

Perspectives

Recovery Strategies from the OR to Home

In This Issue

Ewing's sarcoma is a rare form of cancer affecting primarily pre-adolescents and adolescents. Ewing's sarcoma is often a devastating disease that is difficult to diagnose and even more difficult to treat. Ms. Harstock, an oncology nurse specialist has worked with several individuals with Ewing's sarcoma and stresses the importance of building a trusting relationship between the patient and the health care provider. Trust often begins with understanding the adolescent's need for autonomy, patient's independence, and the importance of body image. Because many patients with Ewing's sarcoma are unable to legally make decisions about treatment modalities, the nurse must always be the patient advocate, which often means walking a "fine line" between meeting the needs of both parties.

Spinal cord injury remains one of the most devastating injuries nurses will care for across the continuum of care. The National Spinal Cord Injury Association estimates that there are 7,800 new injuries in the US per year and anywhere from 250,000 to 400,000 individuals are living with spinal cord injury or dysfunction. As more patients go on to even longer life expectancies the need for nurses in the home care setting has increased dramatically. Ms. Parisi stresses the role of the home care nurse is to prevent, recognize, and treat the most common complications associated with this injury. **Visit our website: perspectivesinnursing.org**

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Ewing's sarcoma: The Uncommon Bone Cancer

By Jane Harstock, RN, MA, AOCN, CNS



Most cases of bone cancer present clinically as metastatic disease. Two primary bone cancers, Osteogenic sarcoma and Ewing's sarcoma, occur in adolescence and young adulthood. While osteosarcoma occurs more often (20% of all primary bone tumors), the little known Ewing's sarcoma is more aggressive and difficult to treat. Although this type of cancer is rare (2.4 per million), nurses in all settings need to be aware of this lethal disease and its treatment.

Pathophysiology

In 1921, Dr. James Ewing described this neoplasm as a tumor of the shaft of long bones.^{1,2} Ewing's sarcoma (ES) is a highly malignant tumor that originates from nonmesenchymal elements of the bone marrow. Pathologists classify this tumor as a primitive neuroectodermal neoplasm. It is round in shape with round nuclei that have a ground-glass appearance.

ES occurs almost exclusively in people under 30 years of age; the majority present between 10 and 15 years of age.^{2,3} The most common sites of occurrence are the femur and pelvis, but ES can occur in any bone. Soft tissue-originating tumors (extraosseous ES) are rare and very aggressive. Destruc-

tion of bone tissue with reactive new bone formation is a distinctive finding; it has an onionskin appearance on X ray due to the layers of new bone growth. The tumor has a rapid growth rate and metastases occur early and frequently to the lungs. On diagnosis, 15% to 35% have metastatic involvement.^{1,2,3}

Clinical features

Signs and symptoms of ES are often vague and confused with indications of benign conditions, delaying diagnosis and treatment. Pain and swelling of the affected area are the most common symptoms. Low-grade fever and flu-like symptoms are the second most common signs.² Less frequently (15% of cases), patients experience pathological fractures.³ Often, people have symptoms for months before going to a health-care provider.

The five-year survival rate ranges between 54% to 74%. The best predictor of survival is a diagnosis of metastases; when present, there is a poorer prognosis. The primary-tumor site also influences survival. Pelvic tumors have the worst prognosis, possibly due to the presence of large-sized tumors at diagnosis, whereas primary tumors

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Spinal Cord Injury: From Emergency Care To Home

By Valerie V. Parisi RN, CRRN, CMS

Spinal cord injury remains one of the most devastating injuries nurses will witness across the continuum of care. The National Spinal Cord Injury Association estimates that there are 7,800 new injuries in the USA per year and anywhere from 250,000 to 400,00 individuals are living with spinal cord injury or dysfunction. Some 82% of them are male with the median age of 19 years. The most common causes are motor vehicle accidents, acts of violence, falls, and sports. After age 45, falls are the leading cause of spinal cord injury. Some 45% of these injuries are complete with slightly more than half resulting in quadriplegia.¹

The average length of hospital stay for a quadriplegic patient in 1992 was 95 days with an average cost of \$118,900.² The majority of patients are discharged home from either the acute care or rehabilitation setting. Until now, since the chance of recovery has been miniscule, treatment has been directed at preventing and treating potentially life-threatening complications. As more of these patients not only survive, but go on to even longer life expectancies, the need for nurses in the home-care setting has increased dramatically.

