

PAIN ASSESSMENT

● STRUCTURE AND FUNCTION

DEFINITION

The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience, which we primarily associate with tissue damage or describe in terms of such damage, or both.” Recent literature has emphasized the importance of pain and recommended it being the fifth vital sign. Some states in the United States have passed laws necessitating the adoption of an assessment tool and documenting pain assessment in patient charts along with temperature, pulse, heart rate and blood pressure (see Chapter 7).

PATHOPHYSIOLOGY

Several theories attempt to explain the concept of pain. Melzack and Wall in 1965 proposed the gate control model emphasizing the importance of the central nervous system mechanisms of pain; this model has influenced pain research and treatment.

Pain is explained as a combination of physiologic phenomena in addition to a psychosocial aspect that influences the perception of pain.

The pathophysiologic phenomenon of pain is summarized by the processes of transduction, transmission, modulation, and perception.

Transduction of pain begins when a mechanical, thermal or chemical stimulus results in tissue injury or damage stimulating the nociceptors, which are the primary afferent nerves for receiving painful stimuli. Nociceptors are distributed in the body in the skin, subcutaneous tissue, skeletal muscles, and joints. Pain receptors are also located in the peritoneal surfaces, pleural membranes, dura mater, and blood vessel walls rather than in the parenchyma of

visceral organs. Noxious stimuli initiate a painful stimulus resulting in an inflammatory process, which leads to the release of cytokines and neuropeptides from circulating leukocytes, platelets, vascular endothelial cells, immune cells, and cells from within the peripheral nervous system. This results in the activation of the primary afferent nociceptors (A-delta and C-fibers). Furthermore, the nociceptors themselves release a substance P that enhances nociception, causing vasodilatation, increased blood flow, and edema with further release of bradykinin, serotonin from platelets, and histamine from mast cells.

A-delta primary afferent fibers (small-diameter, lightly myelinated fibers) and C-fibers (unmyelinated, primary afferent fibers) are classified as nociceptors because they are stimulated by noxious stimuli. A-delta primary afferent fibers transmit fast pain to the spinal cord within 0.1 second, which is felt as pricking, sharp, or electric quality sensation and usually caused by mechanical or thermal stimuli. C-fibers transmit slow pain within 1 second, which is felt as burning, throbbing or aching and is caused by mechanical, thermal or chemical stimuli usually resulting in tissue damage. By the direct excitation of the primary afferent fibers, the stimulus leads to the activation of the fiber terminals.

The *transmission process* is initiated by this inflammatory process, resulting in the conduction of an impulse in the primary afferent neurons to the dorsal horn of the spinal cord. There, neurotransmitters are released and concentrated in the substantia gelatinosa (which is thought to host the gating mechanism described in the gate control theory) and bind to specific receptors. The output neurons from the dorsal horn cross the anterior white commissure and ascend the spinal cord in the anterolateral quadrant in two ascending pathways (Fig. 8-1):

1. Spinothalamic tract (STT): ascends through the lateral edge of the medulla, lateral pons, and midbrain to the thalamus then to the somatosensory cortex. It

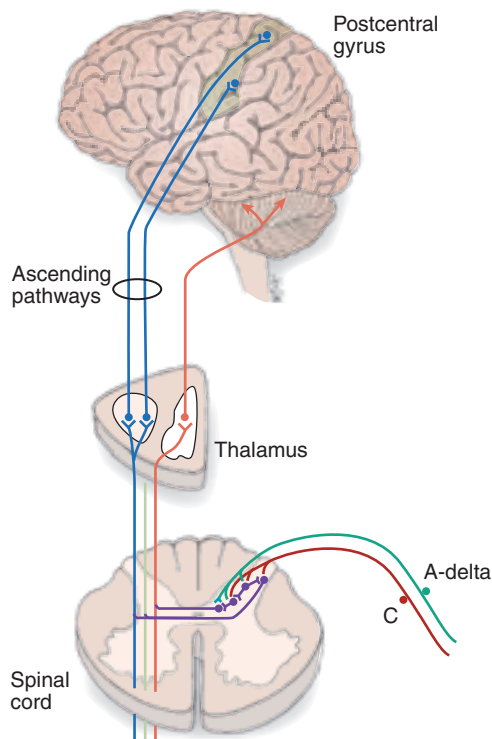


Figure 8-1 Pathways for transmitting pain.

transmits location, quality, and intensity of acute pain and threatening events.

