Nursing Diagnosis: Decreased Cardiac Output r/t Cardiac muscle damage aeb Ejection fraction of 40%, 2+ pitting edema, and U/O of 25ml/hr.

Long Term Goal: Patient will demonstrate adequate cardiac output

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| Outcome Criteria | Interventions | Rationale | Evaluation |
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| 1. Pt’s HR will trend toward 60-100 bpm as assessed q4h2. Pt’s BP will trend toward 120/80mm Hg as assessed q4h3. Pt’s urinary output will trend toward 30 ml per hour as assessed q4h4. Pt’s peripheral pulses will remain 2+ as assessed q4h5. Pt will remain alert & oriented as assessed q4h6. Pt will not experience peripheral edema as assessed q4h7. Pt will be free of additional Myocardial Infarction while hospitalized8. Pts capillary refill will be <3 seconds as assessed q4h9. Pt O2 sat will trend toward 95%-100% on 5L as assessed q4hs10. Pt will be free of CP as assessed q4h11. Pt will have no c/o SOB as assessed q4h12. Pts K level will trend 3.5-5.2 mmol/L as assessed when lab is ordered13. Pts Troponin I level will trend <0.05 ng/ml as assessed when lab is ordered14. Pt will have clear LS, RR regular and trending toward 12-20 as assessed q4h15. Pt will have no heart rate rhythm change as monitored on telemetry continuously 16. Pts LDL will remain <100 and HDL >60 as assessed when lab is ordered17. Pt will not experience dyspnea while performing ADL’s | 1. Assess: Assess pts HR q4h2. Assess: Assess pts BP q4h3. Independent: Monitor patient’s urinary output q4h4. Assess: Assess pt’s peripheral pulses q4h5. Assess: Assess pt LOC q4h6. Assess: Assess pt for peripheral edema q4h7. Dependent: Metoprolol 25 mg po BID 8. Assess: Assess pts capillary refill q4h9. Administer O2 @ 5L NC AAT while hospitalized10. Dependent: NTG 0.4mg tab SL q5m x3 for CP11. Independent: Assess for SOB q4h with VS12. Monitor K level when lab is ordered13. Monitor Troponin I level when lab is ordered14. Assess: Auscultate LS and RR q4h15. Dependent: Monitor telemetry continuously while hospitalized16. Dependent: Crestor 10mg po qd17. Group ADL’s and Provide adequate rest periods prn while hospitalized | 1. When a patient is experiencing decreased CO the patient’s compensatory mechanism will be activated. As a result of this, the SNS will be activated and the pt will develop tachycardia in an effort to increase CO. With that said, when considering this patient, it should be noted that tachycardia may not be present with decreased CO due to the fact that she is currently taking Metoprolol BID and also due to the fact that elderly pts have a reduced response to the release of catecholamine’s (which produces a SNS response in response to stress e.g. cardiac damage) With that said, by assessing my pts HR q4h, I will be able to compare her assessed heart rate to her documented baseline, and based off of my findings, will be able to intervene if necessary, to ensure that her heart rate remains between 60-100. 2. This patient has a past medical history of hypertension and HF. Because of this, it is important that her BP trends toward 120/80 mm Hg. The reason for this is because sustained high BP increases the cardiac workload, and if sustained for too long, can lead to left ventricular hypertrophy. Although this is considered a compensatory mechanism, overtime this hypertrophy will result in a decreased inability for the ventricle to pump, which will lead to a further decrease in this patients cardiac output.3. A decrease in cardiac output will result in decreased perfusion of the kidneys with a resulting decrease in urine output. Because of this, I can assess that my patient is experiencing adequate CO if she is voiding a minimum of 30ml/hr of urinary output. Anything less than this, may suggest decreased CO and would require intervention.4. This pt currently has 2+ bilateral peripheral pulses. Upon inspection, if a deviation <2+ is noticed, it could indicate a reduced stroke volume of the heart, which would be a sign of decreased cardiac output (since we know that adequate CO require SV x HR) and would require further assessment and possible intervention.5. Oxygenation of the cerebral tissues is dependent on a good cardiac out. With that said, because this pt has a diagnosis of decreased cardiac output she is at an increased risk for not being able to adequately perfuse her vital organs (e.g brain). Because of this, it is imperative that her LOC is assessed q4h with her vital signs to ensure that she is not developing hypoxia (which would manifest as a decrease in LOC) as a result of decreased perfusion of oxygenated blood to the cerebral tissues.6. The development of edema is often indicative of decreased cardiac output and a common sign of heart failure. This occurs due to ineffective right ventricular contractile function. Blood backs up into the right atrium and into the peripheral circulation. Edema may occur in dependent body areas, the liver, the abdominal cavity and the lungs. Since this patient has limited mobility she should be assessed q4h for the development of sacral and/or lower extremity edema as a sign of decreased cardiac output. 