Pathophysiology and mechanism of injury

It is important first to look at the spinal cord and review its function. The spinal cord is about 18 inches long and runs from the base of the brain to below the waist. The nerves that lie within the spinal cord are called upper motor neurons. They carry messages back and forth from the brain to the spinal nerves. These spinal nerves branch out from the vertebrae to the other parts of the body and are called lower motor neurons. They have both sensory and motor branches. The spinal cord is the highway connecting the central nervous system to

A patient with an injury above C4 will require life long ventilatory assistance

the peripheral nerves.

Most injuries occur because of a severe indirect force to the vertebral column. Such force may result in sudden flexion, hyperextension, vertebral compression, or rotation of the spinal column. Direct injury can also occur as from a stab or gunshot wound. The mechanism of injury is important to know, as it provides insight into the stability of the spinal injury and therefore the extent of damage to the spinal cord.³

In the early stages after acute injury, the cord is soft, swollen, and mushy with hemorrhages and exudates. This exudate consists of red cells, polymorphs, lymphocytes, and plasma cells. These changes are found several segments above and below the level of injury. This period is known as spinal shock. This edema subsides after several weeks, and the hemorrhages are absorbed. The exudate is replaced by macrophages, and this reparative stage may take up to two years resulting in cavitation and fibrosis.⁴

Injury to the cord can be described as complete or incomplete. Most cervical spine injuries are complete lesions, whereas more lumbar spine injuries are incomplete. If there is chronic and complete transection of the cord after the period of spinal shock, this will result in permanent motor, sensory, and autonomic paralysis below the level of the injury. Incomplete injury results in many different clinical pictures, depending on the

pathways involved.

The level of injury will determine the functional level of the individual. Classification of injury is usually made at the vertebral level involved. A patient with an injury above C4 will require lifelong ventilatory assistance, probably with a tracheostomy tube. A patient with an injury at C7-8 will be able to be independent with some transfers and feeding and will be able to drive with hand controls. An injury at T12 may result in the ability for short-term ambulation with long leg orthoses and crutches.

Emergency care

Immobilization of the neck and spine are critical and must be maintained at all times. Because 50% of all patients with spinal cord injuries also present with other, sometimes more serious, injuries, these must be attended to. A good example is the coexistence of a traumatic brain injury, blunt abdominal trauma, or chest injuries, especially when the cause is a motor vehicle accident. Attention must be paid to the ABCs, as in any emergency situation. The administration of oxygen will reduce the likelihood of edema. Mechanical ventilation may be needed, depending on respiratory effort. Spinal shock is often accompanied by hypotension and bradycardia, and IV fluids and vasoconstrictor agents may be required.⁵

Diagnosis of a spinal cord injury is usually made first by clinical presentation. It is critical to obtain a complete history from witnesses about the cause of the injury. A complete set of radiographs is usually done, though care must be taken not to manipulate the spine while taking lateral and oblique views. CT and CT myelograms are often done, though the manipulation of the patient for the flow of contrast material can also be a risk. MRI has been found to be the best method and allows differentiation between swelling from edema (spinal shock) versus ischemia.⁶

Current research suggests that a high dose of methylprednisone given within eight hours of injury can have beneficial effects in reducing the degree of paralysis. The dosage is 30mg/kg IV followed by a 45-minute pause, then a 5.4 mg/kg continuous infusion for 23 hours. As clinical trials have been so promising, research continues and methylprednisone has become the standard of

care. It is important to note that even in the group that this medication has helped, however, there was still chronic loss of function.⁷

Treatment

Once the patient is hemodynamically stable, attention will then turn to maintaining spinal alignment and, if indicated, surgical decompression. In the case of cervical fracture, an external traction device, such as Halo fixation or Crutchfield tongs, will be applied. In the case of thoracolumbar injury, however, surgical decompression and stabilization with devices, such as Harrington rods, may be tried. Research has shown that there is little effect on the neurological outcome post surgery, but this operation may be essential if spinal cord compression is imminent or there has been a progressive loss of function.