2. Spinothalamic tract (SRT): ascends to the reticular formation, the pontine, medullary areas, and medial thalamic nuclei. It transmits pain information from the brainstem to the limbic area through noradrenergic bundles.

Modulation of pain is a difficult phenomenon. Modulation inhibits the pain message and involves the body's own endogenous neurotransmitters (endorphins, enkephalins, and serotonin) in the course of processing the pain stimuli.

The process of pain *perception* is still poorly understood. Studies have shown that the emotional status (depression and anxiety) affects directly the level of pain perceived and thus reported by patients. The hypothalamus and limbic system are responsible for the emotional aspect of the pain perception while the frontal cortex is responsible for the rational interpretation and response to pain.

CLASSIFICATION

Pain has many different classifications. Common categories of pain include acute, chronic non-malignant, and cancer pain.

- Acute pain: usually associated with an injury with a recent onset and duration of less than 6 months and usually less than a month

- Chronic non-malignant pain: usually associated with a specific cause or injury and is described as a constant pain that persists more than 6 months
- Cancer pain: often due to the compression of peripheral nerves or meninges or from the damage to these structures following surgery, chemotherapy, radiation, or tumor growth and infiltration

Pain is also described as transient pain, tissue injury pain (surgical pain, trauma-related pain, burn pain, iatrogenic pain as a result of an intervention), and chronic neuropathic pain. Also pain is viewed in terms of its intensity and location.

PHYSIOLOGIC RESPONSES TO PAIN

Pain elicits a stress response in the human body triggering the sympathetic nervous system, resulting in physiologic responses such as the following:

- Anxiety, fear, hopelessness, sleeplessness, thoughts of suicide
- Focus on pain, reports of pain, cries and moans, frowns and facial grimaces
- Decrease in cognitive function, mental confusion, altered temperament, high somatization, and dilated pupils
- Increased heart rate, peripheral, systemic, and coronary vascular resistance, blood pressure
- Increased respiratory rate and sputum retention resulting in infection and atelectasis
- Decreased gastric and intestinal motility
- Decreased urinary output resulting in urinary retention, fluid overload, depression of all immune responses
- Increased antidiuretic hormone, epinephrine, norepinephrine, aldosterone, glucagons, decreased insulin, testosterone
- Hyperglycemia, glucose intolerance, insulin resistance, protein catabolism
- Muscle spasm resulting in impaired muscle function and immobility, perspiration

HEALTH ASSESSMENT

COLLECTING SUBJECTIVE DATA: THE NURSING HEALTH HISTORY

There are few objective findings on which the assessment of pain can rely. Pain is a subjective phenomenon and thus the main assessment lies in the client's reporting. The client's description of pain is quoted. The exact words used to describe the experienced of pain are used

to help in the diagnosis and management. Pain, its onset, duration, causes, alleviating and aggravating factors are assessed. Then the quality, intensity and the effects of

pain on the physical, psychosocial, and spiritual aspects are questioned. Past experience with pain in addition to past and current therapies are explored.

HISTORY OF PRESENT HEALTH CONCERN

Review JCAHO standards (Display 8-1) and tips for collecting subjective data (Display 8-2) before assessing the client's subjective experience of pain.

Use the **COLDSPA** mnemonic as a guideline for information to collect. In addition, the following questions help elicit important information.

Following JCAHO standards and tips for collecting subjective data will enhance evaluation of the client's personal experience of pain.

C.O.L.D.S.P.A

CHARACTER: *Describe the sign or symptom. How does it feel, look, sound, smell, and so forth?*

ONSET: *When did it begin?*

LOCATION: *Where is it? Does it radiate?*

DURATION: *How long does it last? Does it recur?*

SEVERITY: *How bad is it?*

PATTERN: *What makes it better? What makes it worse?*

ASSOCIATED FACTORS: *What other symptoms occur with it?*

DISPLAY 8-1 JCAHO STANDARDS FOR PAIN MANAGEMENT

- Recognize patients' rights to appropriate assessment and management of pain.
- Screen for pain and assess the nature and intensity of pain in all patients.
- Record assessment results in a way that allows regular reassessment and follow-up.
- Determine and ensure that staff is competent in assessing and managing pain. Address pain assessment and management when orienting new clinical staff.
- Establish policies and procedures that support appropriate prescribing of pain medications.
- Ensure that pain doesn't interfere with a patient's participation in rehabilitation.
- Educate patients and their families about effective pain management.
- Address patient needs for symptom management in the discharge planning process.
- Establish a way to collect facility-wide data to monitor the appropriateness and effectiveness of the pain management plan.

