Gerontology Nursing Paper

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Client Profile

K.C. is a fifty-six year old female, who was admitted to the facility on 2/09/2012 with Guillain-Barre syndrome. She arrived to the emergency room with complaints of leg weakness, and numbness and tingling (parathesia) in her hands, feet, and of the tongue that has been worsening over the course of three to seven days. She had been taking prednisone and Avelox for bronchitis and early pneumonia prior to these symptoms appearing. K.C. is allergic to the drug Cipro. At this time she does not have an advance directive, therefore making her status a full code. She is married to her husband, Steven, and has no children. K.C. currently does not have a job, and considers herself a homemaker. K.C.'s weight is 209 pounds, and she is on a regular diet supplemented with Boost. Her activity level is up with assistance and uses a slide board with two employees assisting along with a gait belt to move from bed to wheelchair, or to commode. K.C. has a history of melanoma, follicular lymphoma, and a vitamin D deficiency.

Medical Diagnoses

Pathophysiology

Guillain-Barre syndrome (AKA acute idiopathic demyelinating polyneuropathy, GBS) is a form of acute polyneuritis that progresses rapidly. GBS is marked by flaccid paralysis lasting between four to eight weeks, and usually occurs after a viral or bacterial infection, which most often is located in the gastrointestinal tract or lungs (Black & Hawks, 2009, p. 1914). It is considered a temporary syndrome of unknown origin, and it involves inflammation and the degeneration of the myelin sheath of peripheral nerves, which interferes with the nerve impulses (Black & Hawks, 2009, p. 1914). There are three phases to GBS, first is the acute phase lasting around 4 weeks, and includes onset of and the rapid progression of the disease. The second phase

is the plateau, and it may last from days to weeks. This is when the symptoms are not getting worse, but they are not improving either. The third phase is the recovery phase which occurs gradually. Around 20% of individuals may sustain some neurological deficit (Black & Hawks, 2009, p. 1915). Some individuals may even take up to two years to fully recover, and may still need assistance with ADLs (Lugg, 2010). Signs and symptoms include numbness, tingling, incontinence, difficulty swallowing, and respiratory problems (Black & Hawks, 2009, p. 1915). The signs and symptoms start furthest away from the middle of the body, so at the feet and works in an ascending path. In order to diagnose GBS, a history and physical is obtained, electrophysiological studies, and the cerebral spinal fluid in examined for increased protein, with little to no white blood cells in it (Black & Hawks, 2009, p. 1915). Treatment and management of GBS is focused on supportive care, and assessing respiratory, cardiovascular, and vital signs to make sure the disease is not progressing. This includes assessing for the gag reflex and swallowing due to cranial nerves being affected (Lugg, 2010). Plasma exchange helps shorten the client's recovery time, even though the reason for it working is not well understood. It is thought to work by removing antibodies and replacing fluid loss with albumin (Lugg, 2010).

Follicular lymphoma is categorized as a non-Hodgkin's lymphoma, which is a cancerous tumor that originates in the lymphatic system. It occurs when an "abnormal proliferation of neoplastic lymphocytes" happens over a span of months to years (Black & Hawks, 2009, p. 2128). The affected cells are diverse in their looks, origin, and in the way they behave. The highest risk groups are white men and clients with AIDS, which K.C. is part of neither. To date there are no known genetic, ethnic, or dietary risk factors known, however immunodeficiency clients are at a higher risk (Black & Hawks, 2009, p. 2128). The signs and symptoms of follicular lymphoma occur due to a "mechanical obstruction" of the lymph nodes, leading to

what is known as lymphadenopathy or enlarged lymph nodes (Black & Hawks, 2009, p. 2128). The most common locations are the cervical, axillary, inguinal, and femoral lymph nodes (Black & Hawks, 2009, p. 2129). Some clients with swelling of the lymph nodes may have pain associated with it. It may spread to extranodal areas, which include bone, nasopharynx and gastrointestinal tracts, thyroid gland, and the soft tissues of the body (Black & Hawks, 2009, p. 2129). Diagnostic tests are done to rule out other causes, and they include a CBC, ESR, and a peripheral smear. Biopsy of the lymph nodes may be done to confirm the diagnosis along with a MRI or CT scan to stage the lymphoma. Liver and kidney function tests are performed in order to help determine whether there is any extranodal involvement, and a bilateral bone biopsy can show if the cancer has spread to the bone. After a diagnosis is made the client may have to take medications and/or have radiation or chemotherapy depending on the location and the involvement of the lymphoma.

Malignant melanoma is cancer of the melanocytes, or commonly known as skin cancer. The most common cause of melanoma is exposure to UVL, and is the most deadly form of skin cancer (Black & Hawks, 2009, p. 1221). At this time it is unknown what causes the melanocytes to change into melanoma. There are multiple risk factors to melanoma, which are fair complexion, excessive childhood sun exposure, sun burnt with blistering, increase in the number of dysplastic moles, a family history, and the presence of a mole that is changing (Black & Hawks, 2009, p. 1221). The cardinal sign of skin cancer is a change in a skin lesion. According to Black and Hawks, this is marked by the ABCD changes in a mole, which are asymmetry, border notching, color variegation (black, brown, red, or white colors), and a diameter that is greater than 6 mm (2009, p. 1222). Other changes that indicate a possible melanoma is bleeding, itching, color change, lymph node that is palpable, ulceration, and doubling in size within 3-8

months time. Malignant melanomas are usually managed and treated with removal of the suspected lesions or mole.

