The Effect of Education Concerning Pain Relief in Acute Myocardial Infarction on Setting Nursing Care Priorities

by

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Introduction

Cardiovascular disease is the leading cause of death in the United States. In this country, myocardial infarction alone was responsible for approximately 986,400 deaths in 1984, or 48% of all deaths (American Heart Association, 1986). Coronary care units are recognized as effective contributors in decreasing the mortality associated with acute myocardial infarction (A.M.I.). Most of this decrease has been due to the early detection and management of ventricular dysrhythmias and, thus, fewer patients die in the hospital of this complication.

Left ventricular failure and shock have now supplanted ventricular dysrhythmias as the resultant primary cause of death (Gillespie & Sobel, 1977). Since this cause of mortality directly correlates with the amount of necrotic myocardial tissue, the focus of coronary care now includes the limitation of infarct size to improve the prognosis of these patients. Clinical investigations have indicated that infarct size is the most important prognostic indicator of survival. The involvement of jeopardized, ischemic myocardium is influenced by those factors which affect the balance between myocardial oxygen supply and demand during the early stages of an A.M.I.

The persistence and, or, recurrence of ischemic pain, suggest the possible continued evolution of myocardial necrosis which can lead to further ventricular dysfunction,

morbidity and mortality. The prevention of further ischemia after a myocardial infarction and maintaining viable myocardium, is considered a primary objective of the nursing interventions for patients with an acute myocardial infarction (Misinsi, 1987). Controlling pain during an A.M.I. is one method of decreasing oxygen demand, and therefore, potentially limiting infarct size. If the extent of the infarct can be limited, the patient may retain greater myocardial function. Nurses cannot be expected to quickly and efficiently relieve chest pain unless they know that pain relief is important to limit the size of infarction. The research question this study addresses is, will nurses increase the priority of pain relief interventions for a patient with an A.M.I. following education dealing with pain relief and priority setting?

Statement of the Problem

The purpose of this research is to address the knowledge base for priority setting and pain relief that applies to patients with an A.M.I. Patients with an acute myocardial infarction who are experiencing pain have increased psychological distress and increased blood levels of catecholamines which increase myocardial oxygen demand. A patient with an A.M.I. who is experiencing factors that increase myocardial oxygen demand, becomes vulnerable to disruptions in contractility and conduction which can lead to dysrhythmias and an extension in the size of the myocardial infarction. Nursing interventions which decrease the patient's pain during an A.M.I. will improve cardiac function and prognosis by decreasing the patient's psychological distress, the blood levels of catecholamines and the myocardial oxygen demand.

Nurses demonstrate their commitment to individual patient care by basing their nursing priorities on their clients' situations rather than an automatic sequence of maneuvers. However, review of the literature demonstrates little nursing research regarding priority setting by a critical care nurse in caring for patients with an A.M.I. Therefore, the statement of the problem of this research is that practicing critical care nurses do not understand the importance of pain relief and its priority in caring for patients with an acute myocardial infarction. This research

will demonstrate a method for educating nurses concerning pain theory and priority setting and evaluate whether such education increases the priority that practicing critical care nurses give to pain interventions for patients with acute myocardial infarctions.

Review of the Literature

This review of the literature is organized in the following manner: the first subsections will address the importance of limiting the size of a myocardial infarction by decreasing myocardial oxygen demand and increasing myocardial oxygen supply. The next subsections will address nursing interventions to decrease myocardial oxygen demand and increase supply. The following subsection will address the establishment of nursing priorities and the final subsection addresses the principles of adult learning.

Limitation of Infarct Size

The extent of left ventricular dysfunction is directly related to the amount of myocardium damaged during infarction. Braunwald (1967) suggests that limiting the amount of myocardium that becomes necrotic after the onset of an A.M.I. is feasible, thereby improving cardiac function and patient's prognosis. Essential to the theory of limitation of infarct size, is the belief that surrounding the infarction is a border zone of ischemic, but salvageable, myocardium (Shell & Sobel, 1973). This border zone, termed "jeopardized myocardium," is defined as an area of cells which is receiving sub-optimal flow; and although the mechanical function may be severely impaired, the cells are able to remain in a viable condition for 3-4 hours (Hearse & Yellon, 1981).

Myocardial Oxygen Consumption

Protective interventions by the nurse, aimed at limiting infarct size, should focus on optimizing the balance of myocardial oxygen supply and demand. Myocardial oxygen demand is contingent upon heart rate, the contractile state, (the force generated at a particular volume) and wall tension, which is a function of ventricular volume (preload) and the force against which the left ventricle must eject the blood (afterload) (Dracup, Breu & Tillisch, 1981). An increase in any one of these variables increases the work of the heart and myocardial oxygen consumption (MVO2) (Braunwald, 1984). Homeostatic mechanisms function to maintain this balance by increasing the oxygen supply or decreasing the demand by a reflex change in one of the other variables (Berne & Levy, 1986). By reciprocal reflex activity, the body is able to maintain the MVO2 within an acceptable range.

Reflex control of myocardial oxygen consumption is important because any increase in supply is limited. Myocardial oxygen extraction from arterial blood is almost maximal under resting conditions (Berne & Levy, 1986), so increasing extraction is not an effective method for increasing the supply. In normal coronary vasculature, local tissue hypoxia results in coronary vasodilation to increase coronary flow (Ross, 1982). However, in vessels with fixed stenosis, the ability to dilate is compromised. Therefore,

the supply to demand ratio must be optimized by nursing interventions which decrease oxygen demand in this compromised system, or by nursing interventions designed to increase the oxygen supply.

Interventions to Limit Infarct Size: Supply

In an acute myocardial infarction, factors that increase myocardial oxygen requirements or reduce coronary blood flow, may result in extension of the infarction. The major aim of nursing interventions is to decrease myocardial oxygen consumption by altering various determinants in a favorable way. These determinants of myocardial oxygen consumption are summarized in Table 1. The factors most amenable to manipulation with drugs are blood pressure, heart rate, and to a lesser extent, the state of contractibility and the left ventricular volume.

Table 1
Determinants of Myocardial Oxygen Consumption

Importance	Determinant
MAJOR	Wall tension Systolic intraventricular pressure Ventricular size Ventricular wall thickness Heart rate State of contractility (inotropic state)
MINOR	Basal metabolic rate Electrical depolarization Electromechanical coupling Maintenance of active tension Muscle shortening

Rude and associates (1981), in reviewing the literature regarding interventions which limit infarct size, noted a number of pharmacologic agents which increase myocardial oxygen supply. Nitroglycerin (NTG) and other nitrate preparations (Gerry, et al, 1981) corticosteroids (Masters, Harbold & Hall, et al, 1980) and calcium channel blocking agents (Stone, et al, 1980) increase coronary blood flow through vasodilation of collateral channels to the ischemic myocardium. Nitroglycerins result in the release of prostacyclin, which acts on the peripheral vasculature, causing direct venodilation and, to a lesser degree, arteriolar dilation. The primary action of NTG is relaxation of both peripheral and coronary vascular smooth muscle. Systemic vasodilation of capacitance vessels and a decrease in venous return, result in a decreased central venous pressure, lowered cardiac output, a fall in systemic arterial pressure, decreased left ventricular size and reduced cardiac stroke volume. The net effect is a reduction in myocardial oxygen consumption and cardiac work load. As a result, venous filling pressure (preload) and to a lesser extent, arterial impedance (afterload) are reduced, producing a net decrease in myocardial oxygen consumption. In the ischemic heart, NTG enhances regional myocardial nutrient flow via dilation of collateral coronary arteries and improves endocardial-epicardial perfusion ratio, increasing subendocardial oxygenation and blood flow to ischemic areas

and coronary collateral flow, which is helpful in controlling pain. The drug dose however, must be gradually weaned downward to avoid coronary vasospasm (Curfman, 1984). The nurse must also concurrently assess the patient for angina, dyspnea, ST segment deviations, arrhythmias, and signs of left ventricular failure.

Calcium-entry blockers, which have anti-ischemic properties, have proven efficacy in the treatment of both stable and unstable angina (Kostuk, 1987). The calcium channel blockers are a class of vasodilators that inhibit calcium movement into the cell and prevent the interaction of actin and myosin resulting in myocardial and smooth muscle relaxation (Loeb, 1984). These actions dilate blood vessels, reduce myocardial oxygen demand, and ameliorate the biochemical abnormalities of ischemic myocytes (McCall, 1987). Calcium-entry blockers exert a unique influence on ionic currents in the Purkinje fibers and may favorably alter platelet responsiveness (Johnson, 1987). The calcium channel blocking agent, nifedipine, is used to decrease coronary spasms which produce angina pain. Other calcium channel blocking agents, verapamil and diltiazem, are used to decrease total peripheral resistance which decreases systolic blood pressure. This results in decreased afterload and increased myocardial blood supply. Calcium channel blocking agents also enhance the diastolic relaxation of the left ventricle. Calcium-entry blockers however, have been noted

to not reduce post infarction mortality or reinfarction rates (Wilcox, 1986). Also, nifedipine and verapamil may increase plasma digoxin levels, therefore, ECG signs of digoxin toxicity and serum digoxin levels must be monitored. The various effects of calcium channel blocking agents are summarized in Table 2.

Table 2
Physiological Effects of Calcium Channel Blocking Agents

Physiological Effect	Verapamil	Diltiazem	Nifedipine
Coronary artery dilation	moderate effect	intermediate effect	major effect
Peripheral arterial dilation	moderate effect	intermediate effect	major effect
Cardiac muscle calcium blockage	moderate effect	intermediate effect	moderate effect
Depression of atrioventricular conduction	major effect	intermediate effect	minimal effect
Sinus node depression	moderate effect	very poor effect	minimal effect

Corticosteroids produce direct vasodilator effects. They also exert protective effects on ischemic tissue by stabilizing the lysosmal membrane and reducing the inflammatory response to tissue injury. These agents inhibit collagen synthesis, neutrophil and macrophage accumulation in injured tissues, and the development of new capillaries.

Treatments using corticosteroids are very controversial, however, because some studies have suggested that steroids may lead to scar thinning, thus placing the patient at greater risk for ventricular rupture and cardiac tamponade (Zeller, 1986). As in the case of the administration of all pharmocologic agents, the nurse must observe all surveillance parameters including cardiac output, heart rate, and orthostatic parameters, which are very sensitive to vasodilators.

Recent studies suggest that aggressive medical interventions such as balloon percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass graft surgeries, (CABG), or thrombolysis can actually stop the progress of an evolving myocardial infarct if instituted within a 3-4 hour period after the onset of the acute myocardial infarction. Thrombolytic therapy has been widely used in recent years, although its effects on mortality and prevention or limitation of infarctions is still under study (Rentrop, 1985). Thrombolysis is not a comprehensive treatment for an evolving acute myocardial infarction. The treatment addresses only one part of the issue, albeit an important one, namely the proximal cause of the acute obstruction. Thrombolytic therapy can only be of value in the phase of ischemia, a pathophysiologic phase in which the myocardium is jeopardized, noncontractile, and less compliant, but has not yet proceeded to necrosis and will

ultimately regain function if blood flow is restored. Two types of thrombolytic agents, systemic drugs (streptokinase and urokinase) and tissue level plasminogen activators (TPA), are currently being studied. The systemic drugs, streptokinase and urokinase are branched-chain amino acids. TPA is produced by recombinant DNA technology. These thrombolytic agents, or plasminogen activators, improve myocardial blood flow, limit tissue damage, and bolster left ventricular function. The use of plasminogen activators to restore coronary artery patency and myocardial perfusion may significantly diminish the extent of the myocardial infarction. The major contraindication to thrombolytic therapy is the increased risk of bleeding, both at the site and internally. The most frequently occurring problems during thrombolytic infusions are hypotension and ventricular ectopy, as the thrombus is dissolved and reperfusion occurs. The treatment of acute myocardial ischemia with intravenous and intracoronary plasminogen activators is currently undergoing intense investigation.

Other interventions aimed at increasing the oxygen supply include the intravenous infusion of the enzyme hyaluronidase. Hyaluronidase depolymerizes the hyaluronic acid of myocyte membranes, and enhances the influx of nutrients and the efflux of metabolic waste products and edema from myocytes. This agent increases oxygen supply by preventing a decrease in the regional myocardial blood flow

to ischemic tissue and by retarding the formation of myocardial edema in the infarcted tissue (Rovetto, 1977). Hyaluronidase also dilates lymphatic channels, facilitating the influx of water and solutes (Szalay, Adams, Hollenberg, Abrams, 1980). As a result, nutrients are more easily transported into the ischemic tissues and harmful metabolites more readily washed out.