There are two new drugs under investigation at present. One is another steroid called Tirilizade. The other is Sygen or GM-1 Ganglioside. In a small study, Sygen was given within 72 hours of injury and was continued for up to 32 days with an one year improvement in functional recovery. Sygen is still awaiting FDA approval.⁸

Post acute care

Most of these patients are transferred as soon as they are medically stable to an acute rehabilitation unit equipped to provide comprehensive therapy for spinal cord injury.

The rehabilitation setting is crucial in caring for and teaching the patient to care for themselves. This is where an intermittent catheterization program will begin as well as a bowel program. This is also where the patient will learn to be as functionally independent as possible and where equipment will be selected for the patient to use at home.

Discharge planning

Before the patient goes home, the therapy team usually makes a home visit to assess for modifications that will be needed, such as widened doorways, as well as to making decisions about what equipment will be sent home. Power versus manual wheelchair decisions are based on level of injury and functional abilities. Prior to discharge, the patient usually has spent time

in the Independent Living Unit at rehab with their family or has had a home pass to make sure they understand and are able to actively demonstrate all the teaching they have received.

Home care issues - how to deal with complications

According to the National Spinal Cord Injury Association, 92% of these patients are discharged to home. As rehabilitation length of stays decrease due to prospective payment-systems issues, the home-care team will become a more integral part of the rehabilitation process. It is essential that the home-care nurse is able to prevent, recognize, and treat the most common complications associated with this injury.

The first is infection. Urinary tract infections used to be the leading cause of death, but this has now been surpassed by respiratory infections. Most alert patients with spinal cord injury will be on an intermittent catheterization program rather than have an indwelling foley catheter. When an indwelling foley catheter is in place, a legband foley catheter holder with a velcro-type closure made of soft material can be used for added skin comfort. These holders are available with a velcro® locking system to prevent foley movement, thereby reducing the chance of meatal irritation with intermittent catheterization. It is essential that the patient self catheterize at least every 3 to 4 hours to prevent retention and urinary



Figure 1. Abdominal Binder

reflux. The nurse must be alert to signs and symptoms of urinary tract infection such as chills, fever, low-back pain, cloudy urine, burning and increased spasticity. The nurse should report these signs and symptoms immediately and be prepared to collect a urine culture. The home-care nurse should instruct the patient to increase decaffeinated fluids, in the importance of proper leg and catheter bag technique, and in the purpose and timing of medications, such as urinary tract agents and antibiotics.

Respiratory infection is also an issue, especially with the higher level injuries due to ineffective use of the accessory muscles of breathing. The home-care nurse must do a thorough respiratory assessment and teach the use of incentive spirometry and coughing and deep breathing for airway clearance. The abdominal binder (Figure 1) may be used in conjunction with an incentive spirometer to encourage the patient to deep breathe and cough productively.

Autonomic dysreflexia is a true medical emergency and home-care personnel as well as patient and family must be prepared to handle this. It is caused by a sudden increase in blood pressure due to uncontrolled sympathetic nervous system discharge. This occurs with these patients as they have no parasympathetic mechanism to counter this surge. Signs and symptoms are hypertension (200/100 mmHg or greater at times), pounding headache, flushed face, redness above the level of injury and clamminess below, nausea, bradycardia, and sweating above the level of injury and goosebumps below. The most common cause is an overstretched bladder, caused by a blocked catheter, urinary tract infection, or urinary retention. Overdistension of the bowel or overstimulation during the bowel program can also precipitate this, as can any irritant, such as

Questions to ask when choosing a Spinal Cord Injury Program.