Vitamin D is important in the absorption of calcium in the intestinal tract and reabsorption in the kidneys, bone and teeth mineralization, as well as moving needed calcium and phosphorus from the bone in order to be used by the body (Craven & Hirnle, 2009, p. 950; Taber, Thomas, & Venes, 2001, p. 2299). According to Pagana and Pagana, vitamin D also inhibits the parathyroid gland from releasing the parathyroid hormones, promotes phagocytosis, antitumor activity, and other immune system functions (2011, p. 1041). Vitamin D is produced in the skin with only about 5-15 minutes of sun exposure to the face, arms, hands, or back (Pagana & Pagana, 2011, p. 1040). However, people who live in the northern states and clients with higher melanin in their skin will require more sunlight to reach the recommended amount (Pagana &Pagana, 2011, p. 1040). Vitamin D may also be consumed in food, and this is converted into active vitamin D in the liver and kidneys. A deficiency in vitamin D may be due from inadequate sun exposure, food intake, absorption issues, or kidney or liver disorders (Pagana & Pagana, 2011, p. 1041). Signs and symptoms of a deficiency in vitamin D are softening of the bone, joint pain, muscle tetany, or fatigue (Black & Hawks, 2009, p. 557). Diagnosis is made by drawing blood from the client. Management of vitamin D deficiencies is to increase the client's intake of Vitamin D through supplements, increase sun exposure, and/or increase dietary intake. Foods high in vitamin D are fish and fortified dairy products.

Concept Care Map

Please refer to concept care map.

Medications

hydrocodone/ acetaminophen (Vicodin) PO 17 gm qd
enoxaparin (Lovenox) SC 40 mg qd
gabapentin (Neurontin) PO 300 mg BID
cholecalciferol (vitamin D_3) PO 1000 unit qd
polyethylene glycol (MiraLax) PO 17 gm qd PRN
vitamin E (E-Vitamin) PO 200 units/day
aspirin PO 81 mg qd
bisacodyl (Fleet laxative) RS 10 mg q 12 hrs PRN
lorazepam (Ativan) PO 0.5 mg q 4 hrs PRN
docusate sodium (Colace) PO 100 mg BID
acetaminophen (Tylenol) PO 650 mg q 4 hrs PRN

IV Sites/Fluids/Rate

None at this time.

Past Medical /Surgical History

Melanoma

Vitamin D deficiency

Follicular lymphoma

Recent bronchitis and early pneumonia

Hysterectomy

Anxiety

N20020 Conceptual Care MapStudent Name

Christina M Grable Client Initials **K.C.** Date **2/21/2012**
Age **56** Gender: **F** Room # **434-1** Admit Date: **2/9/2012**
CODE Status **Full Code** Allergies: **Cipro**
Diet **Regular** Activity **Up with 2-3 assist** Braden Score **14/20**

Admitting Diagnoses/Chief Complaint

Guillain-Barre/ Bilateral numbness and tingling of upper and lower extremities and of tongue, with weakness in legs.

Assessment Data

T: 98.1, HR 80, BP 136/76, Resp 20, Pox 92% RA, Pain 1/10

K.C. is A & O x 3.

Lung sounds are clear with regular heart rate and rhythm.
Eyes are clear with PERRLA +2.
Oral membranes are pink and moist.
BS x 4 and abdomen is soft and non-tender.
Radial and pedal pulses are both strong and equal bilaterally (2+).
Skin turgor is <3 seconds.
Skin is normal, dry, and intact with reddened areas on back and coccyx. Bilateral bruises on lower extremities.
Bilateral +1 edema on lower extremities.
Nail beds are pink with capillary refill <3 seconds.
Upper extremities are strong and equal.
Lower extremities are bilaterally weak.
K.C. states that she has “numbness and tingling in my hands and feet, and tongue.”

Lab Values

Na: 145 WNL

K: 4.1 WNL

Cl: 110 ↑

CO2: 27 WNL

Glucose: 123 ↑

BUN: 16 WNL

Creat: 0.75 WNL

Pre albumin: 18 ↓

RDW: 15.1 ↑

Diagnostic Test Results

MRI of head was negative.
MRI of cervical spine showed advanced degenerative spondylosis at the C4-C5 and C6-C7. With severe central canal moderate-severe bilateral foraminal stenosis.
MRI of thoracic spine showed degenerative changes
Lumbar puncture was negative and fluid was clear and colorless.

Treatments

Fall risk prevention
Use slide board when moving client from bed to chair to commode, etc.
Turn every 2 hours to prevent skin breakdown.
Bowel and Bladder training q 2 hrs
ET mix to buttocks q shift
K-pad/warm moist heat to right scapular area q shift for pain/burning sensation.

Assessment Data

Upon entering K.C.'s room, I noticed that she had her husband in the room visiting. The client was appeared to be a little tired throughout the assessment. K.C. was alert and oriented to name, time, and place (A&O x 3). Her blood pressure was 136/76, pulse was 80 beats per minute, respirations 20, pulse oximetry reading was 92% on room air, and her oral temperature was 98.1°F. K.C. rated her pain as 1/10 with the VAS pain scale. Her pain was burning and located in her right scapular area. K.C. refused any interventions for her pain at that time. Respirations were clear with regular heart rate and rhythm, and no cough present. Her skin assessment revealed reddened areas on her back while assessing her lung sounds, and her arms. Her lower extremities revealed bilateral +1 edema and bruises. There was also a reddened area on her coccyx in which ET mix is being applied. The rest of her skin was warm, dry, and intact. K.C.'s skin turgor was under 3 seconds, with nail beds pink and cap refill less than 3 seconds. Radial and pedal pulses were strong and equal bilaterally (+2). K.C. upper extremities are bilaterally equal and strong, and her lower extremities are bilaterally weak. She has numbness and tingling mostly in her feet, but also in her hands and her tongue. Her abdomen was soft and non-tender, with normal bowel sounds present in all four quadrants. K.C.'s last bowel movement was two days prior. She does not have any hearing aids, and she complained of no drainage from her ears. Eyes were clear, with pupil's equal, round, and reactive to light + 2 (PERRLA). K.C. does wear glasses for reading, but not contact lenses. Speech was clear, and mucous membranes were pink and moist, with no upper or lower dentures present. K.C.'s Braden score was 14/23, which means that there is a moderate risk for a pressure ulcer to develop. Her Glasgow Coma scale score was 15/15, so she is not in a coma at this time.

Gordon's Functional Assessment

STUDENT NAME CHRISTINA M. GRABLE DATE 2/21/2012

*Include client's admission date, occupation, diet, religion, activity, allergies, current meds, treatments, surgery, and diagnostic test results under the appropriate functional health pattern.