Basic to the nursing goal of supplying oxygen to an ischemic myocardium, is the administration of supplemental oxygen therapy. Some patients with an A.M.I. have some degree of arterial hypoxemia resulting from acute pulmonary congestion. Supplemental oxygen therapy, an interdependent nursing intervention, assists substantially in restoring arterial oxygen saturation to normal levels in these hypoxic individuals. Experimental research has also documented increased vascular resistance and arterial pressure during high-flow oxygen therapy (Kenmure, Murdoch, Beattie, Marshall & Camerson, 1968). Experimental research has documented increased heart rate, systemic vascular resistance and arterial pressure during high-flow oxygen therapy. These effects may increase myocardial oxygen demand and potentially extend infarct size. The implication for nursing is the need to monitor patients for an increase in heart rate or afterload related to oxygen therapy.

The oxygen-induced vasoconstriction of coronary arteries supplying the non-ischemic zones could divert blood flow to

the ischemic zone, termed "reverse coronary steal" (Chiarello, Ribeiro, Davis & Moroko, 1975). Interventions that limit infarct size are accomplished by expeditious delivery of the proper mix of adjunctive pharmacologic therapies, such as nitrates and calcium channel blockers, combined with medical interventions of PCTA, CABGS and thrombolysis, and potentiated by nursing interventions that increase coronary blood supply to the myocardium.

Interventions to Limit Infarct Size: Demand

A number of agents which serve to increase oxygen supply and thus, limit infarct size, work by decreasing the demand for oxygen. Agents which dilate the arteriolar bed, such as nitroprusside (Franciaosa, Guiha, Limas, Rodriquiera & Cohn, 1972) and trimethaphan (Walinsky, Chater Jee, Forester, Parmley & Swan, 1974) limit infarct size. They decrease wall tension by decreasing left ventricular volume and afterload. This decrease in arterial pressure increases volume and afterload. It also increases cardiac output in patients with systemic hypertension or left ventricular failure complicating the infarction.

These agents also decrease systemic arterial impedance which reduces left ventricular work and oxygen requirements. Beta adrenergic blocking agents decrease MVO2 by decreasing heart rate and cardiac output (Cairns & Klasen, 1981). Sympathetic stimulation of the myocardium is prevented by blockade of the beta receptors. The resulting decreases in

heart rate, mycardial contractility, cardiac output, and blood pressure contribute to a decrease in myocardial oxygen consumption. Beta blockers also affect the electrical system of the myocardium by sympathetic blockade. Effects include a decrease in the automaticity of the sinoatrial node, a delay in conduction through the atrioventricular node and a decrease in the excitability of both the atria and the ventricles. Also, the ventricular fibrillation threshold is increased, making it more difficult for the myocardium to fibrillate.

The aim of the metabolic interventions is to decrease excessive peripheral and myocardial lipolysis, increase available glucose and conserve lactate products. Glucose-insulin-potassium solutions enhance anaerobic glycolysis by the myocardial cell (Opie, Bruynell & Owen, 1975) and reduce the concentration of circulating free fatty acids, which augment MVO2 and increase the frequency of ventricular dysrhythmias (Rogers, Segall, McDaniel, Mantle, Russell & Rackley, 1979). These effects produce a decreased incidence of ventricular ectopy, improved global and regional left ventricular function and improved cardiac output, stroke volume, and blood pressure.

Pain in Acute Myocardial Infarction

The severe pain occurring with an A.M.I. results in an outpouring of endogenous catecholamines. The catecholamines, epinephrine and norepinephrine, are released from the adrenal

medulla. Zaleska and Ceremuzynski (1980) documented elevated blood levels of the catecholamines (epinephrine and norepinephrine) during and after pain. These values were greatly increased with pain and dropped to normal after pain relief. Epinephrine was predominantly increased in the severe clinical course during coronary pain which lasted an average of three hours. The researchers concluded that the metabolic alterations are even more pronounced during coronary pain accompanied by fear and anxiety.

Although pain typically elicits a picture of sympathoadrenal arousal, pain of visceral origin, such as cardiac pain, produces elevated blood levels of epinephrine, as opposed to norepinephrine, producing mixed autonomic responses with nausea, vomiting, edema, hypotension, dyspnea, palpitations, syncope and bradycardia (Horowitz & Graves, 1985). These hemodynamic effects may be evidence of the body's inherent protective mechanisms.

Catecholamines in large amounts produce necrotic lesions in the myocardium (Braunwald, 1980; Goodwin, 1982). For example, myocarditis frequently accompanies pheochromocytoma (Bagnell, Salway & Jackson, 1976). The acute myocarditis induced by catecholamines is often associated with focal myocardial necrosis, inflammation, epicardial hemorrhage, tachycardia and dysrhythmias (Szakacs & Mehllman, 1960).

A direct toxic effect or damage due to hypoxia may explain the catecholamine-induced necrosis. Yates (1981)

suggested that the hemodynamic effect of catecholamines may cause stagnation of blood flow in ischemic tissue with an accumulation of oxidized metabolites of catecholamines. Alterations in autonomic tone enhance lipid mobility and platelet aggregation and catecholamines increase the inward current of calcium. Fleckenstein (1983) hypothesized that catecholamines produce myocardial cell injury by causing an intracellular calcium overload, which initiates low ATP levels by excessive activation of calcium dependent intracellular adenosintriphosphatases (ATPases) and by uncoupling the oxidative phosphorylating capacity of the mitochondria.

Dysrhythmias are increased in A.M.I. in the presence of increased levels of catecholamines. Braunwald (1980) suggests that the ischemic myocardium may be excessively susceptible to the arrhythmogenic effects of catecholamines. Enhanced automaticity of the Purkinje fibers and the effect on the slow channel response mediated by calcium, explain these dysrhythmias.

The majority of spontaneous, recurrent, sustained tachyarrhythmias are due to reentry, an abnormality of impulse propagation. Spontaneous membrane depolarization produces automaticity. Under normal circumstances, the sino-atrial node displays the highest rate and control of rhythmicity of the heart. Ischemia alters both conduction and refractoriness because increased levels of the

catecholamines increase the rate of depolarization of pacemaker cells and increase the automaticity. Therefore, if the rhythmicity of an ectopic focus becomes enhanced, it will usurp other pacemakers and become dominant. If the rhythmicity of a higher order pacemaker becomes depressed and defaults, all conduction pathways between the ectopic focus and those regions with greater rhymicity become blocked, then ectopic foci elsewhere in the heart can exert control over the heart (Berne & Levy, 1986).

In summary, the severe pain of an A.M.I. is associated with an increase in the level of circulating catecholamines. Catecholamines produce some coronary vasodilation, but this beneficial effect is offset by the increased incidence of dysrhythmias, focal myocardial necrosis and increased myocardial oxygen demand. Increased myocardial oxygen demand in the compromised setting of an A.M.I. may increase the size of the infarct with a detrimental effect on morbidity and mortality. Nursing interventions must be focused to decrease myocardial oxygen demand, thereby decreasing the size of infarction and increasing the patient's cardiac function and prognosis.

The Establishment of Priorities

This study is in part a replication of Riegel's (1986) study. Riegel's study (n=102), evaluated the effect of an educative class on pain theory related to an acute myocardial infarction, on increasing the priority of pain relief

interventions with patients having an acute myocardial infarction. Results of paper and pencil measurement tools indicated that the nurses were uneducated in pain theory and this lack of knowledge negatively influenced the priority they gave to pain relief interventions. Riegel's study did not have a conceptual framework beyond the physiologic effects of pain in an acute myocardial infarction, as a guiding foundation for research. This research extends the Riegel study by including direct observation by the researcher of the subjects in the clinical setting. According to Erickson and Wentling (1976), an examinee's performance in real-work situations can be inferred from the performance on simulation tests. Correlations of direct observation on the Behavioral Checklist with results of the paper and pencil Case Study tests were used to explore this assumption.

Priority setting is an important factor influencing the nurse's behaviors in clinical practice. Decision-making is a highly developed, knowledge-based skill. Few articles are available about the process of setting nursing priorities. Most articles on decision-making are directed toward interpersonal problem-solving, administration, (Erickson & Borgmeyer, 1979; Taylor, 1978) and education (Wales and Hagemay, 1979) in nursing. Thus, there is a dearth of literature available to assist the critical care nurse in developing the ability to set priorities for patient care.

Wells-Mackie (1981), writing for the emergency room nurse, states that assessment is the key to priority setting and must always be accomplished before interventions are implemented. She cautions that in the face of life-threatening conditions, continued assessment may be postponed, interventions instituted and assessment resumed at a later time. This is the essence of setting priorities. She states that the ultimate goal in performing an assessment and setting priorities for care is to deliver fast, safe, high quality emergency care.

Before interventions can be implemented, the nurse must be able to make a diagnosis from the assessment data. Aspinall (1979) studied the effect of a decision tree on the accuracy of diagnosis. Nurses who understand how to use the decision tree and choose to follow it, had higher than average degrees of accuracy in diagnosis. The essential segment of Aspinall's findings focus on the assessment and diagnosis phase. Rapid repetition of these two steps is often necessary in the face of life-threatening situations, until the crisis period has passed and continued assessment can be resumed.

The first step is to decide what the data in the situation, or the initial assessment, could mean. Next, the nurse must decide on which nursing intervention is most urgent. New data may be gathered only to obtain new information necessary to formulate a reasonable diagnosis.

From that point, the nurse is encouraged to decide on a plan of action, implement it, evaluate it, and then gather new data, if necessary.

Principles of Adult Learning

The experimental intervention in this study, the class, which makes certain assumptions about adults as learners and the learning process, is based on Knowles' theory of adult learning, andragogy (Appendix A). According to Knowles (1986), learning is an internal process with the locus of control of that learning process residing in the learner, but the process can be facilitated by outside teachers. As one matures in clinical practice, one's need to be self-directed, to utilize one's experiences in learning, to identify one's own readiness to learn and to organize one's learning increase steadily. This andragogical theory is based on four main assumptions. The first assumption is that subjects will have the self-concept of being an adult and therefore, have the desire and capability of taking responsibility for their own learning. The principle of teaching based on this assumption is the exposure of the learner by the facilitator to new possibilities for improving clinical practice. The facilitator can help the learner diagnose the gaps between the current level of practice and improved performance.

The second assumption is that the subjects are mature individuals who bring to the class a rich background and

experience which is a valuable resource both for their own learning and for the learning of others in a cluster. The learning environment is characterized by physical comfort, mutual respect and trust, mutual helpfulness, freedom of expression and acceptance of differences. Based on this second assumption, the facilitator will provide physical conditions that are comfortable and conducive to interaction.

The third assumption is that as one matures, one's readiness to learn is increasingly the product of the developmental tasks required for the performance of one's evolving clinical practice, that is, the learning needed for implementing anticipated patient interactions. The critical implication is the importance of timing learning experiences to be perceived as a personal goal by the subjects.

The final assumption is that adults tend to have a problem-centered orientation to learning, and therefore, want to apply what is learned immediately. The content of the class will be presented in a logical sequence. The facilitator will help learners to apply new learning to their personal clinical practice through the use of discussion during the class, a paper and pencil test that will give immediate feedback, and personal consultation after the class.

Alspach (1982) operationalized several theories of adult learning which include the following: The educator must always remember that the primary mission is to facilitate

learning. Adults form a heterogenous group of learners, highly differentiated, and commanding of respect that is due them as mature individuals. The implication for the educator is to recognize learners as mature adults and colleagues. Adults possess a large reservoir of life and work experiences which they value highly in themselves and others. The implication for the educator is to attempt to determine each learner's background of knowledge and skills.

