Intravenous medications in the nursing environment

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Administer and Monitor Intravenous Medications in the Nursing Environment

Question 1

a. Signs and symptoms of iron deficiency anaemia include fatigue, irritability, tachycardia, pale skin, difficulty concentrating, brittle nails and shortness of breath. (Williams & Hopper 2011 p. 562).

b. As the patient has iron deficiency anaemia a blood transfusion is necessary to increase haemoglobin levels within the blood as this helps to transport oxygen to cells and tissues. She also has a history of PR bleeding. Therefore this blood transfusion is helping to replace volume lost, to increase circulating blood volume and to improve the oxygen carrying capacity (Hamlin, Richardson-Tench, Davies 2009 pp 155, 156)

c. It is important to follow the Pico prep instructions as faecal matter can obscure the viewing of the the colon. Pico prep aims to thoroughly cleanse the colon of any matter or gas to ensure that the visual field is clear (Corbett & Banks 2011 pp. 675, 676).

d. Pico prep is an osmotic laxative, its action decreases the fluid absorption within the bowel which then results in the onset of diarrhoea within 1-4 hours. Side effects can include abdominal bloating, abdominal pain, nausea, vomiting and flatulence. (Tiziani 2013 pp. 876, 879).

e. The action of this medication would have quite an impact on this elderly patient. Although she mobilises with a four wheel walker it would become

increasingly difficult to mobilise to the toilet so frequently to empty her bowels in time. This may increase the chances of her having a fall (Williams & Hoper 2011 p. 747). Lowering the bed, having her four wheel walker in reach and the application of hip protectors may aid in reducing the risk of her having a fall and in the chances of her having a fall the hip protectors may aid in protecting that area.(Crisp, Taylor, Douglas, Rebeiro 2013. p. 454).

Providing a bedside commode may also reduce the chances of falls as it is located closer to her than the toilet may be. As she is an older patient the skin around the area may become excoriated and skin breakdown may occur due to the acidity of the diarrhoea and the area frequently being wet. Barrier creams should be applied to at risk areas for protection. Diarrhoea can also quickly cause dehydration and electrolyte imbalances in the elderly, this may also have an impact on this patients fluid and electrolyte levels (Williams & Hopper 2011. pp. 275, 747).

Question 2.

a)This patient is displaying possible signs and symptoms of a suspected urinary tract infection such as incontinence, a burning sensation when she voids, fever, confusion and blood stains on her pad.

A urinalysis should be performed to support a diagnosis of a urinary tract infection (Williams & Hopper 2011 p. 838). As she is incontinent of both urine and faeces a thorough skin assessment should be performed to identify the areas at risk and to identify any change in skin integrity. Skin turgor should also be assessed as this can indicate a sign of dehydration (Crisp et.

al. 2013 p. 592). A fluid balance chart should be maintained to assess if the patient is in a positive or negative fluid balance and the weight of the patient should also be assessed as noticeable weight changes can indicate hypovolaemia (Crisp et. al 2013 p. 1214, Scott 2010 p. 62). Auscultation of the chest could prove useful in determining the reason of the increased respiratory rate and low oxygen saturation levels (Lewis & Foley 2011 p. 356). A falls risk assessment should also be performed as the elderly patient has a few risk factors for falls such as confusion, reduced mobility and is incontinent of urine and faeces. This can help to implement interventions to reduce the risk of a fall (Crisp et. al p. 454).

As this patient is at risk of both hypovolaemia and hypokalaemia the doctor should be notified to thoroughly assess the patient and implement therapy for a suspected urinary tract infection.

b)Cranberry juice can be effective in helping to reduce pain when urinating and also prevents the bacteria adhering to the wall of the bladder, this method can be helpful in reducing the pain of a urinary tract infection however the patient is undergoing a procedure the next day, therefore this intervention should be implemented with the approval of a medical officer. A heat pack could be placed on her abdomen to relive any pain and discomfort along with the administration of an antipyretic to reduce her fever and pain (Williams & Hopper 2011 p. 840). As the patient is having difficulty breathing she should be placed in a suitable position to help with proper lung expansion such as the high fowlers position along with the administration of oxygen to increase oxygen levels within the blood. (Williams & Hopper 2011 p. 604). The patient’s vital signs should be continuously assessed to monitor

any improvements or deterioration especially her blood pressure and heart rate as any further abnormalities such as arrhythmias and a further decline in blood pressure could indicate hypovolaemia and hypokalaemia. Continuous assessment of her neurological state should also be implemented to monitor any changes (Scott 2010 p. 64).

c. Hypokalaemia occurs due to an excessive loss of potassium from the body or from an inadequate intake of potassium. The body is unable to conserve potassium and relies on an adequate intake of potassium to maintain a balance within the body. An excessive loss of potassium can be due to diuretic therapy – especially potassium wasting diuretics, corticosteroids, vomiting and diarrhoea.