Client Profile (summarize events leading to day you cared for client):

When we arrived on the floor on 2/21/2012, I noticed that my client was not in her room. I went to the therapy room to read the board, and realized that K.C. was in therapy until four o'clock. I decided to utilize this time to gather information on K.C. Once she arrived in her room and got settled in, I entered and introduced myself and told her how long I would be there and what the plan for the evening was. She was sitting up in her wheelchair with her tray table beside her. Her husband and friend were visiting. I proceeded with my assessment and documented it shortly afterwards. After K.C. had dinner and her friend left I proceeded with the questions that I was unable to find in the computer system.

DATABASE

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
HEALTH-PERCEPTION HEALTH-MANAGEMENT (general survey, perceived health and well-being, self-management strategies, utilization of preventative health behaviors and/or services.	K.C. states that she felt "normal prior to getting bronchitis" and "I didn't understand what was happening to me, because I took my medications like I was supposed to."	Oral temperature: 98.1°F, heart rate: 80, BP: 136/76, Respirations: 20, Pulse ox: 92 on room air. Client appears well-groomed and has clean clothing on. Demonstrates knowledge of Guillain-Barre syndrome.	Client's chart states admission date as 2/9/2012. Client's health history includes melanoma, follicular lymphoma, vitamin D deficiency, and hysterectomy.	Effective patterns of health perception and management. Potential barriers regarding health management due to decreased mobility and sensation in limbs.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
NUTRITIONAL – METABOLIC (patterns of food and fluid consumption, weight, skin turgor, nails, hair, etc.)	K.C. stated that she was "looking to lose weight since she gained it after menopause." Client states that she has "no nausea, vomiting, or difficulty swallowing." Client states that the "food is not always that good." Client states that she "does not have any dentures."	During my assessment clients mouth was pink and moist. She does not have any IV's at this time. Her skin is pink, warm, and dry, with good skin turgor. There is bilateral lower extremity edema of +1. Reddened area on the coccyx, back, and bilaterally on upper extremities. Her oral temperature is 98.1 °F. Client ate 100% of her dinner.	Client's chart says that she eats independently. She is on a regular diet with diabetic Boost.	Effective pattern in regards to nutrition intake.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
ELIMINATION (patterns of excretory function and elimination of waste; relevant labs, medications, impacting, etc.	Client states bowel habits as not being very consistent lately. Client states having constipation worsened since being in the hospital. Client stated having occasional constipation all her life. Client states urinating 3-4 times a day, without having any pain or burning.	BS x 4, abdomen soft and non-tender during assessment. Client did use the commode. She voided, but had no bowel movement at that time. Urine was clear and yellow.	In client's chart it says last bowel movement was two days prior. K.C. is ordered polyethylene glycol (Miralax), bisacodyl (Fleet laxative), phosphate/ biphosphate (Fleet Enema), and docusate sodium (Colace) for constipation relief.	Effective voiding pattern. Ineffective bowel movement pattern may be due to medication side effects, and/or myelin sheath damage from current condition.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
ACTIVITY-EXERCISE (patterns of exercise and daily living, self-care activities include major body systems involved such as cardio, respiratory, musculoskeletal)	Client states that she wants to be able to walk again and get out of hospital. K.C. states that she cooks all the meals at home and does the majority of the grocery shopping, and cleaning.	K.C. is unable to walk due to weakness in her legs. Her posture is normal. She is sitting in her wheelchair, and the bedside commode and slide board are in the corner of her room. K.C. is able to pull herself with the slide board to use the commode, with someone holding the board from sliding. Pulse is regular and strong (radial 80, and apical 86). BP 136/76 in right arm. Cap refill was brisk, Nails were normal color, hair is normal, and skin was warm dry and intact, with reddened area on coccyx, back and arms. Braden score 14/23.	Client's chart states that her activity level is up with assistance, and max assist of 2 with slide board. Chart states pt needs someone to help her with bathing and dressing. Client has a slide board to help her with transferring from commode, wheelchair, and bed.	Effective pattern in activity and exercise. Client does what she is able to do. K.C. appears to want to do as much for herself as she can.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
SLEEP-REST (patterns of sleep, rest, relaxation, fatigue)	Client states "I wake-up several times a night." Client states "I do not take naps" and "does not feel rested." Client states that she "sometimes read or change position to try to fall asleep."	Client appeared slightly tired throughout interview.	No evidence found in chart.	Ineffective pattern in sleep and rest. Potential barriers are being at the hospital and anxiety related to current condition. K.C. is obviously stressed about her situation, along with anxiety that is most likely keeping her up at night, on top of the noises of a hospital.
COGNITIVE-PERCEPTUAL (patterns of thinking and ways of perceiving environment, orientation, mentation, neuro status, glasses, hearing aids, etc.)	Client states o f having no memory issues. Pt states of feeling tired and somewhat anxious. Client states pain as 1/10, located at right shoulder, and had for around 1 year. Client states numbness and tingling in hands, feet, and tongue.	A&O x 4. Appears to have no memory issues. Pupils are brisk. Hand grasps are strong and equal bilaterally. Leg strength is bilaterally weak.	Chart states Biofreeze gel is for right shoulder pain. Chart indicates that she had come to the emergency room with leg weakness, and numbness and tingling of hands, feet, and mouth.	Effective pattern in cognition and perception of health. Barriers in legs, hands, and tongue due to symptoms of condition.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
SELF-PERCEPTION SELF-CONCEPT (patterns of viewing and valuing self; body image and psychological state)	Client states her "anxiety was a 10 and is closer to a 2 now" and "better now that people have explained what has happened and it should get better." Client states her level of control is "0, no control over this situation."	Client appears calm and tired, also shifted position.	In client's chart case manager stated that K.C. is cooperative and interested in learning about her condition	Effect pattern of self-perception and concept. Potential barrier with feeling as if she has no control over current situation. Being in the hospital and having to complete all the therapy is starting to wear on K.C., and it shows in her demeanor. I feel that she is under stress and anxiety from no longer feeling as in control of her body as she used to be.
ROLES-RELATIONSHIPS (patterns of engagement with others, ability to form and maintain meaningful relationships, assumed roles; family communication, response, visitation, occupation, community involvement)	Client states "I live with my husband in Canton." Pt states "No, we have no children." Client states that she "volunteers, and does fundraisers with the schools."	Client appeared to be happier when discussing her relationship with her husband, as evidenced by smile at me and him.	Husband is in the room. Case manager's notes state that she lives with her husband.	Effective pattern in relation to her relationships with husband, and friends. Potential barrier with no children.

