit him. The patient's mother reports her son does not appear to be in pain when he has visitors. He often smiles, jokes and moves around his bed with ease. The mother then questions how much pain her son is actually in and asks the health care team what medications they plan on keeping her son on upon discharge.

What challenges does the patient in Case 1 present to the team of health care professionals?

The patient from Case 1 presents many challenges to the team of health care professionals. One of the challenges relates to the patient's medications. The patient is on both Percocet and acetaminophen. Percocet is a combination product, which contains both oxycodone and acetaminophen. Health care professionals must be aware that many pain medications, such as Percocet, contain acetaminophen. The challenge for health care professionals when administering acetaminophen with other pain products that contain acetaminophen is to ensure the total daily dose of acetaminophen does not exceed 4000 mg. The recommended maximum total daily dose of acetaminophen, for patients being monitored by health care professionals, is 4000 mg[23]. Therefore, health care professionals should not administer more 4000 mg of acetaminophen to patients within a 24 hour period.

The second, and perhaps the most serious, challenge presented to the team of health care professionals is the patients potential for medication abuse and/or misuse. Opioids, such as oxycodone, may lead to physical dependence, addiction, abuse and misuse[23]. Health care professionals must be aware of those factors when administering opioids to patients, especially if patients have a history of substance abuse or misuse.

How can the team of health care professionals address the challenges put forth by the patient in Case 1?

Course Review

The following questions are presented to further review the concepts found in this course. By reviewing these questions health care professionals can obtain practical knowledge which may be used to safely and effectively administer health care to patients experiencing pain.

What is the primary goal of active listening?

The primary goal of active listening is to obtain meaning. Health care professionals may use active listening skills to effectively assess patients' pain.

What is an open-ended question?

An open-ended question is a question designed to obtain viable information from an individual; open-ended questions are used to avoid "yes" and "no" answers. Health care professionals can use open-ended questions when assessing patients' pain to help their patients open up about their pain and provide useful information regarding their experiences of pain. An example of an open-ended question is as follows: "what makes your pain worse?"

What is the PAINAD scale?

The PAINAD scale can refer to the tool which can be used by health care professionals to assess pain in patients with advanced dementia[15]. There are a variety of pain assessment tools at the disposal of health care professionals. Health care professionals should be aware of the different pain assessment tools and which tools can best help them assess patients' pain.

What is an example of a realistic pain management goal?

An example of a realistic pain management goal for a patient receiving pain therapy may be as follows - "I would like to be able to get a full night's sleep" or "I would like to be able to walk 6 blocks in 5 months time." It is important that health care professionals help patients set realistic pain management goals. Realistic goals can help patients maintain treatment focus, desire and motivation as well as identify what they are working towards.

A 32-year-old female patient is ordered Percocet for pain management. The patient has a known drug allergy to acetaminophen. Should Percocet be administered to the patient?

Percocet is a combination product, which contains both oxycodone and acetaminophen. Patients with known allergies to acetaminophen should not receive acetaminophen products. Health care professionals should always be aware of patients' known drug allergies when administering medications to patients. An allergic reaction to a medication can be dangerous and may lead to a host of complications such as: difficulty breathing as well as swelling of the face, mouth, and throat[23]. Furthermore, health care professionals should be aware of each pain medication's characteristics in order to safely and effectively administer pain medications to patients experiencing pain.

Conclusion

Pain is the body's reaction to actual or potential damage and/or destruction[2]. Pain is a necessary part of the human body's process to avoid trauma and injury. The experience of pain begins when peripherally localized neurons, known as a nociceptors, are stimulated by noxious stimulus, such as tissue damage or extreme pressure. When a nociceptor is stimulated by noxious stimulus it sends messages to the spinal cord[2]. Once the messages are received by the spinal cord they travel to the brain via the spinothalamic tract[2]. The spinothalamic tract takes the pain information up to the thalamus. When the pain information reaches the thalamus, it is then relayed to the somatosensory cortex[2]. Once the pain information reaches the somatosensory cortex, it is processed and interpreted. The human body then reacts based on the interpretation of the pain.

During the interpretation of pain information many factors contribute to the overall experience of pain, including both biological and psychological factors. The biopsychosocial model of pain suggests pain is a dynamic interaction among biological, psychological and social factors unique to each individual4. The biopsychosocial model of pain suggests reasoning for each individual's distinct experience of pain. The biopsychosocial model of pain also may assist in the comprehension of the subjectivity of pain.

Pain is subjective. The experience of pain is an opinion from the point of view/ perspective of the individual. For that reason, clinically, pain is whatever the patient says he or she is experiencing, whenever he or she says it occurs5. The subjectivity of pain along with other factors such as patient reporting and varying types of pain can contribute to the overall complexity of managing pain.

Pain management can be a complex challenge for health care professionals. However, if left untreated, pain may lead to a host of complications including: decreased mobility, muscle atrophy, obesity, decreased cardiovascular health, sexual, hormonal and cognitive dysfunction, as well as insomnia, depression and even suicide[7]. Essentially, untreated pain possesses the potential to completely alter and/or devastate a patient's overall health, well-being and quality of life. Untreated pain can transform a well-adjusted, healthy, active individual into a depressed, inactive, cognitively impaired individual that does not enjoy life. Therefore, it is both the clinical and ethical responsibility of health care professionals to manage patients' pain.

Health care professionals can reduce the complexity of managing pain by conducting effective pain assessments and by establishing patient-centered goals. Once health care professionals gain an understanding of a patient's pain, a pain management plan

can be designed and developed for the individual patient. Pain management plans can include both non-pharmacological and pharmacological treatment options. Common non- pharmacological treatment options used to safely and effectively manage pain include: physical therapy, massage therapy and psychotherapy. Common pharmacological treatment options used to manage pain include medications such as: acetaminophen, aspirin, ibuprofen, naproxen, celecoxib, lidocaine, gabapentin, cyclobenzaprine and opioids.

Finally, pain is common and researchers predict the prevalence of pain will only continue to increase over the next few years. Furthermore, due to a host of different factors, pain can be a challenge to manage. However, with a clear understanding of pain and pain management health care professionals can safely and effectively administer health care to patients experiencing pain.

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