7. Metoprolol is a beta-blocker that has been proven to be effective in the reduction in post MI mortality, due to the fact that it decreases myocardial O2 demand. Furthermore, the use of this drug by my pt during the first 24 hours of MI reduces her risk of reinfarction and ventricular fibrillation, both of which would cause a further decrease in her CO. The reason that is effective in doing so is because by blocking stimulation of Beta1 receptors, this medication decreases BP and HR, thereby helping her heart to maintain adequate cardiac output by blocking the compensatory mechanism of the SNS to decreased cardiac output. Without this med, the patient may experience compensatory tachycardia which would cause an increase in venous return and would overload the heart, making the heart a less effective pump and decreasing cardiac output.8. If a person is experiencing adequate cardiac output it would be expected that when there nail bed is depressed for five seconds, then released, they would have a cap refill of less than 3 seconds. With that said, if a person has decreased cardiac output then this refill rate would be greater than 3 seconds, which would be indicative of reduced stroke volume and peripheral perfusion.9. Because this pt is suffering from decreased cardiac output, her oxygen demands are increased. With that said changes in O2 saturation are one of the earliest indicators of decreased cardiac output and O2 saturation less than 95% should be responded to with the administration of oxygen in an effort to stabilize this pt.10. Pts who have a decreased cardiac output may experience chest pain related to an imbalance between an increase in myocardial demand and a decrease in myocardial perfusion. With that said, because this pt has a history of CAD and ACS, it is important that substernal CP is responded to immediately, as this pain could be indicating that the cardiac muscle is not being adequately perfused, which would prevent oxygen from being carried to the myocardium and would result in ischemia. The reason that NTG would be effective in the treatment of this pts CP is become it increases coronary blood flow by dilating the coronary arteries and improving collateral blood flow to ischemic regions, thereby reducing the pain.11. Dyspnea (SOB) is a common manifestation of decreased CO and is caused by increased pulmonary pressures secondary to interstitial and alveolar edema. Dyspnea can occur with mild exertion or at rest and this patient should be monitored q4h for SOB, as it will allow for early intervention and administration of O2 to allow for adequate tissue perfusion due to decreased CO.d12. An abnormal potassium level can cause a disturbance in the membrane potential and altered function of the neuromuscular tissue, including loss of cardiac contractility and dysrhythmias. With that said, because this pt has a history of Bradycardia, which may have been exacerbated by a potassium level of 6.2, she should have her potassium monitored to prevent future episodes of bradycardia, which in turn, will prevent decreased CO and will promotes oxygenation of the myocardial tissue.13. If this pt has any c/o unrelieved CP while hospitalized she should have her blood drawn in order to test her cardiac troponin levels. These levels, which should be <0.05 ng/ml in the healthy pt will increase in the event that the pt is suffering from myocardial injury (such as ischemia or infarction) and help differentiate Angina from an actual MI. The reason that monitoring these levels is important is because this pt already has decreased cardiac output from an NSTEMI and further myocardial injury could further hinder the pumping action of the left ventricle, which would ultimately further decrease CO. 14. Rapid, shallow respirations are a characteristic of reduced cardiac output. Crackles reflect accumulation of fluid in pulmonary circulation secondary to impaired left ventricular emptying. Crackles are more evident in the dependent areas of the lungs. Auscultating this pts LS and assessing her RR will allow for prompt intervention if adventitious breath sounds are heard or RR becomes shallow, irregular, or trend away from 12-20.15. This patient has a history of NSTEMI as well as Bradycardia and CAD. With that said, the most common complication following a myocardial infarction is dysrhythmias. These dysrhythmias occur as a result of a disruption (e.g. ischemia, myocardial damage) of the intrinsic rhythm of the heartbeat, which then leads to tachycardia, bradycardia, or an irregular heartbeat. Because of this, Telemetry monitoring, which is the observation of the patient’s heart rate and rhythm via the use of electrodes attached to the trunk, should be implemented with my pt, as it can assist in the early diagnosis of life threatening dysrhythmias which can lead to decreased cardiac output. 16. This pt is suffering from decreased cardiac output related to a recent MI. With that said, she also has a history of hyperlipidemia, which causes the buildup of plaque in the arteries, which overtime can cause an occlusion of the arteries that feed the myocardium. If this occurs, then the pt will suffer ischemia and will lose the ability for her heart to pump effectively, which will result in decreased cardiac output. Because of this, she should be given Crestor 10mg po qd, which is a lipid lowering agent, in order to reduce the LDL that is circulating in her blood and to increase the HDL that is circulating in her blood stream.17. One of the clinical manifestations of decreased cardiac output is dyspnea, or shortness of breath. Dyspnea occurs when the heart cannot keep up with the oxygen demands that are placed on the body. With that said, physical activities such as performing ADL’s, will increase the demands places on this pts heart, and if not corrected could contribute to damage to the myocardial tissue and a decrease in the effectiveness of the left ventricle in pumping. To prevent this from occurring, this pt should be provided with adequate periods of rest during the performance of ADL’s. | 1. Not met- Pt experiencing Bradycardia.2. Outcome Met3. Not met- U/O averaged 25ml/hr4. Outcome met.5. Outcome met.6. Not met. 2+ pitting edema noted in ankles and feet7. Outcome met.8. Outcome met.9. Not met. O2 sat reached 83%.10. Outcome met.11. Outcome met.12. Not met. Potassium level was 6.2 mmol/L.13. Not met. Troponin was at 1.27 ng/ml.14. Outcome Met.15. Not met. Dysrhythmias noted on Telemetry.16. Outcome met.17. Not met. Pt c/o dyspnea while ambulating. |