From the patient's symptoms and her personal and family history, it is quite likely that she is suffering from an acute myocardial infarction (AMI). The patient states that her chest pain is unrelieved by rest and antacids. This suggests that her pain is not related to indigestion or heart burn, as otherwise antacids would have helped. She also states that she has taken three sublingual tablets of glyceryl trinitrate (0.4 mg). Typically, these tablets are used to provide relief from pain that occurs due to angina. These are short-acting formulations and so their effect does not last for more than 20 to 30 minutes.

Her current medications include: metformin for treatment of type 2 diabetes as it reduces the amount of sugar that is released by the liver into the blood, hydrochlorothiazide as a diuretic for the treatment of high blood pressure, atorvastatin that is used to prevent cardiovascular disease by lowering the bad cholesterol and increasing the good cholesterol in the body, and isosorbide mononitrate that is used for treatment of angina-related chest pain.

A 12-lead ECG will help observe the electrical conduction from different angles of the heart muscle, thereby helping localize the site of the MI. A test for cardiac troponins will look for cardiac-specific troponins in the blood, which is an indicator for heart injury. Normally, these troponins are present in very small quantities in the blood; however, an incident such as an MI will cause the release of these troponins in the blood and therefore, it can signal heart damage.

A glyceryl trinitrate infusion helps relieve pain from an MI by dilating blood vessels thereby decreasing the strain on the heart and enabling it to pump blood more easily through the arteries. It also dilates coronary arteries, which allows a greater flow of blood to the heart muscle. This can help reverse the effects of an MI as it is usually caused due to the narrowing or blockage of a major artery supplying blood to the heart. Oxygen therapy has been started as her oxygen saturation level is noted to be 92%. Oxygen is carried to all tissues of the body through blood pumped by the heart. During an MI, the ability of the heart to pump blood effectively is hindered thereby resulting in decreased oxygen available to the various tissues in the body. This explains the

hypoxemia experienced by the patient that can be reversed through supplemental oxygen therapy.

Aspirin has also been given to the patient as its blood thinning and anti-platelet properties can help reduce blockage in the coronary arteries and prevent further damage due to the MI. Clopidogrel has also been prescribed due to its blood thinning properties which makes the blood flow more easily through the arteries. Additionally, the combination of aspirin and clopidogrel makes the blood thinning and antiplatelet process more effective as both exert their effects through different mechanisms in the body. After the initial control of the symptoms of MI in the patient, she has been referred for percutaneous stenting where a catheter will be inserted in the blood vessel that has been blocked due to plaque buildup. This will open up the blocked blood vessel restoring the flow of blood through the artery and preventing future risk of an MI. As MI occurs due to a blocked artery and restricted flow of blood from the heart, percutaneous stenting will help eliminate the cause of the MI.

Monitoring of vital signs following an MI should be done as per standard protocol as changes in the vital signs might signal the effectiveness or ineffectiveness of the therapeutic interventions. The patient is already presenting with hypoxemia, high blood pressure, and tachycardia. With the continous administration of oxygen and other therapies, the vital signs gradually need to come within the normal range. If this is not the case, then some other intervention might be necessary to treat the patient to prevent future heart attacks or strokes.