Joint Commission on Accreditation of Healthcare Organizations. [Retrieved from: <http://www.jcaho.com>]

DISPLAY 8-2 TIPS FOR COLLECTING SUBJECTIVE DATA

- Maintain a quiet and calm environment that is comfortable for the patient being interviewed.
- Maintain the client's privacy and ensure confidentiality.
- Ask the questions in an open-ended format.
- Listen carefully to the client's verbal descriptions and quote the terms used.
- Watch for the client's facial expressions and grimaces during the interview.
- DO NOT put words in the client's mouth.

QUESTION <i>Continued</i>	RATIONALE <i>Continued</i>
Are you experiencing pain now or have you in the past 24 hours?	To establish the presence or absence of perceived pain.
Where is the pain located?	The location of pain helps to identify the underlying cause.
Does it radiate or spread?	Radiating or spreading pain helps to identify the source. For example, chest pain radiating to the left arm is most probably of cardiac origin while the pain that is pricking and spreading in the chest muscle area is probably musculoskeletal in origin.
Are there any other concurrent symptoms accompanying the pain?	Accompanying symptoms also help to identify the possible source. For example, right lower quadrant pain associated with nausea, vomiting, and the inability to stand up straight is possibly associated with appendicitis.
When did the pain start?	The onset of pain is an essential indicator for the severity of the situation and suggests a source.
What were you doing when the pain first started?	This helps to identify the precipitating factors and what might have exacerbated the pain.
Is the pain continuous or intermittent?	This is also to help identify the nature of the pain.
If intermittent pain, how often do the episodes occur and for how long do they last?	Understanding the course of the pain provides a pattern that may help to determine the source.
Describe the pain in your own words.	Clients are quoted so that terms used to describe their pain may indicate the type and source. The most common terms used are: throbbing, shooting, stabbing, sharp, cramping, gnawing, hot-burning, aching, heavy, tender, splitting, tiring-exhausting, sickening, fearful, punishing.
What factors relieve your pain?	Relieving factors help to determine the source and the plan of care.
What factors increase your pain?	Identifying factors that increase pain helps to determine the source and helps in planning to avoid aggravating factors.
Are you on any therapy to manage your pain?	This question establishes any current treatment modalities and their effect on the pain. This helps in planning the future plan of care.
Is there anything you would like to add?	An open-ended question allows the client to mention anything that has been missed or the issues that were not fully addressed by the above questions.

●●➤ PAST HEALTH HISTORY

QUESTION

Have you had any previous experience with pain?

RATIONALE

Past experiences of pain may shed light on the previous history of the client in addition to possible positive or negative expectations of pain therapies.

●●➤ FAMILY HISTORY

QUESTION

Does any one in your family experience pain?

RATIONALE

To assess possible family-related perceptions or any past experiences with persons in pain.

How does pain affect your family?

To assess how much the pain is interfering with the client's family relations.

●●➤ LIFESTYLE AND HEALTH PRACTICES

QUESTION

What are your concerns about pain?

RATIONALE

Identifying the client's fears and worries helps in prioritizing the plan of care and providing adequate psychological support.

How does your pain interfere with the following?

- General activity
- Mood/Emotions
- Concentration
- Physical ability
- Work
- Relations with other people
- Sleep
- Appetite
- Enjoyment of life

These are the main lifestyle factors that pain interferes with. The more that pain interferes with the client's ability to function in his/her daily activities, the more it will reflect on the client's psychological status and thus the quality of life.

COLLECTING OBJECTIVE DATA: PHYSICAL EXAMINATION

Objective data are collected by using one of the pain assessment tools. There are many assessment tools, some of which are specific to special types of pain. The main issues in choosing the tool are its reliability and its validity. Moreover, the tool must be clear and, therefore, easily understood by the client, and require little effort from the client and the nurse.

Preparing the Client

In preparation for the interview, clients are seated in a quiet, comfortable and calm environment with minimal interruption. Explain to the client that the interview will entail questions to clarify the picture of the pain experienced in order to develop the plan of care.

Equipment/Tools

The main tools used are the Verbal Descriptor Scale (VDS), Wong-Baker Faces scale (FACES), Numeric Rating Scale (NRS) and Visual Analog Scale (VAS).

Verbal Descriptor Scale (VDS)

Ranges pain on a scale between mild, moderate and severe (Fig. 8-2).