AREA OF HEALTH	SUBJECTIVE DATA	OBJECTIVE DATA	INDIRECT DATA	INTERPRETATION (effective patterns or barriers/potential barriers)
SEXUALITY-REPRODUCTIVE (testes, breasts, abdominal-genitourinary; satisfaction with present level of interaction with sexual partners)	Client states she had a "hysterectomy many years ago." Client states "not currently having sex, but used to on a regular basis."	Client seemed open and relaxed.	Client's chart history shows hysterectomy but no date.	Effective pattern in sexuality and reproduction. Potential barrier is current medical condition.
COPING (stress tolerance, behaviors, patterns of coping with stressful events and level of effectiveness, depression, anxiety)	Client stets that she deals with stress by "venting to my husband."	Client appears to be anxious during this question, with wringing of hands.	No evidence found in chart.	Ineffective pattern in verbalizing feelings of stress with others. K.C. appears to be feeling stressed from being at the hospital for the past 10 days, and knowing that she has a long way to recovery still ahead of her.
VALUES-BELIEF (patterns of belief, values, and perception of meaning of life that guide choices or decision; includes but is not limited to religious beliefs)	Client states that she is a Christian; however she does not attend church anymore.		No evidence found in chart.	Effective pattern in relation to values and beliefs.

Laboratory Information

See Table 1.

Table 1

Tests	Normal Values	Client Results	Analysis
Sodium	135-145 mEq/L	145	WNL
Potassium	3.5-5.0 mEq/L	4.1	WNL
Chloride	95-105 mEq/L	110	Increased, may be due to discontinued sodium chloride medication
BUN	7-26 mg/dL (facility normal value)	16	WNL
Creatinine	0.5-1.1 mg/DL for females.	0.75	WNL
Glucose	70-110	123	Increased, due to diabetes as evidenced by diabetic Boost supplement.
Carbon Dioxide	21-32	27	WNL
Prealbumin	15-36 mg/dL	18	WNL
RDW	11-14.5%	15.1	Increased, I believe it is high due to plasmaphoresis treatment interfering with it.

Normal Values from:

- *Mosby's diagnostic and laboratory test reference* (10th ed.)

Medications

Please refer to Table 2.

Table 2

Drug	Action/Purpose	Dosage	Side Effects	Nursing Considerations
acetaminophen (Tylenol)	Inhibits prostaglandin	325-650 mg q 4-6 hr or 1 g 3-4	Hepatotoxicity Hepatic failure	If taking for pain, then assess

	synthesis in CNS. Treats pain and fever.	times per day or 1300 mg q 8 hr (Max: 4 g/d) K.C.'s ordered dose is 650 mg q 4 hrs PRN	Renal failure Neutropenia Pancytopenia Leukopenia Rash Urticaria	intensity, duration and location prior to giving and 30-60 minutes after. Antidote: acetylcysteine (Acetadote)
hydrocodone/ acetaminophen (Vicodin)	Binds to CNS opiate receptors to alter perception and response to pain. Also causes a generalized CNS depressant effect. Purpose is to decrease severity of pain.	2.5-10 mg q 3-4 hrs PRN (Max 4 gm/d) K.C.'s ordered dose: 2.5 mg hydrocodone/ 400 mg acetaminophen PO	Confusion Dizziness Sedation Hypotension Constipation Dyspepsia Nausea Blurred vision Hallucinations Respiratory depression	Geriatric initial dose should be smaller due to more susceptible to CNS depression and constipation. Assess BP, pulse, and respirations for CNS depression. Respirations < 10/min needs further evaluation.
aspirin	Treats mild to moderate pain, rheumatoid arthritis, and osteoarthritis by inhibiting the production of prostaglandins, which produce analgesia, reduces inflammation and fever.	Pain/fever: 325-1000 mg q 4-6 hrs (Max 4 g/d). Inflammation: 2.4 g/d initially, then increased to 3.6-5.4 g/d. Prevention of MI: 80-325 mg/d K.C.'s ordered dose is 81 mg/d	GI bleeding Dyspepsia Epigastric distress Nausea Abdominal pain Vomiting Hepatotoxicity Anemia Hemolysis Increase bleeding time.	Monitor for toxicity: tinnitus, headache, hyperventilation, agitation, mental confusion, lethargy, diarrhea, and sweating. Withhold aspirin if this occurs. Geriatric clients are at increased risk for adverse reactions.
menthol gel (Biofreeze)	Used to temporarily relieve minor aches and pain.	Adults: Rub a thin layer on to affected area of skin 4 times per	Skin irritation.	Do not ingest. Stop in condition worsens.

		day. K.C. order is 1 oz applied topically every shift for right shoulder pain.		
enoxaparin (Lovenox)	Prevents thrombus formation by inhibiting effect of antithrombin on factor Xa and thrombin.	Subcutaneous: Prophylaxis treatment is 40 mg once daily K.C. ordered dose: 40 mg/day	Anemia Rash Ecchymoses Hematoma Irritation Pain Edema Nausea Vomiting	Assess for bleeding and hemorrhage. Observe to injection site for hematoma, ecchymoses, or inflammation. Antidote: protamine sulfate.
gabapentin (Neurontin)	Action is unknown, but may effect amino acid transport across stabilized neuronal membranes. Analgesic adjunct, mood stabilizer anticonvulsant	Pain: 100 mg TID initially, then titrate weekly by 300 mg/d (Max of 3600 mg/d) K.C. is ordered: 300 mg BID	Suicidal thoughts Confusion Depression Drowsiness Ataxia Hypertension Anxiety Sedation Altered reflexes Nystagmus Vertigo Malaise	Assess pain location, frequency, and intensity. Monitor for mood and behavior changes. Discontinue gradually. Geriatric: Increase risk for toxicity due to decrease renal function with age.
lorazepam (Ativan)	Depresses to CNS by potentiating GABA. Used to treat anxiety, insomnia, and is an antiemetic.	Anxiety: 1-3 mg 2-3 times per day (Max: 10 mg/d). Insomnia: 2-4 mg at bedtime.	Dizziness Drowsiness Lethargy Headache Ataxia Slurred speech Apnea	Geriatric clients should be assessed for fall risk and CNS reactions due to being more sensitive.