Adults are variable in their flexibility as learners. Adult habits, attitudes and perspectives are often more rigidly adhered to, whereas new ideas and approaches may be resisted, challenged, discarded or discounted. Adults frequently have had negative past experiences as learners, which have produced feelings of inadequacy, fear of failure, and diminished self-confidence. Positive reinforcement, given shortly after learning, leads to a lasting association. This immediate feedback also enables the learner to experience success, the strongest motivating force for continued learning. Adults are usually voluntary learners who engage in learning activities for a variety of reasons; motives vary widely. Readiness to learn is a complex, multi-factorial state of preparedness that seems to require physical and emotional maturity, mastery of prerequisite learning and a perception that the material to be learned is somehow necessary, important, desirable or otherwise

worthwhile. Readiness is an attribute of the learner, not the instructor.

Adults engage in learning activities with the intention of immediately applying what they learn to solve problems in their present roles and responsibilities. They are interested in concrete and immediately applicable realities. Adults work best with teachers who interact with them as knowledgeable colleagues. The implication for the instructor is to be yourself, admit mistakes and function as a role model, not pretending to have all the right answers. Adults expect to be given the opportunity to evaluate learning experiences in terms of their own goals and expected outcomes of the experience.

The last principle is that adult learners often have multiple responsibilities. The implication is to be sensitive to concurrent responsibilities which affect the learner's readiness and the quality of participation. Recognize that learning is a unitary process, a "functional trilogy" between the learner, the instructor and the environment.

In summary, the challenge of limiting the size of an acute myocardial infarction is the responsibility of all those involved in the care of those patients. The review of the literature substantiates the need for nurses to take an active role in implementing interventions that limit the size of an infarct in patients with an acute myocardial

infarction. Through control of the patient's pain, nurses can decrease the myocardial oxygen demand, the level of circulating catecholamines, and the psychological distress, and improve the patient's cardiac function and prognosis. While the review of the literature stresses relief of pain, there is, however, an absence of nursing research studies demonstrating that nurses know and apply pain theory and priority setting in providing interventions for a patient with an acute myocardial infarction.

Conceptual Framework

Synthesis of the review of the literature, by the researcher, produced the conceptual framework depicted in Figure 1. This conceptual framework was used as the guiding foundation for this research. A patient with an acute myocardial infarction may experience the dominant subjective sensation of pain. It is often described as a pressure, a fullness, or a squeezing sensation in the center of the chest. This pain may spread to the shoulders, neck or arms and be associated with sweating, nausea, shortness of breath, fainting or dizziness. Pain of cardiac origin can be extremely severe, lasting up to a number of hours, which can cause the patient psychological distress. Psychological factors which mediate the pain experience include perceptions of control over pain, anxiety, and significance of the pain. Sternbach (1986) points out that the autonomic patterns in pain and anxiety are virtually identical.

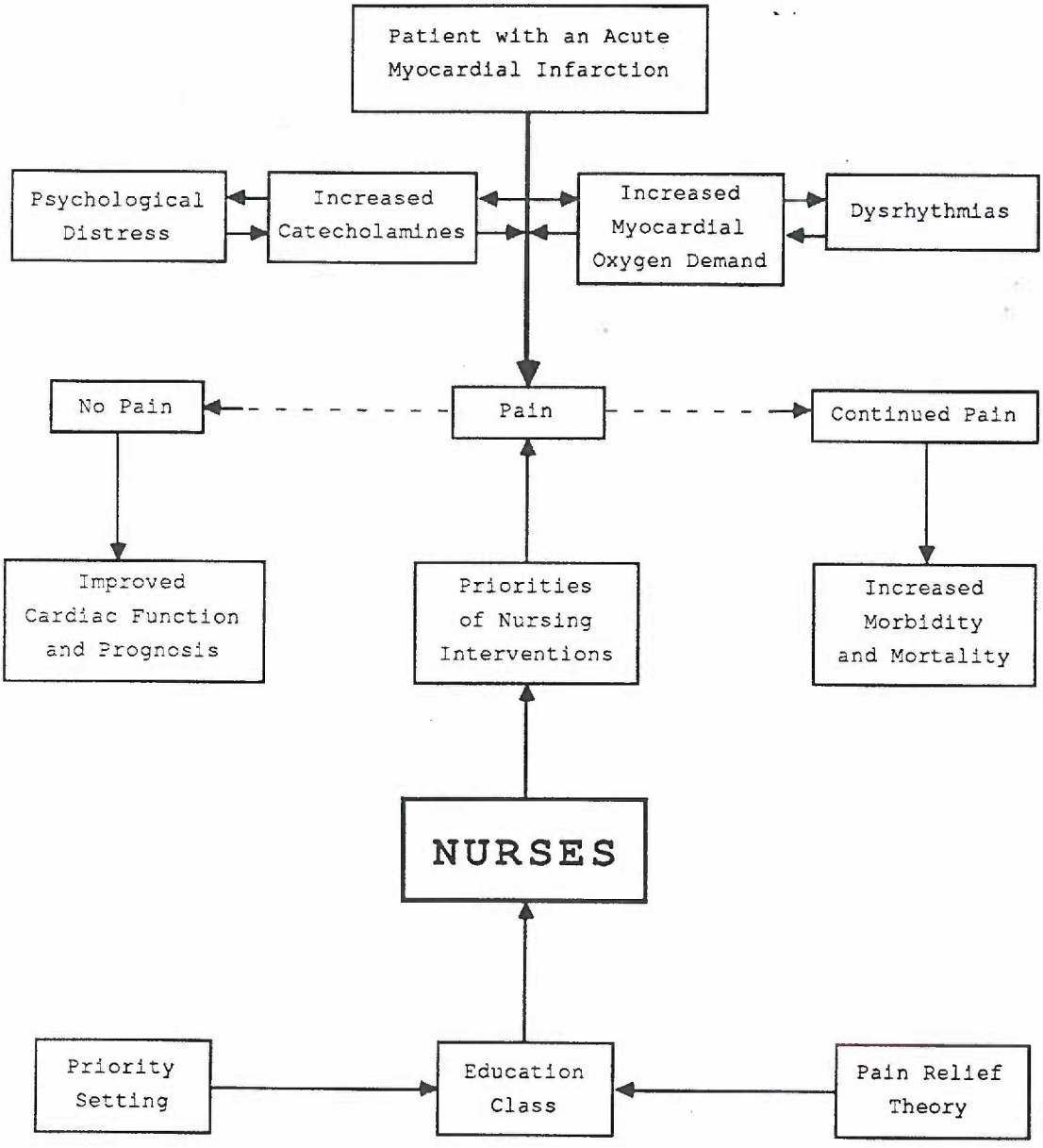

Figure 1

Conceptual Framework

In the setting of acute pain and associated anxiety, the sympathetic autonomic response of the patient is evident due to an outpouring of epinephrine and norepinephrine. The increased blood levels of the catecholamines produce an increase in cardiac rate, blood pressure, respirations, palmar sweating, pupillary diameter and muscle tension. The skin is cool and pale due to the shunting of blood to more necessary organs. The liver requires more blood for gluconeogenesis and glycoogenolysis. The brain requires more blood to facilitate rapid thought processes. The heart requires more blood to increase the force of contractility necessary to supply the large skeletal muscles with enough energy to run or fight, as necessary This response is purposeful, wide-spread and long-lasting. Pain can be a warning signal that activity must be limited and help must be sought. However, during an acute myocardial infarction, the concomitant sympathetic response may be detrimental, perhaps, to the point of being destructive of the myocardium.

Factors which increase myocardial oxygen demand, such as tachycardia or hypertension, will increase the size of the infarction or increase the potential for dysrhythmias. A patient with an acute myocardial infarction who is experiencing pain will have increased psychological distress and blood levels of catecholamines. This combines with pain to increase myocardial oxygen demand and create the potential for increased dysrhythmias. The pain of an acute myocardial

infarction will either stop and the patient's cardiac function and prognosis will improve or the pain will continue and the patient's potential for morbidity or mortality is increased.

The size of the area of necrotic tissue resulting from a myocardial infarction in the left ventricle is directly related to the patient's prognosis. Pump failure due to necrosis of a substantial portion of the myocardium, and mortality are known to increase in relation to the severity of the hemodynamic deficit (Braunwald, 1980). The pain of an acute myocardial infarction is a destructive type of pain and failure to relieve the pain rapidly and thoroughly may extend the damage and have a negative impact on the patient's prognosis.

The priorities of nursing interventions can directly affect whether the pain of an acute myocardial infarction will continue or stop. The education of the nurse regarding the rationale for pain theory related to an acute myocardial infarction and its priority in the care of these patients will equip the nurse to intervene positively in decreasing a patient's experience or anginal pain. By decreasing the patient's pain, the nurse will decease the patient's psychological distress or anxiety and the blood levels of catecholamines. The net result will be to decrease the patient's myocardial oxygen demand and vulnerability to

dysrhythmias which will improve the cardiac function and prognosis.

Research Questions

The research questions addressed in this study are as follows: What priorities do nurses give to pain relief interventions when caring for patients with an A.M.I.? Will nurses give pain relief interventions higher priority after education on pain theory applied to myocardial infarction patients and priority setting? Do the priorities nurses list on a paper and pencil case study simulated test correlate with their actual behavior in a clinical setting?

Hypotheses

1. There will be no statistically significant differences in the pre-test scores on the A.M.I. Case Study Test One, of the experimental group of nurses when compared to the control group of nurses.

2. Scores on the Behavioral Checklist, as measured by the researcher prior to the education class, will indicate no statistically significant differences in the clinical behavior of the experimental group of nurses when compared to the control group of nurses.

3. There will be a statistically significant increase in the post-test scores on the A.M.I. Case Study Test Two of the experimental group of nurses when compared to the pre-test scores on the A.M.I. Case Study Test One of the same group.

4. Scores on the Behavioral Checklist, as measured by the researcher, will indicate a statistically significant

increase in the post-test clinical behaviors of the experimental group of nurses, when compared to the pre-test scores of that same group.

5. There will be no statistically significant differences in the pre-test scores on the A.M.I. Case Study Test One and the post-test scores on the A.M.I. Case Study Test Two of the control group of nurses.

6. Scores on the Behavioral Checklist, as measured by the researcher, will indicate no statistically significant differences in the clinical behaviors of the control group of nurses as measured by the pre-test and post-test scores.

7. There will be a statistically significant increase in the post-test scores on the A.M.I. Case Study Test Two of the experimental group of nurses when compared to the post-test scores of the control group.

8. Scores on the Behavioral Checklist, as measured by the researcher, will indicate a statistically significant increase in the post-test scores of the experimental group of nurses when compared to the control group of nurses.

9. There will be no statistically significant differences in the post-test scores on the A.M.I. Case Study Test of the experimental group of nurses who participated in the pre-testing when compared to the experimental group of nurses who did not participate in the pre-testing.

10. There will be no statistically significant differences in the post-test scores on the A.M.I. Case Study

Test of the control group of nurses who participated in the pre-testing when compared to the control group of nurses who did not participate in the pre-testing.

Methodology

Design

This research was experimental using the Solomon four-group design. It involved two experimental groups of nurses and two control groups of nurses. One experimental group of nurses and one control group of nurses were administered the pre-test and the other groups of nurses were not. This allowed the effects of the pre-test measure and the intervention to be segregated. All four groups of nurses were administered a post-test on two separate occasions. A schematic of the research design appears as follows:

	01	X1	02	03
		X1	02	03
R				
	01		02	03
			02	03

It is both ethical and practical to withhold the designed intervention, i.e., the education on pain theory and priority setting, from half of the subjects. Therefore this true experiment included control, manipulation and randomization. The major strength of this study design is that causal relationships between the dependent and independent variables can be inferred with confidence (Polit & Hungler, 1987).

The pre-test and post-tests were the first paper and pencil measurement component (Appendix B). The second measurement component was structured observations of a

subject's performance in actual clinical situations (Appendix C). These were correlated with the subject's listing of priorities on the A.M.I. pre- and pre- and post-Case Study Tests. The major disadvantages of the paper and pencil test are that the performance on the test assesses only a limited sample of the tasks required for the job, without obtaining an overall assessment of job performance. The Behavioral Checklist provides documentation of the independent variable as implemented in actual behavior in a clinical setting. According to Erickson and Wentling (1976), an examinee's performance in real life work situations can be inferred from the performance on a simulation test. The structured observations document this inference. The Behavioral Checklist was used with all subjects after they had signed the consent form, again during their first working shift after the experimental intervention, and finally, during their first working shift, one month after the experimental intervention.