- Are they CARF (Commission for Accreditation of Rehabilitation Facilities) accredited?
- Have they been designated as a Model Spinal Injury Center by the National Institute of Disability Research and Rehabilitation?
- Will there be a case manager to help with financial matters and to coordinate communication among the team members?
- Will therapy be at least three hours a day?
- Will the patient have access to a physiatrist as well as specialists in internal medicine, neurology, orthopedics, and urology as needed.
- Is there psychological support for the patient and family?

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of the ribs and distal end of long bones have a better prognosis.¹

Treatment

Treatment for ES is multimodal and involves radiation, chemotherapy, and surgery. There are no staging criteria for ES. Protocols place patients according to primary-tumor site and size, and the presence or absence of metastatic disease.

Radiation

Radiation therapy is most often used as first-line curative therapy. ES is extremely radiosensitive and can be cured with relatively low doses of radiation, if metastasis has not occurred.¹⁰ Radiation is often used preoperatively to reduce tumor size prior to surgical removal. Intraoperative radiation therapy can also be effective against metastatic large tumor masses where local radiation may be too dangerous or ineffective. With intraoperative radiation a targeting cone is used during surgery to direct the high radiation beam to the tumor directly. Patients who are candidates for radiation therapy must meet specific criteria (Table 1).

Radiation can be given externally or internally (brachytherapy) to treat ES. External radiation passes through tissue to the tumor site. High-energy ionizing rays destroy cells directly during division and indirectly by damaging nuclear DNA. Indirect damage occurs when the ionizing particles interact with intracellular water, forming unstable oxygen radicals. These radicals then break one or two strands off the cellular DNA, making the cell incapable of replication.² Normal cells are also affected by radiation, leading to symptoms of local tissue irritation, fatigue, anorexia, and immunosuppression.

Brachytherapy is the use of radioactive implants, such as rods or seeds, which deliver a relatively large amount of radiation to the tumor site over a short period of time. When this type of radiotherapy is used, the person becomes “radioactive” and nurses must protect themselves, visitors, and the hospital environment against overexposure and contamination. Each institution has specific protocols to follow to maintain protec-

Requirements for treatment modalities		
Radiation	Surgery	Chemotherapy
Presence of bulky lesions	Location of mass	Patients with metastatic involvement
Non-operative site (pelvis, spine, and skull)	Patient with impending fractures	Healthy functioning liver and kidneys
Patient has had poor response to chemotherapy	Children younger than 7 years of age	Adjuvant therapy preoperatively
Adjuvant therapy preoperatively	Amputation or limb-saving option	

Table 1

tion. General protective guidelines include wearing radiation tags during nursing care and limiting exposure time to a maximum of 30 minutes per shift.

Chemotherapy

When given as adjuvant treatment, chemotherapy has reduced distant metastasis, especially to the lungs, in patients with ES. Chemotherapeutic agents destroy cells during the cell cycle. Malignant and normal cells go through the same division cycle: a resting phase (G₀), protein synthesis in preparation for DNA synthesis (G₁ (S-phase), protein synthesis in preparation for mitosis and cell division (G₂) (M-phase) (Figure 1).

Chemotherapeutic drugs are most effective against fast-growing malignant cells. Some drugs work during a specific cell cycle (cell-cycle specific). Others work during all phases of the cell cycle (cell-cycle non-specific).

Rapidly dividing normal cells are also adversely effected by chemotherapeutic agents. Affected cells include bone marrow, hair follicles, mucosal lining, and germinal cells. Thus the most common adverse effects of chemotherapy are myelosuppression, alopecia, stomatitis, anorexia and

vomiting, diarrhea, and sterility.

Chemotherapeutic agents are combined to produce the largest tumor kill with the least amount of normal-cell damage. The use of cell-cycle specific agents (vincristine and 5-FU) and cell-cycle non-specific agents (cyclophosphamide and Adriamycin) are examples of combinations that provide this benefit. Recent research findings indicate that alternating chemotherapy agents can be very effective in the treatment of ES.¹

Nursing care of patients receiving chemotherapy include strict medical asepsis, monitoring for signs of bone marrow suppression, administration of agents (antiemetics, antimicrobials, blood products, and colony stimulating factors) to treat the adverse reactions of antineoplastic chemotherapy, emotional support and teaching of the patient and family.