		K.C.'s ordered dose is 0.5 mg q 4hrs PRN.	Cardiac arrest Rash Nausea Diarrhea	
aluminum and magnesium hydroxide (Maalox)	Neutralizes gastric acid. Inactivates pepsin if pH is increased. K.C. is ordered this for treatment of heartburn, but may also be used to treat GERD, indigestion, and other GI issues.	Adults: 5-30 ml or 1-2 tablets 1-3 hours after a meal. K.C. ordered dose is 30 ml q 6 hrs. PRN by mouth.	Constipation Diarrhea Hypermagnes-emia Hypophosphat-emia	Assess for heartburn and indigestion, such as location, duration, and factors preceding it. Have clients chew tablets before swallowing, followed by 4 oz. of water.
cholecalciferol (vitamin D_3)	It is an inactive for of vitamin D, therefore it needs to be activated in liver and kidneys to treat vitamin D deficiency.	PO 400-1000 units/d K.C.'s ordered dose is 1000 units/day	Dizziness Malaise Pancreatitis Abdominal pain Nausea Vomiting Anorexia Headache	Assess for vitamin D deficiency throughout therapy. Assess for bone pain and weakness. Monitor for hypocalcemia.
miconazole (Lotrimin AF)	Treats a variety of fungal infections by affecting the fungal cell wall synthesis, which allows leakage of cell contents.	Topical: Apply twice daily. K.C. is ordered 1 oz topical every shift.	Burning Itching Redness Tingling Local hypersensitivity	Inspect treated area of skin throughout treatment. If skin irritation persists then treatment may need to be stopped.
vitamin E (E-Vitamin)	Prevents and treats deficiency in high risk clients by	Dose is determined by nutritional intake or by the degree	Seen mostly with high doses over a long period.	Assess for muscle weakness, ceroid deposits, anemia,

	preventing the oxidation of other substances.	of the deficiency. K.C.'s ordered dose is 200 units/day PO.	Fatigue Headache Weakness Blurred vision Rash Cramps Diarrhea Necrotizing enterocolitis	and creatinuria, which are signs of vitamin E deficiency
bisacodyl (Fleet laxative)	Treats constipation by stimulating peristalsis.	Rectal: 10 mg K.C.'s ordered dose is 10 mg per rectum q 12 hrs PRN	Abdominal cramps Nausea Diarrhea Rectal burning	Assess for abdominal distention, bowel sounds, and color, consistency, and amount of stool. Encourage client to hold for 15-30 minutes.
docusate sodium (Colace)	Prevents constipation by promoting water into stool to produce softer stool.	PO: 50-400 mg in 1-4divided doses. K.C.'s ordered dose is 100 mg BID.	Throat irritation Mild cramps Rash	Assess for abdominal distention, bowel sounds, and pattern of bowel function. Assess stool for consistency, color, and amount. Give with full glass of water or juice. Do not give within 2 hrs of another laxative.
phosphate/ biphosphate (Fleet Enema)	Has a laxative effect by causing water retention in the GI tract and stimulating	Rectal: 118ml. K.C. ordered dose is 133 ml per rectum.	Rectal irritation Dizziness Cramping Hyperphospaht-emia	Assess for bowel sounds and function. Assess stool for color,

	peristalsis, to treat constipation.	It appears that K.C. is ordered over the normal dose; however the Fleet Enemas are available in a 133 ml container.	Hypocalcemia Hypokalemia Sodium retention Renal dysfunction Arrhythmias	consistency, and amount. Monitor clients with cardiovascular problems as it may cause arrhythmias. Position client on left side with knees flexed.
polyethylene glycol (MiraLax)	Acts as an osmotic agent by pulling water in to GI tract. It is used as a laxative and does not cause electrolyte imbalances.	Adults: 17 gm in 8 oz water. K.C.'s ordered dose is 17 gm.	Abdominal bloating Cramping Flatulence Nausea	Assess for abdominal distention, bowel sounds, and color, consistency, and amount of stool.

Medication referenced from:

- *Davis's drug guide for nurses* (12th ed.)

Analysis

Nursing Diagnosis # 1

The primary nursing diagnosis is impaired mobility related to lower extremity weakness. The evidence to support this diagnosis is numbness and tingling in her lower limbs from the progressive nature of the disease. She has been diagnosed with Guillain-Barre syndrome. K.C. is currently unable to walk due to loss of sensation and coordination of her legs. She is currently using a wheelchair as a means to get from point A to point B instead of her walking. She requires a slide board for transfers, which requires two other people to assist with. She also requires assistance for many activities of daily living, such as bathing and getting dressed.

Nursing Diagnosis # 2

The secondary diagnosis is risk for impaired skin integrity related to reddened areas on coccyx and back. The evidence to support this diagnosis is K.C. has altered mobility due to the demyelination of the myelin sheath leading to her being in her wheelchair most of the time. This puts pressure on her coccyx from sitting all the time. This also leads to impaired tissue perfusion of the area, which leads to tissue breakdown. She has reddened areas on her coccyx which is being treated with ET mix and she is being turned every two hours in an attempt to relieve the pressure from that area and others. She also has a reddened area on her back. Her pulse oximetry reading is 92% on room air. Braden scale score of 14/20 puts her in the moderate risk for skin ulcers. K.C. also has +1 edema of her lower extremities which may be caused by her physical state of not being able to walk, and from pressure on the arteries and veins from her sitting down most of the time.