Sample and Setting

The randomly assigned sample (n=85), was drawn from critical care staff nurses working eight hour shifts in 13 hospitals in a large metropolitan city (N=125). Any staff nurse working in a critical care unit was eligible for inclusion in this study with the exception of the following:

1. Nurses from registries.

2. Nurses who did not have a least one month of critical care experience.

3. Nurses who did not work a minimum of two days per week.

4. Nurses who did not function independently, such as new nurses being oriented, or nurses who "floated" from other parts of the hospital.

All hospitals in the metropolitan area were approached through the Director of Nursing and the Chairperson of the Nursing Research Committee who reviewed the proposal for this study. Permission to work with the critical care nurses to conduct this research during scheduled time was obtained from the Director of Nursing. Each participating hospital was informed of the benefits of its cooperation with this research, including a return visit by the researcher to present the results of the study and an offer to provide the class as an inservice to all of the critical care nurses at a future date.

All nurses who met the criteria for inclusion in the study were listed in alphabetical order, numbered consecutively, and then assigned to a research group by use of a random numbers table. The sample was representative of all hospitals, both large and small urban facilities. A certain degree of subject attrition was expected because of inconvenience or inability to attend the class.

To ensure confidentiality, all subjects were given a code number to be used on the demographic questionnaire and tests throughout the study. A list of the subjects' names and phone numbers with their corresponding code numbers was kept in a locked cabinet, accessible only to the researcher. At the completion of the study, the list was destroyed and all questionnaires and test results continue to be kept under lock and key, identified only by code number. When the results of the study are published, the identities of the participants and their institutions will remain anonymous. All subjects were guaranteed confidentiality in writing prior to agreeing to participate in this study.

Data Collection Methods

Instruments

The A.M.I. Case Study Test (original and alternatives A and B) are simulated case study paper and pencil tests. The original form and alternative A were developed by Barbara Riegel, R.N., M.S., a cardiovascular clinical nurse specialist. She developed the tool in her master's research project because no appropriate tool was found in the literature which measured the priority critical care nurses give to various nursing interventions when caring for a patient with an acute myocardial infarction. The 12 item test requires the examinee to read a scenario and rank 5 outcome possibilities for each item. The test and alternative forms are designed to necessitate careful reading and logical, thoughtful action. The test requires approximately twenty minutes to complete.

The A.M.I. Case Study Test was developed to yield "relief of pain" or a synonymous answer as a first priority in the care of patients with an A.M.I. In establishing content validity, Riegel used a five member panel of judges. Each of the five members was a master's prepared Clinical Nurse Specialist, working in a critical care setting. The panel members were asked to agree or disagree with the question, "Do you agree that relieving this patient's pain is the correct priority?" (as assigned by the researcher). In establishing the content validity of the tools, a minimum of

80% agreement among the five judges was deemed acceptable. The percent of actual agreement was 96%.

To decrease answering based on familiarity with the same test offered three different times, an original and alternative form were developed by Riegel. In the current study, a second alternate (B) A.M.I. Case Study Test and a Behavioral Checklist were developed, and thus a retest of the content validity was necessary. Therefore, a ten member expert panel of critical care nurse specialists, all master's prepared in nursing and who were presently working or teaching in a critical care setting, was employed to establish the content validity of the measurement tool, its alternate forms and the Behavioral Checklist. The judges were contacted by mail with a packet containing an introduction, the tools to be judged and a form to indicate agreement or disagreement (Appendix D).

In establishing the content validity of the paper and pencil Case Study tests tools, a minimum of 80% agreement among the ten judges was deemed acceptable. When disagreement occurred the judges were asked to specify why they disagreed. All items not receiving 80% agreement were revised and rejudged. Eight questions received 90% agreement and two questions received 80% agreement. The tool utilized a combination of simulation and ranking techniques. According to Redman (1982), simulation is an artificial process utilized for the purpose of gaining knowledge without

the use of the real objects or situation. Ranking is defined as the placement of an item in a category of more or less than some other item (Redman, 1982).

Riegel also used the five member panel of judges to test the reliability of each question on the alternate form (A) of the paper and pencil Case Study Test tool. The five member panel was asked to determine whether or not the alternate form of each of the 12 items was equivalent. The panel members were asked to agree or disagree based on their response to the question, "Do you agree that situation #__ on the original form is equivalent to the situation in #__ on the alternate form?" The percent of agreement was 97%. Equivalent reliability was tested in the same fashion in this study using the ten member panel of judges. Again, a minimum of 80% agreement among the ten judges was deemed acceptable regarding the alternate forms of each test item. The percent of agreement was 94%.

Procedures

All subjects were asked to sign an informed consent form (Appendix E) and to complete a demographic questionnaire (Appendix F). A pre-test was distributed to half the randomly assigned experimental and control groups of nurses as illustrated in the Solomon design. One month later, (to decrease answering based on familiarity with the pre-test A.M.I. Case Study Test), the experimental group of nurses engaged in a two-hour education class. The class was given

by this researcher using a formal, predesignated, structured outline (see Appendix A). The first hour contained information regarding the theoretical framework and rationale for pain relief, as proposed in this study. The second hour was related to priority setting. After the class, the experimental group was instructed not to discuss the class among themselves. After a ten minute break to minimize fatigue, a post test was given. When class was completed, the control group of nurses was given the post test at another location by the researcher. One month later, all subjects were given a second post-test. The time period between tests was kept relatively short in an attempt to control intervening or extraneous variables, such as contamination, attrition, historical events occurring over time and the possibility of new learning, not related to this study. According to Redman (1980), learning is a gradual, continuous process. Retention of learned material is increased by practice and learning over a period of time. The month between testing was long enough to minimize easy recall of the class material and previous testing.

All subjects were observed by the researcher and their behaviors scored using the Behavioral Checklist. The structured protocol for the observations was as follows:

1. One hour prior to the observations, the researcher introduced herself to the subject to be observed.

Information from the subject and the chart were gathered and recorded on the Behavioral Checklist.

2. The researcher also introduced herself to the patient using the following introduction: I am a graduate nursing student conducting research with your nurse. I am observing the care your nurse gives to you during the next few hours. I am not going to be involved in your care but will only observe the care given by your nurse. Thank you for letting me observe your nurse.

3. The researcher observed only the interactions between the subjects and patients already admitted to the unit with the diagnosis of acute myocardial infarction. Scoring on the Behavioral Checklist was done only if the patient complained of pain.

4. At the completion of the observations the subject and the patient were thanked for their cooperation.

5. The same protocol was used with all subjects, in all of the participating hospitals.

In the event that subjects had not been observed after a second visit using the Behavioral Checklist, they were noted and deleted when the data were analyzed. The same protocol was followed the day after the experimental intervention, and finally, one month after the experimental intervention.

The researcher also administered the paper and pencil tools to the control and experimental groups of nurses.

Analysis of Results

Parametric statistics were used in the data analysis of this study. The data were drawn from a normally distributed population that is homogeneous with respect to critical care nursing. The scoring of the test was two points for a correct priority given to pain relief, and no points if pain relief was ranked in any other order. The summated points possible were 20. Scores along the continuum, from zero to twenty, indicated the degree to which the subject correctly chose the pain relief priority. Although the ranking of the interventions in order of priority generated ordinal data, the sum of the scores generated by the entire procedure possessed the properties of magnitude and equal intervals, but not an absolute zero point.

The standard analyses of variance, ANOVA and t-test, were used to compare the means of the total test scores of each group of nurses. A one-way ANOVA was used to examine the relationship between the post-test scores of the experimental groups and control groups of nurses. The level of statistical significance chosen for this study was $p=.05$. Data from the Behavioral Checklist were compared with the means of the total test scores for each group of nurses, using a one way ANOVA and Chi Square. The comparisons between the data generated by all the instruments and each item from the demographic questionnaire were analyzed using a one-way ANOVA and Chi-Square.

Characteristics of the Sample

Eighty-five registered nurses participated in this study. Forty-four were randomly assigned to the control group of nurses and 41 to the experimental group of nurses. The two groups were each further divided into two additional random groups, according to the Solomon design. Seven nurses were lost from the study due to incomplete data collection. Therefore, the results of this study reflect n=78, 40 subjects were in the control group of nurses and 38 were in the experimental group of nurses. No statistically significant differences, (p=0.1707) were found among the four groups when the demographic variables were compared using Chi Square. At the completion of all testing, participants were asked about their personal experiences with pain (Appendix G). No statistically significant (p=.1313) differences between the experimental and control groups of nurses were obtained using Chi Square to analyze these experiences.

The percentage of females in the total sample, was 93.6%. Caucasians totaled 96.2%; 2.6% were Blacks and 1.3% were American Indian. Thirty percent of the subjects had an associate degree in nursing; 34.5% had a baccalaureate degree in nursing; 7.7% of the nurses had a diploma and baccalaureate degree; and 28% held a combination of degrees. None of the nurses had a master's degree in nursing. Forty-nine percent of the nurses had earned a certificate in basic coronary care. Thirty-two percent had earned an A.C.L.S.

certificate and 21.8% had a C.C.R.N. certificate. Continuing education classes in coronary care had been attended in the preceding year by 73.1% of the subjects.

The years of experience in critical care nursing were divided into 6 equal intervals, from less than one year to greater than 12 years. 74.9% of the nurses were in the first 3 intervals, having 6 years or less experience. Experience with patients having an acute myocardial infarction was less, with 69% having less than 3 years experience. Eighty-six percent of the nurses were staff level nurses. The remainder were charge nurses and no nursing supervisors participated in this study. Seventy-one percent of the subjects subscribed to only one professional journal and 50% of those read less than 25% of the journal. The demographic and personal variables were not noted to vary significantly in the attrition subjects when compared with the sample subjects. The profile of the typical nurse participant appears in Table 3. Selected demographic data of the control and experimental groups of nurses are listed in Table 4.

Table 3

Profile of the Typical Nurse Participants in the Sample

Variable	Mean of Sample
age	34 years
race	Caucasian
mean number of coronary care nursing certificates	1.4
participated in a class in coronary care within the past year	yes
mean number of journals to which subscribed	1.2
content of those journals read	<25%
education in nursing	34% Baccalaureate 30% Associate degree 7.7% Diploma 28.3% Combination of degrees
critical care experience	1 - 6 years
experience with A.M.I. patients	1 - 3 years
current position	staff nurse
personal experiences with pain	yes
experience seeing a loved one in pain	yes
read more than three articles on pain	no
read a book on pain	no
mean rating of interest in pain on scale of 1 to 5	2.8

Table 4
Selected Demographic Data According to the Control and Experimental Groups of Nurses

Variable	Control Group (n=40)	Experimental Group (n=38)	Total (n=78)
level of nursing education			
Master's degree	-0-	-0-	-0-
Bachelor's degree	34.0%	33.0%	32.0%
Diploma	7.7%	9.5%	8.6%
Associate degree	30%	37%	36%
Combination of degrees	28.3%	20.5%	23.4%
Work experience in critical care			
less than 1 year	24.4%	25.3%	23.5%
1 to 3 years	26.9%	28.3%	27.6%
4 to 6 years	23.1%	24.1%	22.1%
7 to 9 years	11.5%	12.3%	12.3
10 to 12 years	6.4%	7.9%	7.1%
greater than 12	7.7%	9.4%	6.0%
Continuing education in coronary care within the last year			
yes	71.8%	74.4%	73.1%
no	28.2%	25.6%	26.9%
Content of professional journals read per month			
less than 25%	71.7%	68.8%	70.5%
25% to 50%	23.5%	22.6%	23.1%
>50% to 75%	2.0%	4.1%	3.1%
>75% but <100%	0.0%	1.3%	.2%
Certificates in coronary care			
none	25.8%	26.2%	26.0%
Basic	42.8%	40.3%	41.6%
Intermediate	20.6%	21.9%	21.3%
Advanced	10.8%	11.6%	11.1%

Results of the Hypotheses Testing

Hypothesis One

The first hypothesis of this study stated that there would be no statistically significant differences in the pre-test scores on the Acute Myocardial Infarction Case Study Test One of the experimental group of nurses when compared with the control group of nurses. This hypothesis was supported for independent groups of nurses by a t-test of .4863 with an alpha level at p=.3865. Therefore, the pre-test established that there were no statistically significant differences between the control and the experimental groups of nurses at the onset of the study.