Wong-Baker Faces Scale (FACES)

Shows different facial expression where the client is asked to choose the face that best describes the intensity or level of pain being experienced; this works well with pediatric clients (see Chapter 29, Fig. 29-3).

Numeric Rating Scale (NRS)

Rates pain on a scale from 0 to 10 where 0 reflects no pain and 10 reflects pain at its worst (Fig. 8-3).

Visual Analog Scale (VAS)

Rates pain on a 10 cm continuum numbered from 0 to 10 where 0 reflects no pain and 10 reflects pain at its worst (Fig. 8-4).

Physical Assessment

During examination of the client, remember these key points:

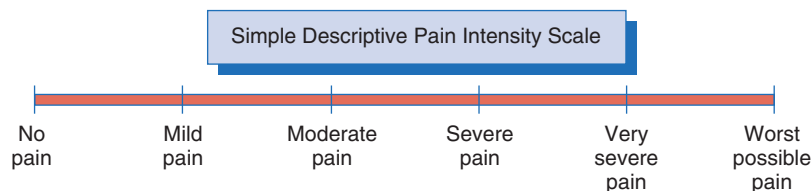


Figure 8-2 Verbal Descriptor Scale (VDS).

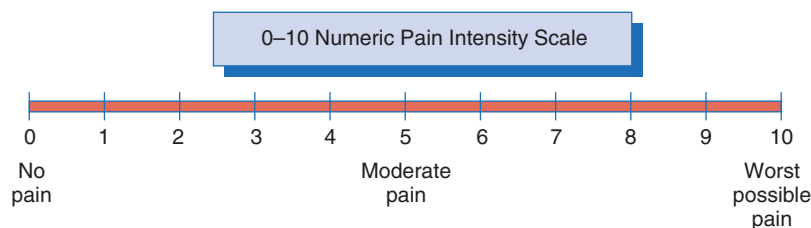
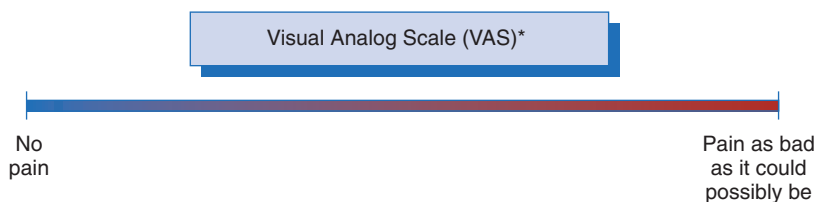


Figure 8-3 Numeric Rating Scale (NRS).



* A 10-cm baseline is recommended for VAS scales.

Figure 8-4 Visual Analog Scale (VAS).

- Choose an assessment tool reliable and valid to your culture.
- Explain to the client the purpose of rating the intensity of pain.
- Ensure the client's privacy and confidentiality.

- Respect the client's behavior towards pain and the terms used to express it.

Understand that different cultures express pain differently and maintain different pain thresholds and expectations.

PHYSICAL ASSESSMENT

Assessment Procedure

Normal Findings

Abnormal Findings

General Observation

Inspection

Observe posture.

Posture is upright when the client appears to be comfortable, attentive, and without excessive changes in position and posture.

Client appears to be slumped with the shoulders not straight (indicates being disturbed/uncomfortable). Client is inattentive and agitated. Client might be guarding affected area and have breathing patterns reflecting distress.

Observe facial expression.

Client smiles with appropriate facial expressions and maintains adequate eye contact.

Client's facial expressions indicate distress and discomfort, including frowning, moans, cries, and grimacing. Eye contact is not maintained, indicating discomfort.

Inspect joints and muscles.

Joints appear normal (no edema); muscles appear relaxed.

Edema of a joint may indicate injury. Pain may result in muscle tension.

Observe skin for scars, lesions, rashes, changes or discoloration.

No inconsistency, wounds, or bruising is noted.

Bruising, wounds, or edema may be the result of injuries or infections, which may cause pain.

Vital Signs

Inspection

Measure heart rate.

Heart rate ranges from 60 to 100 beats per minute.

Increased heart rate may indicate discomfort or pain.

Measure respiratory rate.

Respiratory rate ranges from 12 to 20 breaths per minute.

Respiratory rate may be increased, and breathing may be irregular and shallow.

Measure blood pressure.

Blood pressure ranges from:
Systolic: 100 to 130 mmHg
Diastolic: 60 to 80 mmHg.