Surgery

Surgery is the oldest recorded form of curative treatment for cancer. Surgery is used in the ES patient for diagnosis, treatment (primary, adjuvant, salvage, and palliative), second-look procedures, and reconstruction. Primary surgery was the preferred treatment for many years; removing both the tumor and large areas around the tumor site often resulted in amputation. Today, advances in limb-saving surgical techniques (an adjuvant surgery) mean that many patients do not need amputation. The tumor site and surrounding bone is removed and donor bone is grafted to replace diseased bone. This type of surgery works extremely well for osteogenic sarcoma, but is less effective in Ewing’s sarcoma, because of the pathology of this cancer. Salvage surgery is done to remove tumor mass when previous treatment has been less effective and palliative surgery is performed to decrease pain and increase quality of life when cure is im-

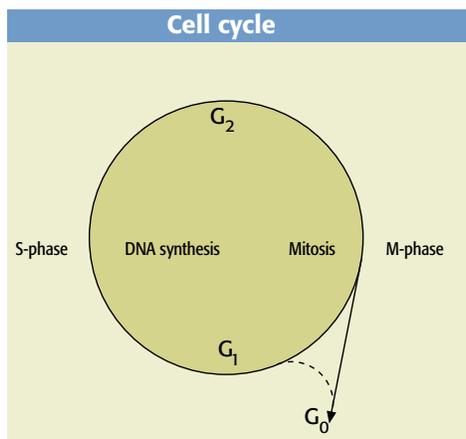


Figure 1

possible. The choice of procedure depends on tumor site and size, the patient's age, the involvement of muscle and connective tissue and distant metastasis.¹ General nursing care of the patient who is having surgery is to prepare the adolescent or young adult and their families for the surgical experience and what to expect before, during, and after surgery.

Preoperative care

Preoperative care focuses on assessment and intervention. Information such as the purpose of the surgery, kind of surgery, what the patient/family knows about the surgery, diagnosis and consequences are important to assess prior to surgery.

Interventions

Promote physical well-being, so the patient can tolerate surgery and have the best postoperative recovery. Assessing and enhancing nutritional status is important for the patient with ES for a number of reasons. They are 1) often still growing, 2) experiencing anorexia associated with other treatment modalities, and 3) have strong food likes and dislikes. Thus, providing adequate calories for growth and healing is imperative.

Promote rest and sleep by relieving pain and anxiety. Oddly, adolescents often want friends around to relieve stress and promote sleep. Conversely, many adolescents and young adults “regress” and need their parents to spend the night. Allow free visiting hours and be understanding of these developmental needs. Various drugs can be used to relieve pain, anxiety, and promote sleep, if necessary.

Teaching is of utmost importance with patients/families experiencing cancer and when giving preoperative care. Information taught should include the type of surgery, general pre- and postoperative activities, procedures and techniques and their rationale, equipment, and self-care strategies to prevent complications of surgery.

Postoperative care

Postoperative care involves caring for the patient's physical and psychological needs.

Physical needs include maintaining adequate oxygenation (pulmonary and cellular) by monitoring vital signs and pulse oximetry, administering oxygen, encourag-

ing coughing and deep-breathing exercises, range of motion exercises, and early ambulation (if possible).

Pain is severe after surgery, so the nurse must assess accurately and administer analgesics freely, even around the clock or by PCA (patient-controlled analgesic) pump. Severe pain will decrease the patient's moving and coughing, which increases the chance for complications. An abdominal binder to help splint the wound and encourage ambulation should be considered. With the pharmaceutical options available, pain control should not be a problem.

Monitor and replace fluid and electrolytes, as necessary. Encourage eating as soon as allowed and treat any nausea and vomiting as ordered by the physician. If there is no order for antiemetics, then notify the physician prior to any episode of nausea and vomiting.