Hypothesis Two

The second hypothesis of this study stated that scores on the Behavioral Checklist, as measured by the researcher, prior to the education class would indicate no statistically significant differences in the clinical behaviors of the experimental group of nurses when compared to the control group of nurses. This hypothesis was supported because all nurses participating in the study scored zero on the behavioral checklist prior to the study. Therefore, there were no statistically significant differences in the observed clinical behaviors of the experimental and control groups of nurses, as measured by the behavioral checklist.

Hypothesis Three

The third hypothesis stated that there would be a statistically significant increase in the post test scores on the Acute Myocardial Infarction Case Study Test of the experimental group of nurses when compared to the pre-test scores on the Acute Myocardial Infarction Case Study Test of the same group. This hypothesis was supported by a t-test score of 2.98, with an alpha level of .2648. This finding supports that after the experimental intervention of the class, the scores on the Acute Myocardial Infarction Case Study Test did improve.

Hypothesis Four

The fourth hypothesis stated that scores on the Behavioral Checklist, as measured by the researcher, would indicate a statistically significant increase in the post-test clinical behaviors of the experimental group of nurses when compared to the pre-test scores of that same group. This hypothesis was supported by a Chi Square of 68.34 which was significantly higher than would be expected by chance. The alpha level was p=.1562. This finding indicates that after the experimental intervention of the class there was a significant change in the clinical behaviors as measured by the Behavioral Checklist.

Hypothesis Five

The fifth hypothesis stated that there would be no statistically significant differences in the pre-test scores

on the Acute Myocardial Infarction Case Study Test One and the post-test scores on the Acute Myocardial Case Study Test Two of the control group. This hypothesis was supported by a t-test of 1.4834 with an alpha level of p=.1364. This indicates the paper and pencil scores of the control group did not change during the study.

Hypothesis Six

The sixth hypothesis stated that scores on the Behavioral Checklist, as measured by the researcher, would indicate no statistically significant differences in the clinical behaviors of the pre-test and post-test scores of the control group of nurses. The Chi Square result was 33.4 which could have occurred by chance, with an alpha level of p=.2538. This indicates that the clinical behaviors of the control groups as measured by the Behavioral Checklist did not change significantly during the study.

Hypothesis Seven

The seventh hypothesis stated that there would be a statistically significant increase in the post-test scores on the Acute Myocardial Infarction Case Study Test of the experimental group of nurses when compared to the post-test scores of the control group of nurses. This hypothesis was supported by t-test of 3.168 with an alpha level of p=.1638. The second set of post-test scores, one month later were also significantly higher with t=2.586 with an alpha level of p=.05. The t-test results were noted to be lower one month

later but still statistically higher than the control group of nurses. These results are displayed in Figure 2.

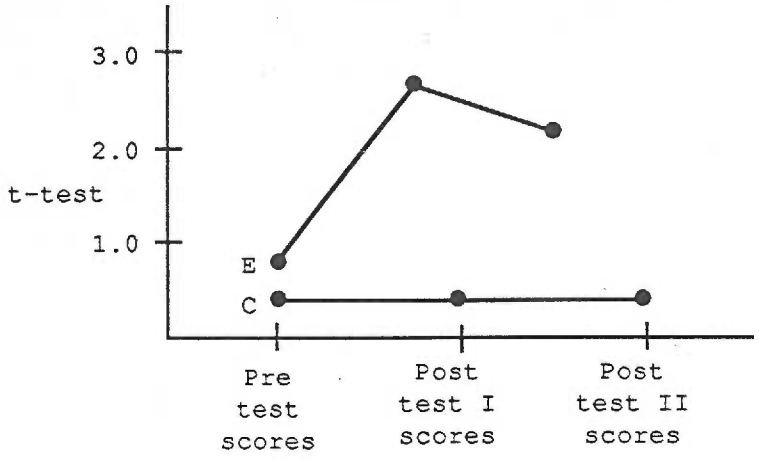

Figure 2 Comparison of t-test Scores

Hypothesis Eight

The eighth hypothesis stated the scores on the Behavioral Checklist, as measured by the researcher, would indicate a statistically significant increase in the post-test scores of the experimental group of nurses when compared to the control group of nurses. This hypothesis was supported by a Chi Square of 58.65, with an alpha level of p=.2643. Therefore, the scores of the post-test of the experimental group were significantly higher than the control group of nurses.

Hypothesis Nine

The ninth hypothesis stated that there would be no statistically significant differences in the post-test scores on the Acute Myocardial Infarction Case Study Test Two of the

experimental group of nurses who participated in the pre-test as compared with the experimental group of nurses who did not participate in pre-testing. The t-test score of .7638 and an alpha level of p=.1465 supported this hypothesis. This result indicates that pre-testing was not a significant influence in this study.

Hypothesis Ten

The tenth hypothesis stated that there would be no statistically significant differences in the post test scores on the Acute Myocardial Infarction Case Study Test Two of the control group of nurses who participated in the pre-testing as compared to the control group of nurses who did not participate in the pre-testing. The t-test score of .3281, with an alpha level of p=.2363, supports this hypothesis. Therefore, the scores of the control group who participated in pre-testing were not significantly different than the scores of the control group who did not participate in pre-testing.

The Relationship of the Results to the Theoretical Framework

Eighty-five registered nurses voluntarily agreed to participate in an experimental study to determine if their priorities of care for patients with acute myocardial infarction changed after attending a 2-hour class in which pain theory and the process of setting priorities was presented. Those nurses were randomly divided into two groups, control and experimental. Each group was further divided into two groups which participated in pre-testing. This segregated for the pre-testing effect which did not significantly influence this study.

A number of demographic variables were analyzed to determine their relationships to the pre-test and post-test scores. No demographic variables or personal experiences with pain correlated with the scores on the Behavioral Checklist or the paper and pencil case study test. The typical nurse participant of this study resembles the demographic characteristics typical of nurses nationwide (National Sample Survey of Registered Nurses II, 1980) and in critical care units (Kinney, 1981).

This research discussed in its literature review the significance of pain relief and morbidity of patients with acute myocardial infarction. Based on the results of hypotheses one and two, the nurses in this sample appeared similar in their lack of knowledge of pain relief and priority setting. According to the conceptual framework, if

nurses participate in an education class, regarding theory of pain relief and priority setting, they will assist in decreasing the pain of patients with an acute myocardial infarction and thus, the patient's morbidity and mortality. The experimental group of nurses demonstrated a significant increase in their post-test scores on the paper and pencil test and the Behavioral Checklist. Since hypotheses 3 - 8 were supported, this indicates that the subjects who attended the class learned material which assisted them in correctly answering the Acute Myocardial Infarction Case Study Test questions and changing their clinical behaviors, as measured by the Behavioral Checklist.

According to the conceptual framework of this study, if the nurses participate in an educational class concerning pain relief theory and priority setting, cognitive learning will occur which produces a change in the clinical priority setting of nursing interventions related to the pain relief of patients with an acute myocardial infarction. The positive correlation of the clinical behaviors with the paper and pencil test results supports similar findings of Erickson and Wentling (1976): an examinee's performance in real life work situations can be inferred from the performance on a simulation test.

The fact that the subjects demonstrated a significantly higher mean post-test score following the presentation of pain theory and the process of priority setting, implies that

one or both of these areas of content influenced the way in which they chose the priorities for their nursing interventions. The data support the conclusion that the nurses who participated in the experimental class did indeed gain knowledge in the content areas which they then applied to the simulated case studies. These experimental findings were further substantiated by a change in the observed clinical behaviors. Therefore, cognitive learning was transferred and applied in the clinical area.

The literature reviews for this study and the similar study by Barbara Riegel, R.N., M.S., have focused on the destructive effects of pain for patients with an acute myocardial infarction. Patients with an acute myocardial infarction who experience pain destructively alter the supply and demand balance of the myocardium. Pain produces psychological distress, increasing the level of circulating catecholamines, which increases myocardial oxygen demand and the risk for dysrhythmias. Riegel's study demonstrated that nurses who participate in an educational class on pain relief and priority setting will improve their scores on a paper and pencil case study test on pain relief and priority setting. These results were replicated in this study and carried through in the observations of the nurses in clinical settings. Therefore, this researcher recommends that educational classes for critical care nurses be established

which provide knowledge regarding pain relief theory and the priority setting of pain relief interventions.

Limitations

A number of limitations are recognized in this study; the major limitation is contamination. The nurses in the experimental and control groups worked together. The actions of the experimental group of nurses, after taking the class, after taking the class, might have influenced the actions of the control group of nurses, thus raising the post-test scores of the control group. A few nurses might have, after taking the test, been stimulated to rethink their priorities. This may be described as a novelty effect. This study did not have any screening or policing methods to detect whether enthusiasm or skepticism in the clinical behaviors of the experimental group affected the behaviors of the control group. A similar limitation is the Hawthorne effect. All nurses signed a consent form and therefore were aware they were participating in research concerned with patients with an acute myocardial infarction. Therefore, the subjects in this study may have behaved in a particular manner primarily because they were aware of their participation in this study.

The second major limitation is the pre-testing effect. The pre-testing effect is minimized by the use of the Solomon design. The results of hypotheses nine and ten support that pre-testing did not affect the post-test results. A placebo class could have been taught to the control group of nurses, but for convenience considerations, this was not done. Also,

there are the limitations inherent in using an existing situation as the control.

Another limitation of this study was the potential negative effect introduced by the commitment to participate in the study. The nurses were asked to sign the consent form, and complete a demographic questionnaire, and pre-test on work time. However, the class was on their free time, and they may have had to drive to another institution to take the class and the post-test. Although all of these considerations were explained verbally and in writing prior to obtaining the agreement to participate in this study, the subjects may not have understood. Therefore, dropouts and refusals resulted in seven subject attrition. Also, it would be naive to underestimate the effect that follow-up testing may have on motivation and learning. Bandura (1986) describes motivation, which is concerned with the activation and persistence of behavior, as being primarily rooted in cognitive activities. Individuals motivate their behavior by thinking of future outcomes, creating expectations that behaving in a certain way will produce anticipated benefits or avert future difficulties. A second cognitively based source of motivation is the influence of goal setting and self-evaluation. Both the anticipated satisfactions of desired accomplishments and the negative appraisals of insufficient performance thus provide motivation.

Those individuals randomly assigned to the experimental group had access to the class which could have been viewed as producing anticipated benefits or averting future difficulties, thus increasing self-motivation. Those nurses in the control group may have seen no benefit to themselves in taking the test, and their motivation may have been supplied only by obligation. Another limitation of this study is the threat of historical events occurring over the two-month time frame. The subjects may have changed in their knowledge of critical care due to two months of critical care job experience. Events occurring due to the time frame cannot be controlled, but none were noted by the researcher which could have influenced the findings.

The final limitation of this study is the threat of experimenter. The performance of the subjects could have been affected by characteristics of the researcher. The researcher did have emotional and intellectual investment in conducting this research and may have unconsciously communicated her expectations to the subjects. However, a structured protocol was used with a structured Behavioral Checklist to control for this variable.

Summary and Recommendations

Answering these research questions is very important to the nursing profession for the promotion and protection of clients experiencing an acute myocardial infarction. Nurses can play a critical role in limiting infarction size. The implication of this study is that nurses may not realize the importance of relieving pain in a patient with an A.M.I. Many of the decisions that nurses make each day concerning the care of patients with an A.M.I., such as the amount of activity, visiting privileges, body positioning, and meal size, are based on the need to decrease myocardial oxygen demand. Nurses demonstrate their commitment to individualized patient care by basing their priorities on their client's situation, rather than on any automatic sequences of maneuvers. The theoretical framework of this study suggests that the relief of pain by nurses can potentially improve the prognosis of clients with an A.M.I. Relieving pain is an important nursing intervention that is essential if the stress response and concomitant effects of increased circulating catecholamines are to be minimized. Furthermore, many of the medical interventions that are designed to increase myocardial oxygen supply or to decrease oxygen demand are prescribed at the nurse's request.

The results of this study indicate that education about the physiologic basis of pain relief as applied to an A.M.I. will increase the priority nurses give to pain relief

interventions with their clients. Recommendations for future study include the methodological testing of the design of the study and various components of the conceptual framework. The sample size should be increased to be representative of the population of cardiac critical care nurses that were excluded from this study, i.e., part-time, agency or float nurses. Observations of the nurses without their awareness would decrease the external and internal threats to validity noted in this study.