Increased blood pressure often occurs in severe pain.

Note: Refer to physical assessment chapter appropriate to affected body area. Body system assessment will include techniques for assessing for pain, e.g., palpating the abdomen for tenderness and performing range of motion test on the joints.

VALIDATING AND DOCUMENTING FINDINGS

Validate the pain assessment data you have collected. This is necessary to verify that the data are reliable and accurate. Document the assessment data following the health care facility or agency policy.

Sample Documentation of Subjective Data



Ms. S.B. is a 68-year-old female patient known previously as having osteoporosis. This visit she presents with low back pain, burning in nature, radiating to the left lower extremity associated with tingling and numbness sensation of the lower extremity. The pain is continuous and exacerbates mostly in the morning and after any movement. Pain is moderately relieved by pain medications and rest. "Pain is interfering with my activities of daily life. I am not able to bathe, dress, and perform the daily household chores. Also, I am not able to concentrate on my work anymore. I cannot sleep at night and I seem not to enjoy anything lately." Using the Visual Analog Scale (VAS), Ms. S.B. rates her pain to be 8/10.

Sample Documentation of Objective Data



Client comes in leaning on her daughter and has difficulty sitting down on the chair. Her posture is not upright and she seems to be irritated. She is frowning and grimacing most of the time. Focusing on her pain, she is unable to concentrate and continue an idea. Her HR = 108 beats/min, RR = 22 breaths/min, BP = 135/80 mmHg.

ANALYSIS OF DATA

DIAGNOSTIC REASONING: POSSIBLE CONCLUSIONS

After collecting subjective and objective data pertaining to the pain assessment, identify abnormal findings and client strengths. Then, cluster the data to reveal any significant patterns or abnormalities. These data may then be used to make clinical judgments about the status of the client's pain.

Selected Nursing Diagnoses

Following is a listing of selected nursing diagnoses (wellness, risk, or actual) that you may identify when analyzing the cue clusters.

Wellness Diagnoses

- Readiness for enhanced spiritual well-being related to coping with prolonged physical pain
- Readiness for enhanced comfort level

Risk Diagnoses

- Risk for activity intolerance related to chronic pain and immobility
- Risk for constipation related to nonsteroidal anti-inflammatory agents or opiates intake or poor eating habits
- Risk for spiritual distress related to anxiety, pain, life change, and chronic illness
- Risk for powerlessness related to chronic pain, healthcare environment, pain treatment-related regimen

Actual Diagnoses

- Acute pain related to injury agents (biological, chemical, physical, or psychological)
- Chronic pain related to chronic inflammatory process of rheumatoid arthritis
- Ineffective breathing pattern related to abdominal pain and anxiety
- Disturbed energy field related to pain and anxiety
- Fatigue related to stress of handling chronic pain
- Impaired physical mobility related to chronic pain
- Bathing/hygiene self-care deficit related to severe pain (specify)

Selected Collaborative Problems

After grouping the data, certain collaborative problems may become apparent. Remember that collaborative problems differ from nursing diagnoses in that they cannot be prevented by nursing intervention. However, these physiologic complications of medical conditions can be detected and monitored by the nurse. In addition, the nurse can use physician- and nurse-prescribed interventions to minimize the complications of these problems. The nurse may also have to refer the client in such situations for further treatment of the problem. Following is a list of collaborative problems that may be identified when obtaining a general impression. These problems are worded as Potential Complications (or PC), followed by the problem.

- PC: Angina
- PC: Decreased cardiac output
- PC: Endocarditis
- PC: Peripheral vascular insufficiency
- PC: Paralytic ileus/small bowel obstruction

- PC: Sickling crisis
- PC: Peripheral nerve compression
- PC: Corneal ulceration
- PC: Osteoarthritis
- PC: Joint dislocation
- PC: Pathologic fractures
- PC: Renal calculi

Medical Problems

After grouping the data, the client's signs and symptoms may clearly require medical diagnosis and treatment. Referral to a primary care provider is necessary.

CASE STUDY



The case study demonstrates how to analyze pain assessment data for a specific client. The critical thinking exercises included in the study guide/lab manual and interactive product that complement this text also offer opportunities to analyze assessment data.