Nursing Diagnosis # 3

The tertiary nursing diagnosis is anxiety related to uncertain future and prognosis. This is evidenced by K.C. stating that she has had "anxiety of 12 on a scale of 1-10." Vital sign changes such as an increase in respiration, which were 20, and an increase blood pressure of 136/76. When questioned about her blood pressure, she stated that "it is a little higher than normal." K.C. also stated that she is unable to sleep through the night, and feeling like she is no longer in control. Objectively K.C. appeared tired and slightly tense and worried throughout the day.

Nursing Diagnoses, Plans, Interventions, and Evaluation

Please refer to Tables 3, 4, and 5.

Table 3

Primary Nursing Diagnosis:	Impaired mobility related to lower extremity weakness AEB…
Supporting Data:	Guillain-Barre syndrome Numbness and tingling in hands and feet. Loss of sensation and coordination of legs Wheelchair and slide board assistive devices. Activity level of up with assistance only (with 2-3 people). Assistance needed with some ADL's.
Client Goal:	STG: Client will remain free from injury throughout the shift. LTG: Client will increase strength and endurance of lower limbs by discharge date.
Interventions:	1. Assess vital signs and motor, cardiovascular, and respiratory function every 6 hrs and when indicated. *Rationale: To assess for disease progression, and possible respiratory and cardiovascular problems that may need quick intervention (Lugg, 2010)* 2. Elevate lower extremities at regular intervals when needed. *Rationale: Prevents pooling of blood and venous stasis in the lower extremities, and prevents associated complications (Doenges, Moorhouse, & Murr, 2010).* 3. Perform passive ROM on lower extremities, and progress to active ROM then to functional activities every shift. *Rationale: ROM exercises improve circulation, restores and maintains muscle tone and joint mobility, and prevents contractures (Doenges et al., 2010).* 4. Teach client to reposition in chair when sitting down every hour and as needed. *Rationale: Repositioning helps to reduce pressure areas and promotes peripheral circulation ((Doenges et al., 2010).*
Evaluation:	Short term goal met. K.C. did not sustain any falls or injury prior to end of shift. Long term goal is unable to be assessed at this time due to amount of time with client. In order for her to meet this goal, K.C. needs to be

	actively working with her therapists. She also needs to remember to change position frequently to prevent complications.

Table 4

Secondary Nursing Diagnosis:	Impaired Tissue Integrity related to mechanical reddened areas on coccyx and back, secondary to pressure, shear, and friction AEB...
Supporting Data:	Documented reddened area on coccyx with ET mix treatment Wheelchair and inability to walk Braden score of 14/20 + 1 Bilateral lower extremity edema Pulse ox 92% RA
Client Goal:	STG: Client will exhibit activities that assist in maintain tissue integrity by end of shift. LTG: Client will exhibit progressive healing of tissue within 2 weeks.
Interventions:	1. Assess all skin areas for blanching, redness, swelling, and sponginess of tissue. *Rationale: In order to assess for new, progressing, or healing skin breakdown (Doenges et al., 2010).* 2. Turn client every 2 hours. *Rationale: Reduces the risk of and further breakdown of pressure points (Doenges et al., 2010).* 3. Assist with topical applications of ET mix for coccyx every shift. *Rationale: Helps protect the skin and helps the skin the recover (Black & Hawks, 2009).*
Evaluation:	Short term goal was met. K.C. was able to verbalize the need for position changes and was seen doing so by shift end. Long term goal is unable to be assess due to not seeing client after 2 weeks. In order to help her reach her goal, I encouraged position change and we discussed the importance of moving, in order to prevent skin breakdown at pressure points.

Table 5

Tertiary Nursing Diagnosis:	Anxiety related to uncertain future and prognosis AEB…
Supporting Data:	Client stated anxiety was at 12 on a scale of 1-10. Vital sign changes, such as respiratory rate of 20, and BP of 136/76. Fatigue Inability to sleep and stay asleep.
Client Goal:	STG: Client will express fears and concerns about condition openly by end of shift. LTG: Client will express accurate information about GBS, and state a decrease in anxiety level within one week.
Interventions:	1. Encourage open communication between client, husband, and health care team when needed during shift. *Rationale: Helps enforce support systems and provides opportunity for client to express concerns (Doenges et al., 2010; Black & Hawks, 2009)* 2. Provide accurate, consistent information in regard to GBS, and provide in different format if needed, do as indicated by client or husband. *Rationale: Providing consistent information may help reduce anxiety and help the client to make choices based on reality (Doenges et al., 2010). Providing information in a different format allows the client another perspective that may be more apt to their learning strengths (Craven & Hirnle, 2009)* 3. Permit client to express feelings of anger, fear, and despair without confrontation, and provide information that what she is feeling is normal and need to be expressed, as needed. *Rationale: Acceptance of her feelings will allow her to deal with the situation better (Doenges et al., 2010).*
Evaluation:	Short term goal not met by end of shift. K.C. was not willing to openly discuss her condition at this time. I feel that being able to spend more time with her would help gain her trust, and allow a more open relationship. Long term goal and short term goal was met one week later. She expressed herself openly on week two and asked questions in regards to her health. She also stated her anxiety about her prognosis had

	improved since the previous week, and appeared to be in better spirits.

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Recognising and managing Guillain-Barré syndrome

Jason Lugg explores the difficulties of recognising the viral-like symptoms of this rare condition and offers diagnostic advice to emergency practitioners

Summary

Guillain-Barré syndrome, a randomly acquired inflammatory condition that can lead to progressive muscle weakness and paralysis, is a rare presentation in emergency departments, and differentiating its early stages from common viral illnesses can be difficult. Emergency practitioners should be aware, therefore, of the subtle early signs of Guillain-Barré syndrome so that they can make a diagnosis and refer patients appropriately. This article examines the aetiology, clinical presentation, diagnosis and treatment of the condition, and reviews the case of a 16-year-old girl diagnosed with a viral illness and discharged, but who was admitted to a neighbouring hospital a week later and diagnosed with Guillain-Barré syndrome.