Signs and symptoms include an irregular weak pulse, hypotension, muscle cramps, muscle weakness and shallow respirations. (Williams & Hopper 2011 p. 79, Scott 2010 p. 98).

Medical management is aimed at restoring potassium levels either by increasing the intake of potassium in the diet or oral potassium supplements. Intravenous replacement therapy is also implemented in those with severe hypokalaemia to rapidly increase potassium levels. Diuretics may be changed to a potassium sparing diuretic to prevent the loss of potassium from the body. (Scott 2010 pp. 100, 101).

Nursing management includes monitoring fluid input and output, monitoring the heart rate and rhythm of those receiving IV replacement therapy, maintaining and ensuring the correct administration of the therapy and

continuous monitoring of the patient’s condition throughout. (Scott 2010 p. 102).

Hypovolaemia occurs due to the loss of fluid from the body and extracellular spaces; this can be due to excessive bleeding, excessive sweating, burns, diuretic therapy, diarrhoea, renal impairment and vomiting. The loss of fluid then results in a decreased blood volume. (Williams & Hopper 2011 p. 71, Scott 2010 pp. 60, 61). Signs and symptoms include thirst, nausea, hypotension, restlessness, confusion, dizziness, cool pale skin, tachycardia, increased body temperature, weight loss and a decline in cognitive status. (Williams & Hopper 2011 p 72, Scott 2010 p. 62).

Medical management includes finding and stopping the source of the fluid loss, the replacement of lost fluid with an intravenous infusion with the same osmolality of blood to increase the body’s blood volume. (Scott 2010 p. 63).

Nursing management includes the administration and maintenance of intravenous fluid replacement, monitoring the daily weight of the patient, monitoring fluid input and fluid output, encouraging the intake of fluids to aid in restoring fluid balance and providing mouth care to maintain the integrity of the oral mucous membranes. (Crisp et. al. p. 73).

Question 3

a)Midazolam is used in this procedure as it is a sedative, hypnotic agent and muscle relaxant. This aims to reduce the amount of movement throughout the procedure and assists in keeping the patient in a sedative state and impairs memory function (Tiziani 2013 p. 967). Fentanyl would be used

to reduce pain during the procedure and also aids in the maintenance of the anaesthesia (Tiziani 2013 p 928) Diprivan is used to induce sedation and also increases the effects of the hypnotic agent and analgesia (Tiziani 2013 p 793.)

b)Midazolam acts by binding with a benzodiazepine receptor in the central nervous system which inhibits neurotransmitters in the brain resulting in a calming sedative affect (DrugBank, *Midazolam DB00683* 2013). Midazolam given intravenously takes affect within 1. 5 – 2. 5 minutes. Adverse effects include respiratory depression, memory impairment, anxiety, muscle weakness, drowsiness, hypotension, dizziness, fatigue and decreased alertness. (Tiziani 2013 pp 964, 967)

Fentanyl acts on receptors within the brain, spinal cord and muscles and bind with opioid receptors producing an analgesic affect. Administered intravenously fentanyl takes affect almost immediately.

Side effects include respiratory depression, apnoea, dyspnoea, vomiting, nausea, increased intra cranial pressure, bradycardia, sedation, confusion, constipation, hypotension and muscle rigidity. (Tiziani 2013 p. 923)

Diprivan suppresses the central nervous system and produces a loss of consciousness. Adminstered intravenously diprivan takes affect within 30 seconds of administration. Side effects include respiratory depression, tachycardia, hypotension, shivering and involuntary muscle movements (Tiziani 2013 p 793)

Nursing care includes continuous monitoring of respiratory rate, heart rate and vital signs during administration of these agents and throughout the procedure, ensuring that the dose is titrated to produce the right affect, a sedation scale should be performed when the patient is conscious, ensuring that the patient is aware that midazolam can cause muscle weakness so care should be taken when mobilising. Central Nervous System toxicity may occur when all three medications are given together therefore continuous monitoring is extremely important as the effects on the central nervous system are increased (Tiziani 2013 p 964, 968).

c)As this patient has renal failure the kidneys ability to filter and excrete waste is decreased, this may

result in an accumulation of the medications and could possibly result in drug toxicity – especially opiate medications (Tiziani 2013 p. 925). This patient is elderly and may have increased sedation and confusion after the procedure due to her age and renal function and is at a high risk of falls especially as midazolam causes muscle weakness. Midazolam administered to an elderly patient can cause delirium, therefore this patient is at an increased risk of being affected by this (Tiziani 2013 p. 964).

Constipation is also going to affect this patient as this is one of the major side effects of opiate medications.

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