

## Chapter 1 : Critical Care Case Study - Melissa Gable - Nursing Portfolio

*Critical care nursing is a complicated and rewarding field in which to work. The patients are critically ill and require specialized care for the best outcomes.*

The following 3 case studies from our heart center were chosen to illustrate the use of the protocol for continuous ST-segment monitoring. Each of the patients in the case studies experienced signs or symptoms of ACS, and each displayed characteristics that required critical thinking and adaptation of monitoring. The following case studies on continuous ST-segment monitoring include 1 monitoring of silent ischemia limited by inappropriate alarm levels, 2 selecting an appropriate lead for monitoring response to interventions, and 3 monitoring in patients with cardiac risk factors and comorbid conditions. Six years before this admission, she had a stent placed in the left anterior descending coronary artery LAD. She underwent coronary angiography and had the following interventions: The procedure was technically difficult because of her tortuous and calcified vessels. The patient was hypertensive during the procedure, spent 1 night in the ICU, and had no changes in her morning lead ECG. She transferred to a PCU, where she initially began an uneventful recovery. She had no chest or shoulder pain. This alarm resulted in a visual notification on the telemetry screen, with no audible alarm and no automatically generated printout of a strip. Although 3 measurements of troponin T levels had been normal upon admission, a stat analysis indicated an abnormal troponin T level 0. The patient was subsequently returned to the cardiovascular laboratory, where a drug-eluting stent was successfully placed in the proximal portion of the first diagonal branch of the right coronary artery. She was discharged home 2 days later without further complications. In a new window Figure 1 Case 1: This case study illustrates the usefulness of continuous ST-segment monitoring for detecting both asymptomatic and symptomatic ischemia. However, this monitoring tool is dependent on staff nurses being able to recognize the seriousness of such changes. Additionally, the ST alarm of 2 mm should be set to an alarm level that is audible and that automatically generates a telemetry strip to distinguish it from less immediate alarms. This important lesson resulted in a practice change. This practice change resulted in a continuous audible alarm and automatic generation of a printed strip showing the ST-segment change. Selection of Appropriate Leads for Monitoring Response to Interventions A year-old man was admitted to the ICU with a history of hypertension, cigarette use 1 pack a day , and severe coronary artery disease not amenable to intervention. He had chest pain and an elevated level of troponin T 0. He was further treated with intravenous antibiotics, intermittent continuous positive airway pressure, and diuretics for a diagnosis of left-sided pneumonia and renal insufficiency. He began to complain of pleuritic left-sided chest pain and a headache. The patient was receiving continuous cardiac monitoring for 7 leads, with leads V1 and II chosen as display leads. However, continuous ST-segment monitoring never triggered alarms, as the ST segment on lead II appeared only 1 mm elevated. The primary physician came to the unit and ordered sublingual nitroglycerin and intravenous morphine. The patient was transferred to the ICU for intravenous infusion of nitroglycerin and morphine titrated to relieve angina. The nurses were able to adjust monitoring leads so that continuous ST-segment monitoring could be used to match the leads with ST-segment changes shown on the lead ECG. In a new window Figure 2 Case 2: The case study provides a reminder for nurses to check the lead ECG in order to select the most appropriate lead to display and monitor for ST-segment changes. For this patient, V1 showed no ischemia on admission; therefore, the nurse may have found that switching to leads III and V3 leads of concern shown by lead ECG would be more helpful for continuous monitoring of this patient. Although our monitors, like many telemetry monitors, allow only 1 chest lead to be monitored at a time, nurses can manually switch the chest lead to detect ST-segment changes in other affected leads. In this case, continuous ST-segment monitoring was also useful to monitor whether interventions such as nitroglycerin and morphine were helpful in reducing ischemia. For example, the nurse could evaluate the effect of interventions by checking for a lessening of ST-segment elevation in lead III and a lessening of ST-segment depression in V3. A helpful table for selecting the best leads for viewing