Keywords

Emergency practitioners, Guillain-Barré syndrome, viral-like illness

GUILLAIN-BARRÉ SYNDROME (GBS) is an acute autoimmune disease that affects the peripheral nervous system and, less commonly, the motor or cranial nerves (Richman 2008).

Inflammation of the peripheral nerves affects the arms and legs resulting in reduced function, weakness, loss of sensation and limb paralysis with or without pain.

The syndrome affects men and women in equal number and has similar morbidity rates across all age ranges. It affects about two people per 100,000 annually (Atkinson *et al* 2006), or approximately 1,500 people a year (Guillain-Barré Syndrome Support Group 2009).

Mortality rates are between 3 and 10 per cent and up to 20 per cent of patients are unable to walk after six months (van Doorn *et al* 2008).

As GBS is a relatively rare presentation in first point-of-contact environments, such as emergency departments (EDs), this article aims to broaden emergency practitioners' knowledge of the condition and increase their ability to recognise the symptoms.

The condition is classified as an acute idiopathic polyneuritis, which usually occurs symmetrically and results in progressive motor weakness and sensory abnormalities (Atkinson *et al* 2006).

There is no clear cause of GBS and research into it continues. It is known, however, that GBS is neither contagious nor hereditary.

About two thirds of patients with GBS present with a viral-like illness, usually respiratory or gastric, one to three weeks before the onset of neurological symptoms (Atkinson *et al* 2006, Halderman and Zulkosky 2005).

The most commonly identified event associated with pathogens before the onset of GBS symptoms is campylobacter (Atkinson *et al* 2006), although Simon *et al* (2007) note that in as many as 40 per cent of patients, there is no such precipitating event.

The precise pathophysiology of GBS is also the subject of ongoing research. Sulton (2002) describes how macrophages and lymphocytes cause the demyelination of nerve cells, however others believe that the Schwann cells of the myelin sheath are attacked by antiganglioside antibodies (Richman 2008).

There is also a widespread belief that the process occurs as a result of an inappropriate immune response (Hughes *et al* 2007).

Myelin electrically insulates the neuron, increases the speed of conduction of nerve impulses (Tortora and Grabowski 2003) and allows the impulses to travel long distances (Atkinson *et al* 2006).

Damage to the myelin sheath causes slower dispersion of impulses from node to node, leading to the progressive neurological features of GBS.

Clinical presentation varies, but the onset is often sudden and can involve pain and muscle weakness and dysfunction (Sulton 2002).

Patients with GBS can, on initial presentation, experience numbness and tingling in their hands and feet, followed by progressive and often rapid muscle weakness, distally at first and then symmetrically, and distal to proximal, accompanied by diminishing reflexes, proprioception and vibratory sensation (Richman 2008).

In mild cases, the weakness might stop at this point and patients might only have difficulty walking (Guillain-Barré Support Group 2009).

In the worst cases, however, patients can suffer complete paralysis of all extremities, including the trunk, face and cranial nerves (Sulton 2002).

Up to 30 per cent of patients have some form of respiratory dysfunction, often requiring mechanical ventilation (Richman 2008).

An inability to clear secretions and an ineffective swallow and gag reflex can also occur if the cranial nerves IX glossopharngeal, X vagus and XII hypoglossal become demyelinated (Toft 2002).

Sulton (2002) puts pain associated with GBS into three categories:

- Parasthesia, which can include numbness, prickling, burning or tingling sensations.
- Muscular aches and cramps.
- Hyperesthesia, or an abnormal increase in sensitivity.

Sulton (2002) goes on to state that the cause of the pain is unclear, although other researchers suggest it originates from spontaneous discharges in the demyelinated nerves.

A case study in which Guillain-Barré syndrome is diagnosed in a 16-year-old girl is presented below. After reflecting on the care of this patient, the author was satisfied that she did not display any of the early signs of GBS when she presented to the ED.

Case study

A 16-year-old girl, accompanied by her mother, presented to an emergency department (ED) complaining of feeling 'generally unwell'.

She was triaged to the see and treat area where she gave a history of being unable to sleep the night before because of a frontal headache and neck pain. She was also nauseous and had vomited three times overnight.

There was no history or evidence of trauma and no allergies, and she was otherwise in good health. Her only medication was an oral contraceptive.

During the examination she complained of a frontal headache, nausea and general myalgia.

She said she had been reluctant to eat and drink that day and had not taken any analgesia.

She was pale but was able to walk into the cubicle and was alert and oriented.

Physiological observations revealed that she was apyrexial, had a normal respiratory rate, was normotensive, but tachycardic with a pulse rate of 106.

Further examination revealed no other cardiovascular abnormalities and respiratory assessment concluded that the patient had bilateral air entry with no additional sounds, and no cough or sputum.

The patient had a Glasgow Coma Scale score of 15, all cranial nerves were normal and she had good power and sensation in all four limbs. There was no neck stiffness or dizziness and her pupils were equal and reactive to light, although she did complain of some photophobia.

Ear, nose and throat examination was also unremarkable, apart from a slightly pink throat with no exudate.

The initial impression was of a probable viral illness, possibly viral meningitis.

As a student emergency care practitioner, the author requested a review by a consultant nurse.

The consultant nurse supported the author's first two impressions, but expressed concern about the tachycardia and noticed the patient was slightly dehydrated.

A further review by an ED specialist registrar was requested, which resulted in a diagnosis of viral illness.

The patient was advised to rest, take simple analgesia and return if she was concerned about her symptoms. She was subsequently discharged.

One week later, the author visited a neighbouring hospital's medical assessment unit and found that the girl had been admitted there with progressive weakening of her lower limbs.

Her provisional diagnosis, pending the results of some tests, was of Guillain-Barré syndrome.

Emergency department and unscheduled care practitioners should be able to recognise the first, subtle signs of the condition.

The patient in the case study reported muscular aches and a general feeling of weakness at the time of presentation. However since these symptoms are non-specific and commonly experienced by people with viral illness, GBS would not have been suspected.