Psychological needs include determining the client and family's anxiety, ensuring a supportive environment, so they may feel secure, providing adequate information, and being aware of a potential body image crisis. More depth on emotional and educational support will be discussed below.

Nursing care

Emotional and educational support

Autonomy, independence, and body image are very important issues with patients experiencing treatment for Ewing's sarcoma. Many factors can contribute to patient compliance with medical and nursing treatment (Table 2).

Adolescents are learning to problem-solve and think abstractly but lack experiences that give them insight into the consequences of their actions and decisions.^{2,4} They want to be independent and distance themselves from authority figures, including health-care professionals. Because adolescents and young adults are often in the “here and now”, they only value experiences that affect their lives today, not tomorrow or next year. The nurse's role is to promote communication, education, and trust (specific interventions as described in the above sections). This foundation allows the ES patient to feel independent and autonomous, while going through the stresses and changes caused by their disease and its treatment.

Because many patients with ES are un-

Factors related to adolescent and young adult compliance with treatment.

General	Health beliefs, inconvenience, cost, cultural factors, trust in the health-care system, perceived severity of disease, susceptibility, support systems
Age-specific	Cognitive level, need for independence, body image, self concept, peer pressure, risk-taking behaviors

Table 2

able to legally make decisions about treatment modalities, a major stressor develops between the patient and family. Often the nurse experiences the brunt of anger from both the patient and family. The nurse must always be the patient's advocate, which often means walking a “fine-line” between meeting the needs of both parties. Parents, many times, do not want their child to know and worry about their diagnosis. Remember that the family is grieving and needs your understanding and respect. However, adolescents know when they are not well and have cognitive abilities to assist in decision-making. They complain about being treated like a child. A nursing care conference with the nursing staff, physicians, social worker, and family can be organized and all options, including the consequences of the patient not knowing the diagnosis or treatment, can be discussed. Knowledge enables the adolescent/young adult and the family to make informed decisions.

Body image is a very important and significant concern for adolescents and young adults not experiencing ES. With the possibility of alopecia from chemotherapy, burns from radiation, and scarring or amputation from surgery, body-image concerns become paramount. Many young patients have resisted treatment because of these fears.

Interventions, such as clear communication, respect, offering hats and scarves, providing therapeutic skin care to counteract local skin irritation and postoperative changes, and discussing prosthetic options with the client, family and physician can enable the patient to deal with their anger, grief, and loss. Informing the adolescent and young adult that many changes are temporary and strides in surgical techniques and treatment modalities may decrease the disfiguring effects of ES will give patients hope.

Promotion of hope must be continuous, as this intervention will be very beneficial in improving the quality of life and survival of these patients.

Complications of treatment

Myelosuppression can occur during all phases of the treatment regime. Many interventions can prevent this common complication. Medical interventions include colony stimulating factors (CSF) to promote growth of white blood cells (WBCs), red blood cells (RBCs), and platelets:

WBCs: filgrastim (Neupogen) and sargramostim (Leukine)l

RBCs: erythropoietin (Epoen)

Platelets: thrombopoietin and megakaryocyte growth and development factor (MGDF), which are still in research trials.⁶

Even with the expanded use of CSF, patients often need transfusions of packed RBCs and platelets. Antimicrobial therapy and protective isolation are used during acute episodes of infection.

Nursing focuses on preventing infection and promoting rest, safety, and nutrition. Interventions include practicing and teaching good handwashing, oral and skin care, safety to prevent injury, allowing diets that reflect the patients food preferences, and realistic activity expectations.¹⁰

Fatigue is a common effect of ES and its treatment.⁸ Many cancer patients list fatigue as one of the more debilitating long-term effects that strongly impacts their quality of life.⁷ Adolescents and young adults are active and as mentioned before, still growing, which causes normal fatigue. Surgery, chemotherapy, radiation, anemia, and increased nutritional demands all combine to increase fatigue.¹¹

Nursing interventions include promoting realistic activity expectations and frequent rest periods, administering nutritional supplements, and allowing expressions of anger about limitations and restrictions.