Once the limitations have been controlled the conceptual framework should undergo methodological research. The conceptual framework, as developed and tested in this study could be used in the evaluation of pain relief priority setting in other clinical areas that involve the stress response, eg. surgical clients. Further experimental testing of the design of this study could be expanded to include other client populations.

Pain is a purposeful symptom and usually has protective value. It is a warning sign that activity must be limited and help must be sought. The pain of an A.M.I. can also be destructive. The challenge of limiting the size of an A.M.I. is the responsibility of all those involved in the care of clients with an acute myocardial infarction. Thus, nurses need to continue to educate themselves and their clients about the importance of seeking relief from coronary pain.

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Appendix A

Teaching Plan

Teaching Plan

Objectives:

1. State two goals of therapy for the patient newly admitted with an acute myocardial infarction (A.M.I.).
2. Identify 16 physical findings which indicate an outpouring of catecholamines.
3. List 3 nursing interventions which can decrease myocardial metabolic demands.
4. List 6 processes which increase myocardial metabolic demands.
5. List 4 physical-psychological effects of pain on the patient with an A.M.I.
6. List 10 nursing interventions to decrease pain.
7. Prioritize nursing care interventions based on the theory presented, for patients with an acute myocardial infarction.

Content:	Teaching Action:
	"Lets talk about what happens physiologically when a patient has an A.M.I."
	"What physical findings do you usually observe in patients with A.M.I?" (write & leave on board)
	"A myocardial infarction is a stressor. What is the body's physiological response to stress?"
	Overhead #1--diagram of the autonomic nervous system (A.N.S.).
	"I am going to begin by reviewing the autonomic nervous system briefly."
Review of the autonomic nervous system--concerned with	

Content:	Teaching Action:
the regulation and coordination of vital visceral activities. It innervates smooth muscles, cardiac muscles, other muscles and glands. It is concerned with regulating internal glands. In general, it regulates structures not under voluntary control and those below the level of consciousness. Examples: Heart beat, digestion, sweating, pupillary dilation/constriction.	
There are two major subdivisions to the autonomic nervous system: the sympathetic and the parasympathetic divisions.	
The sympathetic nervous, also called the thoracolumbar division, anatomically leaves the central nervous system from the thoracic and lumbar regions of the spinal cord.	Overheads #2 and #3-- anatomical location of both divisions of the A.N.S.
The sympathetic division is especially active during situations of stress. When stress occurs, the hypothalamus in the brainstem stimulates the adrenal medulla, which sits on top of the kidneys, and causes the release of substances called catecholamines known as epinephrine and norepinephrine. These are also known as adrenalin and nonadrenalin.	Overhead #4-- diagram of stressor stimulating hypothalamus with release of catecholamines. Include the parasympathetic division for reference.
This response of the body to stress is purposeful to prepare the patient to deal with stress by fighting or fleeing. Thus, this response is often called the "fight or flight" response. You might have also heard it called an adrenergic response. It is a widespread and long	Overhead #5-- physiological effects of sympathetic nervous system (SNS) stimulation.

Content:	Teaching Action:
lasting response.	See how the physical findings correlate with the physiological responses listed. Refer back to the physical findings listed on the board.
	How the body is preparing to fight or flee. (talk through a few to demonstrate)
	"Look how many of these are present in the patient with an A.M.I.
Physical findings: elevated blood pressure skin pallor cool skin decreased urine output increased respiratory rate irregular respirations increased muscular tension change in activity level increased CNS arousal decreased appetite decreased bowel routine dilated pupils sweating, tachycardia arrhythmia	
	"What are some of the things that cause the stress response in the patient with an acute MI?"
	"What do all MI patients have in common? (pain) "Is this important to us? Can we as nurses do anything about that?"
Let's focus on pain. Severe pain causes both psychological and physiological stress.	

Content:

Teaching Action:

But both pain and psychological stress also cause stimulation of the sympathetic nervous system with an outpouring of catecholamines, specifically epinephrine.

We can group the adverse catecholamines effects in MI patients into two broad categories.

Arrhythmias are known to increase levels of the catecholamines. Epinephrine is thought to enhance automaticity of the Purkinje fibers and affect calcium in the heart. Both automaticity and calcium can cause the arrhythmias we see in patients with an A.M.I. Sudden death, which we relate to arrhythmias, also appears to be caused by catecholamine outpouring.

The other major adverse effect of catecholamines in patients with an A.M.I. is the effect on myocardial oxygen demand.

Within an hour of the occlusion of the coronary artery, a necrotic area develops. This area of the infarcted tissue is a given--it cannot be decreased as far as we know. But surrounding that dead tissue is a zone of jeopardized, but potentially salvageable myocardium. The fate of this area and thus the final size of the infarct is undecided for a day or so.

Overhead #6--diagram of jeopardized myocardium.

The amount of heart failure a patient has after an A.M.I. is

Content:

Teaching Action:

directly proportional to the amount of necrotic contracting myocardium. Thus, limitation of infarct size has become a major goal of therapy in the CCU.

Rehabilitation potential is directly related to the amount of functioning myocardium left to contract. Research on factors which substantially alter the size of infarcted tissue indicate that anything that causes increased cardiac contractility (work) will increase the myocardial oxygen demand, ischemia and thus enlarge the necrotic area.

"How does pain affect the myocardial workload?"

The catecholamines released with the pain of an A.M.I. can cause this increased cardiac work by causing a tachycardia. This increases myocardial metabolic demands because the faster the heart beats, the more demand for oxygen and nutrients it makes on the body.

The normally vascularized heart can tolerate tachycardia just fine. But in a heart that can't dilate the clotted coronary arteries to give the heart more blood when it beats faster, tachycardia just worsens the ischemia. Worsening the ischemia can enlarge the size of the heart.

"Name some factors which would increase the heart rate or cardiac work."

Factors which cause increased cardiac contractility are catecholamines, pharmacologic stimulation such as Atropine,

Content:

Teaching Action:

anemia, hypotension or exercise.

Nurses can be very influential in salvaging the area of jeopardized myocardium. Relief of pain is a nursing intervention since the medications are ordered on a PRN basis. Pain relief can decrease the patient's level of catecholamines.

Relief of pain is also a humanitarian goal. Perhaps patients who have their pain relieved quickly even adjust better to their disease in the long run. Maybe they are not as traumatized as the patient who has pain for a long time, and thus, having coronary artery disease seems like something they can cope with.

"Can you think of anything else which can decrease myocardial oxygen demand at a time like this?"

Two more factors which can decrease myocardial oxygen demand are to decrease psychological stress and to administer pharmacologic agents as ordered to keep the heart rate at the low side of normal, such as Inderal.

Research has shown that even 60 beats/minute can demand more oxygen for the myocardium than the compromised system can supply, which can increase infarct size.

The bottom line is that pain causes psychological stress. Pain and psychological stress cause an outpouring of the catecholamines.

Further demand in this already compromised system can lead to

Content:

Teaching Action:

increased arrhythmias and an increase in the size of the infarct. Both arrhythmias and large infarcts increase the morbidity and mortality of patients with an A.M.I.

"Questions?"

"We have developed this classic picture of the acute MI patient with pain--restless, with cool, clammy skin, tachycardia, hypertension, etc. But what about the patients we see who have bradycardia and hypotension on admission? Does this mean that these patients are not stimulating their autonomic nervous system?"

Overhead #7--
pain of visceral origin.

Pain of visceral origin, especially if severe, may produce a mixed autonomic response. The parasympathetic nervous system can produce effects that we see in patients with an A.M.I.

Increased peristalsis causing diarrhea; nausea and relaxation of intestinal sphincters and increased motility.

Slowed rate of cardiac muscle contraction causing bradycardia; peripheral vasodilation causing hypotension.

Further responses to visceral pain include:
- increased anxiety
- heightened awareness to noxious stimuli
- facial grimaces

Content:

restlessness
excitability

Pain causes release of catecholamines whether or not other physical evidence is present. Catecholamines have harmful effects which are essentially independent of the presence or absence of concomitant augmentation or cardiac work load.

Thus, while there are a number of physical findings which can help confirm that the patient is physiologically overloaded with catecholamines, pain causes increased circulating catecholamines even if the physical findings are not evident. Catecholamines use up oxygen. Patients with A.M.I. have a deficiency of oxygen reaching their cardiac muscles. We can help balance the patient's physiological parameters by actively working to relieve the patient's pain.

Factors which increase pain: fatigue, sleep deprivation, anger, boredom, loneliness, anxiety, sensory overload, or lack of sensory input.

Teaching Action:

"Can we make the supposition that it is not essential to relieve the pain of a patient with A.M.I. who does not exhibit other signs of sympathetic stimulation?

"What factors can you think of which would make this patient's pain worse?" (Write on the board)

"Administration of drugs to relieve pain is not our only option. How else can we as nurses help to relieve the patient's

Content:	Teaching Action:
	pain?"
Nursing interventions to decrease pain: arrange schedules to provide rest, visiting hours flexible for the benefit of the patient, explanations about what is happening, consistent environment, minimum noise, minimum extraneous personnel, consistency of nursing personnel assignments, calm, confident attitude of the nurses, emotional support when the normal response of anger evolves a few days later, monitor the selection of programs, monitor reading material.	
	"Although most of the literature supports the belief that pain of an A.M.I. should be relieved quickly, a study where pain relief is withheld to test the effects would be ethically difficult to do. Thus, there continues to be a controversy about the need to relieve pain quickly in these patients."
Margo McCaffery, the well-known nursing authority on pain, states in her book that there has been a trend toward the underuse of narcotics in the treatment of pain.	
	"What are some of the reasons you can come up with for the undermedication of patients in pain? What are some of your concerns when administering narcotics?"
Beliefs of the health care givers: side effects of morphine may hurt more than help; fear of respiratory depression; fear of addiction, fear of being "used" by the	

Content:	Teaching Action:
malingerers; pain is antagonistic to morphine addiction; belief that pain is not a direct threat to life; personal fear of pain; infer less pain than the patient feels; denial, self-protection, desensitization by routine exposure; under-estimation of the effective dose range; over-estimation of the duration of action; fear of "copping out"--too easy to sedate; inexact methods to quantify pain.	"Let's talk about some practical solutions to some of these problems." "What methods do you use to assess how much pain a patient has?"
Pain can be quantified easily by the patient on a scale of 1 to 10, with 10 being the worst.	"Questions?"
	(10-minute break)
	"We've talked about nursing interventions aimed at decreasing the work of the heart so that we can limit infarct size and prevent pump failure."
	"How can we put this into perspective?" "I'm not trying to tell you that one's first priority should always be to decrease the work of the heart, for example, by limiting activity." "My intention is to give you another perspective to fit into your clinical judgment."

Content:

Teaching Action:

"Let's talk a little about the process we all do so quickly and automatically that it appears to be a one step phenomenon. But let's try to dissect it, break it down into separate steps. In general, what steps do you go through when you're faced with either a new patient or new information?"

1. Assess what is possibly happening.
2. What's the worst thing that could be happening?
3. What new data do you need to begin to rule out the possibilities?
4. What's your decision about what is probably going on?
5. Decide on a plan of action and implement it.
6. Evaluate your plan and collect new data if necessary.