suspicious coronary arteries was provided by Sandau and Smith. Monitoring for Patients With Cardiac Risk Factors and Comorbid Conditions A year-old man with a history of schizophrenia who had chest pain and shortness of breath with productive sputum was brought to the hospital by paramedics. Coronary risk factors included a history of cigarette smoking 1 pack per day until 2 days earlier, hypertension, and type 2 diabetes mellitus; he was unaware of his lipid status. Home medications included a histamine2 blocker for acid reflux symptoms and an angiotensin-converting enzyme inhibitor for hypertension. Hypoxemia noted on admission was thought to be due to chronic obstructive pulmonary disease. Blood tests revealed a level of troponin T that increased from admission 0. In a new window Figure 3 Case 3: A lead electrocardiogram obtained at admission, when he had chest pain, shortness of breath, and productive sputum. B Five days after admission at 6: C Concurrent lead electrocardiogram at 6: D Telemetry strip at 9: He had no further complaints of chest pain. On day 2 of his stay, he had mild but sustained ST-segment depression of only 1 mm in the inferior leads on telemetry, particularly in lead II. The nurse followed protocol and verified that the telemetry patches were placed correctly and that the patient was supine. The hospitalist was called again, and because the patient had no complaints of chest pain and no increased needs for oxygen, he started treatment with aspirin and metoprolol and an ECG was ordered for the following morning. The next day the patient began to complain of chest pain. However, a cardiologist was consulted. The option of angiography was presented to the patient because of his risk factors. Although the patient had initially refused angiography, he agreed to start treatment with intravenous heparin, undergo stress testing, and consider action based on the findings. Angioplasty was performed successfully on the LAD and 2 areas of the circumflex branch. Two drug-eluting stents were placed in the proximal circumflex branch and the LAD. The lesion in the right coronary artery was reported to be well collateralized. This patient clearly displayed characteristics of a patient at risk for silent ischemia. Diabetes mellitus 32 and his mental health issues could interfere with his ability to perceive and communicate anginal symptoms. It is possible that differences in the telemetry strip and the lead ECG may reflect a lack of voltage standardization in telemetry systems versus lead systems. The ST-segment alarm is one of several pieces of clinical assessment, not a diagnostic confirmation. This case study demonstrates the interdisciplinary discussion that must occur in addressing ST-segment alarms. Nurses are encouraged to continue to talk with hospitalists and cardiologists about the most appropriate response to these alarms. Previous Section Next Section Summary Patients experiencing ACS require rapid initial assessment as well as ongoing assessment for ischemia, injury, and infarction. We used case studies such as these as opportunities for continued learning and to modify our monitoring protocol. Our 10 years of clinical experiences have provided us with conviction that continuous ST-segment monitoring is a technology that will continue to be enhanced, both by improvements in protocols and by monitoring technologies required to meet the needs of clinicians who require more user-friendly ways of monitoring trends in ST-segment changes in ACS patients. According to a study, only half of critical care units in the United States used available technology to monitor continuously for changes in the ST segment. Funk in the American Journal of Critical Care, ;

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## Chapter 2 : usnnursing / Cardiovascular Mini Case Studies

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Critical Care Clinical Case Study Nurs – Clinical Management of Adult Health Nursing III Purpose The purpose of this case study it to integrate knowledge from the humanities and sciences, including nursing research and theory, to plan, provide, and evaluate holistic care provided to a client selected during this clinical rotation. Student Approach to Assignment The patient that was selected for the critical care case study was admitted to the Cardiac Care Unit CCU with an extensive medical history, including atrial fibrillation, coronary artery disease, peripheral vascular disease, and diabetes mellitus. He was admitted to the CCU with acute respiratory failure and acute renal failure. He was the only patient that I cared for throughout nursing school prior to role transition that required a 1: Reason for Inclusion of the Assignment in the Portfolio This assignment was included in the portfolio because the provision of care on a 1: Furthermore, she emphasizes the ability to breathe normally as a priority. I discussed in the paper the importance of suctioning the patient. Although the patient appeared to need suctioning quite frequently, I made the decision to suction the patient only when necessary to prevent adverse effects, such as an increase in intracranial pressure. Furthermore, I hyperoxygenated the patient prior to suctioning in order to prevent a decrease in oxygen saturation. The clinical care case study provided a discussion of the outcomes related to the top nursing diagnoses discussed for the patient. In the evaluation section I discussed that the patient was unable to maintain adequate ABGs and was showing declines neurologically sluggish and unequal pupils, no longer following verbal commands, and no longer demonstrating a withdrawal reflex which was inconsistent with his expected outcomes and previous assessment data. As discussed in the paper, my patient was being given Levophed for hypotension, but also has Catapres and Apresoline, PRN. The medical diagnosis section of this paper demonstrates the application of knowledge of health problems to guide nursing practice. I demonstrated my understanding that the patient with acute respiratory failure cannot maintain respiratory efforts and will display clinical manifestations such as hypoxia, hypoxemia, restlessness, agitation, confusion, tachycardia, tachypnea, shortness of breath, and dyspnea. The patient was emergently intubated based on his signs and symptoms related to respiratory failure. Expected outcomes were discussed for the top two prioritized nursing diagnoses related to the patient. In the evaluation section of the paper I discussed that, for this patient, the interventions were unsuccessful, as his outcomes were not met. For example, one outcome included the absence of any new neurological deficits, but despite our efforts, the patient was no longer following verbal commands or withdrawing from nail bed pressure. The critical care case study is an excellent example of my writing ability. The paper was written clearly and concisely. It was within the range for the required number of pages, while including all necessary information. My writing, as well as my grade on the paper, demonstrate my use of accurate and relevant writing, including correct grammar, spelling, and punctuation. In this assignment I utilized various forms of nursing research to support my nursing diagnoses and interventions. The two previously mentioned research articles supported various interventions that I performed for my patient during the clinical day.

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1. *Nurs Stand. Jan 23;5(18) Case Studies in Cardiovascular Critical Care Nursing Case Studies in Cardiovascular Critical Care Nursing M Walsh J Clochesy Aspen pp £ [Formula: see text].*

## Chapter 7 : Continuous ST-Segment Monitoring: 3 Case Studies in Progressive Care

*of results for "critical care nursing case studies" Case Studies in Critical Care Nursing: A Guide for Application and Review (Melander, Case Studies in Critical Care Nursing) Mar 5,*