L.B. is a 55-year-old male divorced with two children who works as a financial manager at a company. Two years ago, he experienced difficulty urinating and burning upon urination. Tests revealed prostate cancer. Mr. L.B. underwent prostatectomy followed by cycles of chemotherapy 1 year ago. For the past 8 to 10 months, he has complained of continuous low back pain and leg pain that exacerbates at night and while walking. “I sometimes feel that I will fall down while walking and at night I am awakened by stabbing deep dull pain in my legs. I am not able to sleep at night and during the day I feel tired and unable to proceed with my work, especially meet-

ing my clients.” Mr. L.B. also reports decreased appetite and weight loss of around 6 kg in the past 3 months.

During the physical exam, Mr. L.B. entered the room limping and sat on the chair with his shoulders slumped. He changes his position every 2 to 3 minutes looking anxious and uncomfortable with frowns and grimaces as facial expressions. He rates his pain on average on the Visual Analog Scale (VAS) to be 7/10. Vital signs: HR=110 beats/min, RR=22 breaths/min, BP=135/85 mmHg.

The following concept map illustrates the diagnostic reasoning process.

1) Identify abnormal findings and client strengths

Subjective Data

- Diagnosed with prostate cancer; treated with surgery and chemotherapy 1 year ago
- Low back and leg pain while walking and at night
- Pain is stabbing, deep and dull
- "Not able to sleep at night"
- "I feel tired and unable to proceed with my work"
- Decreased appetite and weight loss
- Rates pain on the Visual Analog Scale (VAS) to be 7/10 on average
- "I am awakened by stabbing pain"

Objective Data

- Entered the room limping
- Sat on the chair with his shoulders slumped
- Changes his position every 2–3 minutes
- Appears anxious and uncomfortable
- Frowns and grimaces
- Vital signs: HR = 110 beats/min, RR = 22 breaths/min, BP = 135/85 mmHg
- ROM tests of legs: Standing: lifts knees only 20 degrees from straight position when asked to march in place. Lying: able to lift each leg with knee unbent 15 degrees before pain starts; lying prone, able to lift each leg only 10 degrees before pain.

2) Identify cue clusters

- Diagnosed with prostate cancer treated with surgery/chemotherapy 1 year ago
- Pain is stabbing, deep and dull; increasing for the past 8–10 months
- Pain on average 7/10 on the VAS
- Continuous low back pain and leg pain that exacerbates at night and while walking

- "I sometimes feel that I will fall down while walking and at night I am awakened by stabbing deep dull pain in my legs"
- Limited ROM or legs w/pain
- Ability to lift knees in standing position for marching/walking decreased

- "Not able to sleep at night"
- Pain exacerbates at night

- Increased respirations and pulse
- Frowns and grimaces as facial expressions
- Sat on the chair with his shoulders slumped
- Changes his position every 2–3 minutes
- "I feel tired and unable to proceed with my work"
- Unable to sleep because of pain

3) Draw Inferences

Client has an onset of pain which is worrying him. Refer for medical investigation and diagnosis

Client has difficulty in mobility affecting his work

Client is awakened by his pain and his inability to sleep is affecting his performance during the day time

Client is uncomfortable and shows facial expressions relating to being distressed and his posture is not straight; vital signs increased in line with discomfort or anxiety

4) List possible nursing diagnoses

Chronic pain increasing r/t unknown cause

Impaired Physical Mobility r/t the pain

Sleep Deprivation r/t prolonged physical discomfort

Anxiety r/t prolonged pain affecting daily activities

5) Check for defining characteristics

Major: 7/10 continuous and increasing deep stabbing and dull pain for the past 8–10 months

Major: Limited ROM limited ability to perform gross motor activities

Major: Daytime drowsiness, decreased ability to function, tiredness, anxious, inability to concentrate

Major: Restlessness, concern over effect of pain on lifestyle, anxious, increased respiration, increased pulse, sleep disturbance, increased blood pressure, awareness of physiologic symptoms

6) Confirm or rule out diagnoses

Confirm the diagnosis because it meets the defining characteristics and is confirmed by the client

Confirm the diagnosis because it meets the defining characteristics and is confirmed by the client

Confirm the diagnosis because it meets the defining characteristics and is confirmed by the client

Confirm the diagnosis because it meets the defining characteristics and is confirmed by the client

7) Document conclusions

Nursing diagnoses that are appropriate for this client include:

- Chronic Pain (increasing) r/t unknown cause
- Impaired Physical mobility r/t the pain
- Sleep Deprivation r/t prolonged physical discomfort
- Anxiety r/t prolonged pain affecting daily activities

Potential collaborative problems include the following:

PC: Prostate cancer metastasis

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