There is no specific test for GBS. Diagnosis is generally based on clinical presentation and history, combined with the exclusion of other neurological conditions. If GBS is suspected, various tests can be undertaken (Box 1, page 30).

Elevation of white cells and protein in the cerebrospinal spinal fluid (CSF) strongly indicates a diagnosis of GBS. Common diagnoses that should be ruled out include tick paralysis, diphtheria, toxic neuropathy and organophosphate poisoning (Sulton 2002).

Guillain-Barré syndrome has three distinct phases. The acute phase, which generally lasts about four weeks, begins with the onset and rapid progression of symptoms until no further deterioration or new symptoms occur.

The second phase, often referred to as the plateau phase, can last from a few days to a few weeks and is identified by the fact that symptoms are unchanged but do not worsen. Finally, the recovery phase begins when a gradual improvement is seen in patients' conditions.

When she was admitted to the neighbouring medical admissions unit, the patient in the case study was found to have progressive weakness in all four limbs, severe muscle aches and hyperesthesia.

She underwent a computed tomography scan, lumbar puncture and electromyogram studies, and as other differential diagnoses were ruled out, and following consultation with and transfer of care to a neurology team, a diagnosis of GBS was made.

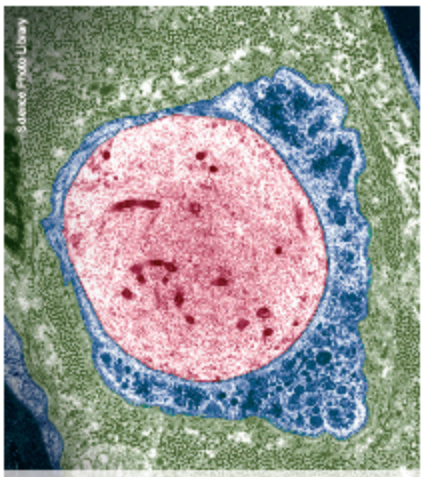
The patient developed rapid increasing proximal paralysis that eventually involved her thoracic and cranial nerves and was admitted to the intensive care unit for mechanical ventilation.

Treatment

Treatment options for GBS focus on lessening the severity of the symptoms and accelerating recovery.

Three main therapies are used to achieve this: intravenous immunoglobulin, plasma exchange and CSF filtration.

Intravenous immunoglobulin (IVIg) is understood to block the receptors on microphages preventing



Nerve cell with demyelination leading to Guillan-Barré syndrome

an attack on the Schwann cells and myelin (Atkinson *et al* 2006).

Plasma exchange works by circulating blood through a machine which removes antibodies, and replacing fluid loss with albumin.

Cerebro-spinal fluid filtration, which removes cells, including inflammatory mediators, is less commonly used. Research suggests that intravenous immunoglobulin and plasma exchange are the most common and effective treatment for GBS (Hughes *et al* 2007).

Corticosteroids were once regarded as a useful treatment for GBS because they inhibited the inflammatory process associated with the syndrome.

Evidence to suggest the routine use of corticosteroids is limited, however, and they should be reserved for treating underlying clinical problems associated with the condition (Guillain-Barré Syndrome Steroid Trial Group 1993, Haldeman and Zulkosky 2005, Atkinson *et al* 2006).

Up to 80 per cent of people diagnosed with GBS make a complete recovery (Guillain-Barré Syndrome Support Group 2009).

For a minority of patients, however, recovery can take a few months, and some can take up to two years to make a full recovery (Atkinson *et al* 2006).

Research suggests that about 12 per cent of people with GBS require assistance in undertaking daily living activities two years after diagnosis and that up to 17 per cent of people who were working when GBS was diagnosed were unable to return to work after two years due to ongoing physical limitations (Forsberg *et al* 2005).

Box 1 Nursing interventions when Guillam-Barre Syndrome (GBS) is suspected

Nursing interventions should always include:

- Measuring the patient's temperature, pulse, pulse oximetry, respiratory rate and blood pressure.
- Taking bloods, including blood cultures.
- Taking electrocardiogram to look for cardiac arrhythmias, which can occur with GBS
- Assessing airway and breathing. If the cranial and trunk nerves affect airway or breathing, early critical intervention is essential and the patient must be monitored in a resuscitation area.
- Observing the patient's swallow carefully to identify cranial nerve involvement and potential airway risk. If these are present, ensure patient is nil by mouth until a formal swallow assessment has taken place.
- Ensuring the patient has adequate analgesia..

Medical interventions can include:

- Computed tomography scan of patient's head or body.
- Lumbar puncture.
- Nerve-conduction study.

All healthcare professionals who work with patients with undiagnosed conditions, particularly rare conditions such as GBS, must maintain a broad knowledge base.

Many of the early signs of GBS are similar to those associated with common viral illnesses but practitioners must be alert to 'red flag' signs that suggest a differential diagnosis of GBS, including parasthesia, hyperesthesia and distal muscle weakness, as well as histories of viral symptoms during the past three weeks.

Gaining full histories of patients' presenting complaints is often regarded as the keystone of diagnosis and its importance cannot be over-emphasised.

After thorough history-taking, differential diagnoses can be made and appropriate physical examinations undertaken (Ford *et al* 2005).

Where examination of every system is impractical or inappropriate, practitioners usually perform more focused examinations based on their differential diagnoses.

If patients present with viral-type illnesses and display any of the red flag signs of GBS, neurological examinations are essential. If the abnormalities indicative of GBS are revealed, clinicians should refer patients for urgent specialist neurological reviews.

Implications for practice

Guillain-Barré syndrome (GBS) is a rare presentation in EDs, however clinicians need a broad understanding of the condition and its presentation to allow for early provisional diagnosis and referral to an appropriate clinical setting. Patients who present with airway or respiratory dysfunction will need to be seen in a resuscitation area with appropriate specialist support.

Further reading

More information on GBS is available on the GBS Support Group website, at www.gbs.org.uk

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Jason Lugg is an emergency care practitioner at NHS South Gloucestershire

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