Pain is one of the most feared consequences of cancer and its treatment. Accepting a patient's expression of pain, promoting pain relief, and preventing painful episodes are main nursing interventions. The use of therapeutic communication, drug regimes, and relaxation techniques (favorite music, imagery, and massage) are important in the care of these patients.

End-of-life issues often take precedence in the minds of patients and families experiencing ES. Adolescents and young adults understand the concept of death but often deny that it will happen to them. They have great difficulty in accepting and coping with the idea that they may die. These patients are angry, reject support, and struggle with the immensity of their loss. Once the concept of dying is accepted, patients want to have an active part in planning their funeral and the disposing of prized possessions.³

Often, family members experience great difficulty in dealing with the patient's need to plan and organize their impending death. At this point, the nurse may decide to expend more emotional support on the family and be an advocate for the patient.

Nurses and other health-care professionals are often uncomfortable with death and dying.⁹ Dying alone is the second most common fear (after pain) of the cancer patient. Honesty and empathy are the best interventions for nurses to use with ES patients who are dealing with end-of-life issues. Nurses need to be honest with themselves, the patient, and families. It is part of the nurse's role to assess the patient's and family's support systems and assist in the plan for a peaceful death. One of the most important and difficult interventions while caring for these patients is to be compassionate and open-minded about the needs and desires of patients and their families. No person needs to die in pain or alone.

Conclusion

Caring for adolescents and young adults with ES can be complicated, stressful, challenging, and rewarding. Young people are eager to learn and anxious about their bodies and health. Use these developmental strengths to plan nursing care. With the development of new treatments and use of nursing interventions, these patients can live fulfilling and meaningful lives.

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tight clothing. The key is to first remove the cause. If the urine bag is kinked, straighten it. If the patient is distended, disimpact (carefully). If this does not bring the blood pressure down, the patient should receive medical attention immediately and may need antihypertensive medication to prevent a brain attack or myocardial infarction.

Pressure sores are one of the most serious complications and are eminently preventable. The home-care nurse is in a good position to teach the proper use of air mattresses, pressure cushions (never donut shaped), positioning, and skin inspection. If a decubitus ulcer develops, a wound care specialist (ET nurse) should be consulted immediately to ensure the use of appropriate agents. Attention to nutrition is also crucial and a dietician should be consulted as needed in the home-care setting, as caloric needs increase post injury.

Another complication is spasticity, which can interfere with transfers and cause falls. Some spasticity is good, as it can aid muscle tone, however, too much can interfere with self help goals and increase the likelihood of skin breakdown. Medications like Baclofen have become increasingly standard. It is also important to teach the importance of lying prone as directed by the rehabilitation team.

Other complications that the home-care nurse must be aware of are deep venous thrombosis and orthostatic hypotension. An abdominal binder has been demonstrated to reduce the incidence of orthostatic hypotension. TED stockings can prevent both of these complications. It is also important to pay attention to safety concerns when transferring these patients and to be sure to allow time between positional changes. Spinal cord injury patients may be discharged on low molecular weight heparin (Lovenox) or Coumadin.

Psychosocial issues, such as sexuality and vocational issues, must be addressed for a return to productive life. It is essential for the home-care nurse to be able to make the appropriate referrals and to maintain communication with the rehabilitation team, so that these issues can be addressed by the appropriate team members. Other concerns, such as pain management and heterotopic

ossification also may require referral to the appropriate medical professionals. The patient should maintain a relationship with the rehabilitation center so that follow-up can be maintained. He/she should see the physiatrist at least every 3-6 months and should also see urologist on a regular basis. The home care nurse is in a position to ensure that this continuum is maintained. If financial and reimbursement concerns surface, there should be a referral early in the case to medical social work.

Conclusion

Spinal cord injuries continue to be a common cause of disability in this country. New treatment techniques and outcomes-oriented rehabilitation systems have offered new hope for a productive life.

Nurses across the continuum of care play a vital role in caring for these patients and in teaching patients and their families how to develop regimes that will prevent complications and improve the quality of life.