"Let's work through a few examples to try to fit this goal of decreasing MVO2 into the proper perspective.
"A 62 year-old female has been newly admitted from the clinic across the street. She has a long history of ASHD and a previous MI. She was up most of the night with chest pain, and her husband finally brought her in. The nurse from the clinic tells you she has a BP of 160/100, pulse rate of 96 with skipped beats. The clinic does not have a monitor, so she doesn't know what the skipped beats are. Her respiratory rate is 24/minute. When you

Content:	Teaching Action:
	see her, she still has chest pain and she is sitting up in the bed like she is frozen.
	"What have you assessed?" (write on the chalkboard) "What could possibly be happening?"
An arrhythmia, an MI, angina and anxiety.	
	"Which of these choices is the worst thing which could be happening?"
An arrhythmia is the most immediate life threat.	
	"What new data do you need?"
Put the patient on the monitor and run a rhythm strip for assessment.	
	"Let's say she is having unifocal PVC's at a rate of 3/minute. What would you do now?"
Progress to the second worst possibility, A.M.I.	
	What would you do for this situation?"
Relieve the pain of the MI, but before giving a narcotic, take a baseline blood pressure.	
	"How would you evaluate your plan?"
Recheck the blood pressure and ask her if the pain is relieved.	
	Overhead #8-- list of 10 possible nursing interventions. Talk through each one. "Let's go through another example. This is a 57 year-old female with a long history of medical care, but no documented CAD. She has had frequent ER visits requiring MS for

Content:	Teaching Action:
	relief of chest pain. This is her fourth admission in the past year to rule out an MI. Her initial EKG showed ST segment elevation in the inferior leads. She had 2mg MS in the ER, and she's now been in the unit for 2 hours. Her monitor suddenly shows an increase in heart rate from 92 to 128/minute. She had been sleeping, but now she's awake. You assess her to be pale, clammy, with a respiratory rate of 20/ minute. She complains of chest pressure. "What do you know from your initial assessment?" (write on chalkboard) "What could be happening?"
Heart failure, pulmonary embolism, A.M.I. with chest pain, shock, anxiety.	
	"What new data do you need to rule out some of these possibilities?"
Blood pressure, listen to the lungs.	
	"Let's say the BP is up to 120/70 from a previous reading of 106/60. When you listen to the lungs, they are clear. So based on this data, she is probably not going into failure or shock. Do you all agree? As she was sleeping when this began this probably wasn't precipitated by anxiety. We're left with pulmonary embolism and pain of an A.M.I. What would you do to discriminate the two?"
Ask her to describe the character of the pain.	

Content:	Teaching Action:
	"Let's say that she tells you that it's the same pain that she came in with --it's a heaviness in her chest with some radiation to her jaw. What would you do now?"
Relieve her pain. Evaluate it as before, i.e., recheck the BP and ask her if the drug relieved the pain.	
	Overhead #8-- list of 10 possible nursing interventions. Talk through each one. "Let's do a third one. This is a 47 year-old male who has been in the CCU for three days. He was admitted with syncope and he has a documented inferior wall MI. A moment ago, you walked into his room and he said he didn't feel well. You take his BP and find it 86/52. He has a bradycardia, rate 52. He complains of nausea and he seems restless. He had been up in the chair eating his lunch, so you put him back to bed. Let's summarize our assessment." (write on chalkboard) "What could be happening?"
Arrhythmias, anxiety, extension of his MI, vagal response, overexertion.	
	"What is the worst thing that could be happening?"
Arrhythmias or an extension of his MI.	
	"What new information do you need?"
A rhythm strip.	
	"Let's say it's a sinus bradycardia with no evidence of block. What would you do next?"

Content:	Teaching Action:
Take his blood pressure after you get him back to bed. Then ask for more symptoms.	
	"This patient denies pain, but he does admit to a pressure feeling in his epigastric region. Would you relieve this discomfort with MS or would you wait until it was 'pain'?"
Relieve the discomfort.	Overhead #8--as before.

Appendix B

Paper and Pencil Measurement Tools

Original

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situations, but in the test, please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mr. Smith, a 54 year-old male, has just arrived in the coronary care unit via stretcher from the emergency room with a diagnosis of probable anterior myocardial infarction. He is alert and oriented but complaining of severe, substernal chest pain that he describes as "an elephant sitting on my chest." His pulse rate is 60 and regular, blood pressure 100/60, respiratory rate 22. You help him transfer from the stretcher to the bed.

   ___ listen to his heart and lungs

   ___ relieve the patient's pain

   ___ talk with the family in the waiting room

   ___ ask what medications he has been taking at home

   ___ wait five minutes and take the BP again

2. Mr. Desters, a 75 year-old male was brought to your critical care unit a few minutes ago. You were told by the nurse in the E.R. that he has had an acute anteroseptal MI. Taking his blood pressure 88/56; respiratory rate 26/minutes; pulse rate 48/minutes, he answers slowly when you ask him how he feels. You put him on the monitor and assess that he is in a Mobitz type II AV block.

___ call the doctor

___ give Atropine per standing order

___ run a monitor strip for later comparison

___ wait 5 minutes and take another BP

___ ausculate the lungs

3. Mrs. McAdams, a 68 year-old female, has just been wheeled into the intensive care unit in a wheel chair from the admitting office as a direct admission. her diagnosis is probable myocardial infarction. She has had jaw pain for the last three hours. She is still uncomfortable. You help her into bed and put the monitor leads on her and discover that her heart rate is 92 with approximately 4 PVCs per minute. Her respiratory rate is 18 per minute with no complaints of difficulty breathing. You put an IV in.

___ ausculate her heart and lungs

___ ask about prior episodes of jaw pain

___ take a blood pressure reading

___ relieve the patient's jaw pain

___ call the doctor and tell him about the PVCs

4. Mrs. Coverton, a 35 year-old mother of two, has just been admitted to the intensive care unit with a diagnosis of inferior infarction. Her only risk factors are that she takes birth control pills and smokes one pack of cigarettes per day. Her blood pressure on admission is 110/72, her respiratory rate is 20 per minute, and after putting her on the monitor you see she is in borderline sinus tachycardia, rate 104. She appears very frightened and restless in the bed; as you approach her, you hear her moaning. You ask her if she is having chest pain and she sarcastically snaps, "No, I feel great."

___ give a narcotic to relieve her discomfort

___ assess the cardiac rhythm

___ listen to heart and lungs

___ talk with her family in the waiting room

___ call the doctor with your physical findings

5. Mr. Rotund, a 60 year-old obese male, has been newly admitted to the coronary care unit to rule out a myocardial infarction. He had an hour of left arm

discomfort associated with sweating and "indigestion" prior to admission and came immediately to the hospital because his Adult Nurse Practitioner told him his weight was a risk factor for heart disease. His arm discomfort persists. Taking his vital signs you find he has a regular pulse of 94, respiratory rate is 18 to 20, blood pressure 152/86. You establish IV access.

___ run an admission monitor strip for later comparison

___ wait five minutes and take another BP

___ give a narcotic to relieve the discomfort

___ listen to his heart and lungs

___ let the patient rest quietly

6. Mrs. Lasser, a 58 year-old female was admitted to your critical care unit one hour previously to rule out an acute myocardial infarction. She has had an incident of "fainting" prior to admission which may have been due to an arrhythmia. She was stable on admission: BP 114/76; sinus rhythm, rate 88; respiratory rate 14/min; lungs clear. But she has just had a short burst of 5 PVCs in a row at a rate of 16 min.

___ give a lidocaine bolus per standing order

___ take her blood pressure

___ call the doctor

___ ask her whether she felt like she was going to faint again

___ let the patient rest quietly

7. Mr. Lucas, a 71 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest and left arm pain associated with intermittent nausea and diaphoresis for the last three hours. You put him on the monitor and find his heart rate is 90, sinus rhythm, but taking his blood pressure you discover it is 180/110.

___ wait five minutes and take the BP again

___ call the doctor to tell him the BP reading

___ let the patient rest quietly

___ administer an antiemetic per order

___ relieve the patient's pain

8. Mr. Figlio, a 52 year-old male, has just been transferred back to the intensive care unit from the sixth floor. He had been a patient in your unit for three days with an uncomplicated myocardial infarction. Thirty minutes ago he complained of severe chest pain and was too nauseated to eat his lunch. His ECG shows acute ST and T wave changes, and a heart rate of 52 per minute.

___ get out his old ICU records and check the monitor strips for his past rhythms

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

9. Mrs. Hornbeck, a 52 year-old female, has been a patient in your unit for 3 days with the diagnosis of an anterior myocardial infarction. At noon, you assessed her and found her skin warm and dry, BP 148/96, sinus rhythm 60, respiratory rate 16, lungs clear, normal S1 and S2 on cardiac auscultation. She has been resting since lunch until a few minutes ago when she put her call light on. When you go into her room, she complains of shortness of breath and some chest pressure. Her respiratory rate is now 32/minute, pulse rate 74 and sinus. Her skin is cool and clammy.

___ call the doctor with her physical findings

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

___ take her blood pressure

___ give a narcotic to relieve her discomfort

10. Mr. Stilton, a 45 year-old male, has just been brought into the critical care unit by the emergency personnel, laughing and talking all the while. His diagnosis is probable myocardial infarction. As you approach him you realize his pupils are dilated and he is perspiring. He admits he has discomfort in his chest. The monitor shows sinus tachycardia with 4 PVCs per minute. His blood pressure is 150/92. You help him into the bed.

    ___ stay with him and talk to him to decrease his anxiety

    ___ run a monitor strip for later comparison

    ___ listen to his heart and lungs

    ___ relieve the patient's chest discomfort

    ___ call the doctor with your physical findings

11. Mrs. Hastings, a 68 year-old female, has just arrived in the critical care unit via stretcher from the emergency department with a diagnosis of probable myocardial infarction. Her admission ECG shows an evolving anterior infarct. She is restless and moaning and nods "yes" to your inquiry about chest pain. Taking her blood pressure you find it to be 98/66. She is in sinus rhythm. Her respiratory rate is 18 per minute.

    ___ give an IV narcotic to relieve the pain

    ___ wait 5 minutes and take another BP reading

    ___ listen to her lungs

    ___ call the doctor with your physical findings

    ___ run a monitor strip for later comparison

12. Mrs. Sochaux was admitted to the critical care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical. You were sitting in front of the monitors a few minutes ago writing a nursing care plan for your new patient when you noticed that her heart rate had increased from 90 to 112 and she had begun having occasional PVCs. You go into Mrs. Sochaux's room and find her crying. She says that both arms are aching and she has a feeling of impending doom. Taking her BP, you find it 160/110.

___ ask her what brought on this sudden change in symptoms

___ run a monitor strip for later comparison

___ call the doctor with your physical findings

___ sit with her until she has stopped crying

___ give an IV narcotic to relieve the arm pain

Do you think you answered this test differently from the last test? If so, why?

Alternate A

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situation, but in the test, please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mr. Randall, a 56 year-old obese male has just arrived in the coronary care unit to rule out a myocardial infarction. He had an hour of retrosternal chest discomfort associated with nausea and diaphoresis. He had thought at first that this was a severe case of indigestion, but realizing that his weight is a risk factor for heart disease, he came to the hospital. He states that his chest discomfort persists. His pulse is regular at 94, respiratory rate 18, blood pressure 154/84. You put in an IV line.

   ___ run an admission monitor strip for later comparison

   ___ wait five minutes and take another BP

   ___ give a narcotic to relieve the discomfort

   ___ listen to the heart and lungs

   ___ let the patient rest quietly

2. Mrs. Reynolds, a 54 year-old female, was admitted to the critical care unit a few days ago with an anterolateral myocardial infarction. You assessed the patient at the beginning of your night shift and found her BP 144/92, pulse 62 and sinus, normal S1 and S2, respiratory rate 14, lungs clear, skin warm and dry. She has been sleeping since her snack you brought her until a few minutes ago when she put her light on. When you go into

her room, she says she is short of breath and having some chest pressure. Her respiratory rate is now 32/minute, pulse rate 76/minute and sinus. Her skin is cool and clammy to the touch.

___ call the doctor with her physical findings

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

___ take her blood pressure

___ give a narcotic to relieve her discomfort

3. Mr. Lockman, a 74 year-old man has just been brought into the CCU. His diagnosis is acute anteroseptal myocardial infarction. His blood pressure is 88/60; pulse rate 46; respiratory rate 26/min; he is slow to answer your questions. As you glance at the monitor, you see a slow irregular heart beat. You assess the cardiac rhythm and find the patient is in Mobitz type II AV block.

___ call the doctor

___ give Atropine per standing order

___ run a monitor strip for later comparison

___ wait 5 minutes and take another BP

___ ausculate the lungs

4. Mrs. Pershall was admitted to the coronary care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical immediately, and left her to rest. A few minutes ago, you noticed on the monitor that her heart rate had increased from 88 to 110 and she had begun to have occasional PVCs. You immediately go into your patient's room and find her crying and clutching her fist to her chest. She says she hurts. You take her blood pressure and find it to be 170/110.

___ ask her what brought on this sudden change in symptoms

___ run a monitor strip for later comparison

___ call the doctor with her physical findings

___ sit with her until she has stopped crying

___ give an IV narcotic to relieve the pain

5. Mr. Thelan, a 48 year-old male, has just been brought into the coronary care unit by paramedic personnel. He is telling them jokes and laughing raucously. His diagnosis is probable lateral myocardial infarction. As you approach him you see that his pupils are dilated and he is perspiring noticeably. He admits he has discomfort in his chest. You hook him up to the monitor and note he is in sinus tachycardia, with about 4 PVCs/minute. His blood pressure is 154/94.