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After reading this educational offering, the reader should be able to:

1. Identify two signs and symptoms of Ewing's sarcoma.
2. List three predictors of survival in patients diagnosed Ewing's sarcoma.
3. Identify two treatment modalities presently in use with patients with Ewing's sarcoma.
4. Explain how the developmental tasks of adolescents and young adults may influence their response to Ewing's Sarcoma.
5. Describe two complications of treatment of Ewing's sarcoma and corresponding nursing interventions.

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1. Which of the following is the most common site of metastasis of Ewing's sarcoma?

- a. bone marrow
- b. lymph nodes
- c. brain
- d. lungs

2. Which of the following are common signs and symptoms of Ewing's sarcoma?

- a. Abdominal pain and vomiting.
- b. Blurred vision and headaches
- c. Low grade fever and flu-like symptoms.
- d. Frequent cough and hemoptosis.

3. Treatment modalities for Ewing's sarcoma include which of the following?

- a. surgery
- b. chemotherapy and biotherapy.
- c. radiation and biotherapy.
- d. chemotherapy, radiation and surgery.

4. The five year survival rate for persons experiencing Ewing's sarcoma is which of the following?

- a. 25 - 36%
- b. 40 - 64%
- c. 48 - 70%
- d. 54 - 74%

5. Radiation therapy is most often used in patients with Ewing's sarcoma to do which of the following?

- a. as first-line curative therapy
- b. as palliative therapy
- c. to shrink tumor preoperatively
- d. postoperatively to treat tumor bed

6. Which of the following differentiates Ewing's sarcoma from other bone cancer?

- a. curable by surgical intervention
- b. extremely sensitive to radiotherapy
- c. generally treated with brachytherapy
- d. resistant to cell-cycle non-specific chemotherapy

7. Which approach will best help an adolescent ES patient to develop independence?

- a. educating the patient to participate in self-care
- b. developing a buddy system with another patient
- c. having parents/guardians rigorously monitor lab tests
- d. validating information with parents/guardians that the patient gives you

8. Which of the following age-specific factors most influence an adolescent with alopecia?

- a. need for independence
- b. risk-taking behavior
- c. cognitive ability
- d. body image

9. Which of the following is the most influential factor in promoting patient compliance?

- a. need for independence
- b. relationship with authority
- c. development of self-control
- d. trust in health-care provider

10. Which of the following is a critical adverse effect from both radiation and chemotherapy treatment in patients with Ewing's sarcoma?

- a. alopecia
- b. diarrhea
- c. myelosuppression
- d. nausea and vomiting

Mark your answers with an X in the box next to the correct answer

1 A B C D

3 A B C D

5 A B C D

7 A B C D

9 A B C D

2 A B C D

4 A B C D

6 A B C D

8 A B C D

10 A B C D

Participant's Evaluation

1. What is the highest degree you have earned? 1. Diploma 2. Associate 3. Bachelor's 4. Master's 5. Doctorate
Using 1 =Strongly disagree to 6= Strongly agree rating scale, please circle the number that best reflects the extent of your agreement to each statement.

	Strongly Disagree				Strongly Agree
2. Indicate to what degree you met the objectives for this program:					
■ Identify two signs and symptoms of Ewing's sarcoma.	1	2	3	4	5 6
■ List three predictors of survival in patients diagnosed Ewing's sarcoma.	1	2	3	4	5 6
■ Identify two treatment modalities presently in use with patients with Ewing's sarcoma.	1	2	3	4	5 6
■ Explain how the developmental tasks of adolescents and young adults may influence their response to Ewing's sarcoma.	1	2	3	4	5 6
■ Describe two complications of treatment of Ewing's sarcoma and corresponding nursing interventions.	1	2	3	4	5 6
3. Have you used home study in the past? <input type="checkbox"/> Yes <input type="checkbox"/> No					
4. How many home-study courses do you typically use per year? _____					
5. What is your preferred format? <input type="checkbox"/> video <input type="checkbox"/> audio-cassette <input type="checkbox"/> written <input type="checkbox"/> combination					
6. What other areas would you like to cover through home study? _____					

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