___ stay with him and talk to decrease his anxiety
___ run a monitor strip for later comparison
___ listen to his heart and lungs
___ relieve the patient's chest discomfort
___ call the doctor with your physical findings

6. Mrs. Tucker, a 35 year-old mother of two, has just arrived in the coronary care unit with a diagnosis of inferior infarction. Her ECG shows an apparent inferior infarction. In your initial assessment you determine her risk factors or coronary disease are a history of smoking a pack of cigarettes a day for 16 years, and an excess of 30 lbs. of weight. Her blood pressure on admission is 120/84, respiratory rate 20/minute, and after putting her on the monitor you see she is in sinus tachycardia, rate 106. She appears frightened and restless in the bed. As you enter her room you find her moaning. You ask her if she is having pain and she says sarcastically, "No, I feel terrific."

___ give a narcotic to relieve her discomfort
___ assess the cardiac rhythm
___ listen to heart and lungs
___ talk with her family in the waiting room
___ call the doctor with your physical findings

7. Mr. Laird, a 56 year-old male, has just arrived in the coronary care unit via stretcher from the emergency department with a diagnosis of probable myocardial infarction. He is alert and oriented but complaining of severe substernal chest pain. His pulse rate is 62 and regular, blood pressure 100/56, respiratory rate 22. You help him into the bed.

___ listen to the heart and lungs

___ relieve the patient's pain

___ talk with the family in the waiting room

___ ask what medications he has been taking at home

___ wait five minutes and take the BP again

8. Ms. Likert, a 56 year-old female was brought to he ICU approximately an hour ago after passing out at home. The doctor in the Emergency Department admitted her to rule out an acute myocardial infarction. He felt her syncope could be related to an arrhythmia. On admission, her BP was 112/80; lungs **??**; respiratory rate 16/min.; sinus rhythm rate 92/min. Just now the monitor alarm has gone off for a short run of ventricular tachycardia of 5 beats at a rate of 160/minute.

___ give a lidocaine bolus per standing order

___ take her blood pressure

___ call the doctor

___ ask her whether she felt like she was going to faint again

___ talk with her family in the waiting room

9. Mr. Backhaus, a 52 year-old male, has just been transferred back to the critical care unit from the 4th floor. He had been a patient in your unit for four days with an uncomplicated myocardial infarction. He was transferred to the floor two days ago. Twenty minutes ago he complained of severe, crushing chest pain and extreme nausea. His ECG shows acute ST and T wave changes, and a heart rate of 54/minute.

___ get out his old ICU records and check the monitor strips for his past rhythms

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

___ listen to the heart and lungs

___ relieve the patient's pain

___ talk with the family in the waiting room

___ ask what medications he has been taking at home

___ wait five minutes and take the BP again

8. Ms. Likert, a 56 year-old female was brought to he ICU approximately an hour ago after passing out at home. The doctor in the Emergency Department admitted her to rule out an acute myocardial infarction. He felt her syncope could be related to an arrhythmia. On admission, her BP was 112/80; lungs clear; respiratory rate 16/min.; sinus rhythm rate 92/min. Just now the monitor alarm has gone off for a short run of ventricular tachycardia of 5 beats at a rate of 160/minute.

___ give a lidocaine bolus per standing order

___ take her blood pressure

___ call the doctor

___ ask her whether she felt like she was going to faint again

___ talk with her family in the waiting room

9. Mr. Backhaus, a 52 year-old male, has just been transferred back to the critical care unit from the 4th floor. He had been a patient in your unit for four days with an uncomplicated myocardial infarction. He was transferred to the floor two days ago. Twenty minutes ago he complained of severe, crushing chest pain and extreme nausea. His ECG shows acute ST and T wave changes, and a heart rate of 54/minute.

___ get out his old ICU records and check the monitor strips for his past rhythms

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

10. Ms. Holiday, a 68 year-old female, has just arrived in the intensive care unit via stretcher, with the diagnosis of myocardial infarction. He ECG shows an evolving anterior myocardial infarction. She is restless and can't seem to get comfortable in the bed. When you ask her she admits to discomfort in her chest. Taking her blood pressure you find it to be 180/110. You put her back on the monitor and find she is in sinus rhythm. Her respiratory rate is 20/minute.

    ___ give an IV narcotic to relieve pain
    ___ wait 5 minutes and take another BP reading
    ___ listen to her lungs
    ___ call the doctor with your physical findings
    ___ run a monitor strip for later comparison

11. Mr. Watkins, a 72 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest pain and left arm pain associated with diaphoresis for the past three hours. He tried to eat a bowl of soup while at home but he was too nauseated. You put him on the monitor and find he is in sinus rhythm, rate 90, but taking his blood pressure you find it is 98/66.

    ___ wait 5 minutes and take the BP again
    ___ call the doctor to tell him the BP reading
    ___ let the patient rest quietly
    ___ administer an antiemetic per order
    ___ relieve the patient's pain

12. Mrs. Lockman, a 67 year-old female, has just been wheeled into the critical care unit in a wheel chair from the admitting office. She had called her private physician from home after she had three hours of jaw pain. He had her admitted directly through the admitting office with the diagnosis of probable myocardial infarction. She continues to have jaw pain. As you put on the monitor, you find that she is in borderline sinus tachycardia, rate 96, with 4 PVCs per minute. Her respiratory rate is 18 per minute without complaint of shortness of breath. You put an IV in.

___ ausculate her heart and lungs
___ ask about her prior episodes of jaw pain
___ take a blood pressure reading
___ relieve the patient's jaw pain
___ call the doctor to tell him about the PVCs

Do you think you answered this test differently from the last test? If so, why?

Alternate B

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situation, but in the test please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mrs. Zuffrea was admitted to the critical care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical. You were sitting in front of the monitors a few minutes ago writing a nursing care plan for your new patient when you noticed that her heart rate had increased from 90 to 116 and she had begun having occasional PVCs. You go into Mrs. Zuffrea's room and find her crying. She says that both arms are aching and she has a feeling of impending doom. Taking her BP, you find it 164/108.

   ___ ask her what brought on this sudden change in symptoms

   ___ sit with her until she has stopped crying

   ___ call the doctor with her physical findings

   ___ give an IV narcotic to relieve the arm pain

   ___ run a monitor strip for later comparison

2. Mr. Tonrund, a 60 year-old obese male, has been newly admitted to the coronary care unit to rule out a myocardial infarction. He had an hour of left arm discomfort associated with sweating and "indigestion" prior to admission and came immediately to the hospital because his Adult Nurse Practitioner told him his weight

was a risk factor for heart disease. His arm discomfort persists. Taking his vital signs, you find he has a regular pulse of 92, respiratory rate 18 to 20, blood pressure 156/86. You establish intravenous access.

___ run an admission monitor strip for later comparison

___ listen to heart and lungs

___ give a narcotic to relieve the discomfort

___ wait five minutes and take another BP

___ let the patient rest quietly

3. Mr. White, a 46 year-old male, has just been brought into the critical care unit by the emergency personnel, laughing and talking all the while. His diagnosis is probable myocardial infarction. As you approach him you realize his pupils are dilated and he is perspiring. He admits he has discomfort in his chest. The monitor shows sinus tachycardia with 4 PVCs per minute. His blood pressure is 152/90. You help him into bed.

___ run a monitor strip for later comparison

___ stay with him and talk to him to decrease his anxiety

___ call the doctor with your physical findings

___ relieve the patient's chest discomfort

___ listen to his heart and lungs

4. Mr. Cote, a 71 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest and left arm pain associated with intermittent nausea and diaphoresis for the last three hours. you put him on the monitor and find his heart rate is 92, sinus rhythm, but taking his blood pressure you discover it is 182/110.

___ relieve the patient's pain

___ let the patient rest quietly

___ wait five minutes and take the BP again

___ call the doctor to tell him the BP reading

___ administer an antiemetic

5. Mr. Beckin, a 52 year-old male, has just been transferred back to the intensive care unit from the eighth floor. He had been a patient in your unit for three days with an uncomplicated myocardial infarction. Thirty minutes ago, he complained of severe chest pain and was too nauseated to eat his lunch. His ECG shows acute ST and T wave changes, and a heart rate of 54 per minute.

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ get out his old ICU records and check the monitor strips for his past rhythms

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

6. Mrs. Haynes, a 55 year-old female, has been a patient in your unit for three days with the diagnosis of an anterior myocardial infarction. At noon, you assessed her and found her skin warm and dry, BP 150/96, sinus rhythm rate 62, respiratory rate 16, lungs clear, normal S1 and S2 on cardiac ausculation. She has been resting since lunch until a few minutes ago when she put on her light. When you go into her room, she complains of shortness of breath and some chest pressure. Her respiratory rate is now 32/minute, pulse rate 76 and sinus. Her skin is cool and clammy.

___ take her blood pressure

___ call the doctor with her physical findings

___ give a narcotic to relieve her discomfort

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

7. Mrs. Cantin, a 56 year-old female, was admitted to your critical care unit one hour previously to rule out a myocardial infarction. She has had an incident of "fainting " prior to admission which may have been due to an arrhythmia. She was stable on admission: BP 118/76, sinus rhythm, rate 88, respiratory rate 14/min., lungs clear. But she has just had a short burst of 5 PVCs at a rate of 16 min.

___ take her blood pressure

___ call the doctor

___ give a lidocaine bolus per standing order

___ ask her whether she felt like she was going to faint

___ talk with her family in the waiting room

8. Mrs. Baney, a 68 year-old female, has just arrived in the critical care unit via stretcher from the emergency room with a diagnosis of probable myocardial infarction. Her admission ECG shows an evolving anterior infarct. She is restless, and moaning and nods "yes" to your question about chest pain. Taking her blood pressure you find it to be 98/68. She is in sinus rhythm. Her respiratory rate is 18 per minute.

___ give an IV narcotic to relieve the pain

___ listen to her lungs

___ wait five minutes and take another BP reading

___ run a monitor strip for later comparison

___ call the doctor with your physical findings

9. Mrs. Bletscher, a 35 year-old mother of two, has just been admitted to he intensive care unit with a diagnosis of possible myocardial infarction. Her ECG shows an apparent inferior infarction. Her only risk factors are that she takes birth control pills and smokes one pack of cigarettes per day. Her blood pressure on admission is 110/72, her respiratory rate is 20 per minute, and after putting on the monitor you see she is in borderline sinus tachycardia, rat 104. She appears very frightened and restless in the bed and as you approach her, you hear her moaning. You ask her if she is having chest pain and she sarcastically snaps, "No, I feel great."

___ assess the cardiac rhythms

___ give a narcotic to relieve her discomfort

___ talk to her family in the waiting room

___ listen to her heart and lungs

___ call the doctor with your physical findings

10. Mrs. White, a 68 year-old female, has just been wheeled into the intensive care unit in a wheelchair from the admitting office as a direct admission. Her diagnosis

is probable myocardial infarction. She has had jaw pain for the last three hours. She is still uncomfortable. You help her into bed and put the monitor leads on her and discover that her heart rate is 18 per minute with no complaint of difficulty breathing. You put an IV in.

___ listen to her heart and lungs

___ take a blood pressure reading

___ ask about prior episodes of jaw pain

___ call the doctor to tell him about the PVCs

___ relieve the patient's jaw pain

11. Mr. Daufel, a 75 year-old male, was brought to your critical care unit a few minutes ago. You are told by the nurse in the E.R. that he has had an acute anteroseptal MI. Taking his vital signs, you find his blood pressure 88/56, respiratory rate 26/min., and he answers slowly when you ask him how he feels. You put him on the monitor and assess that he is in a Mobitz type II AV block.

___ give Atropine per standing order

___ wait 5 minutes and take another BP

___ call the doctor

___ run a monitor strip for later comparison

___ listen to the heart and lungs

12. Mr. Waldron, a 54 year-old male, has just arrived in the coronary care unit via stretcher form the emergency room with a diagnosis of probable anterior myocardial infarction. He is alert and oriented but complaining of severe substernal chest pain that he describes as "an elephant sitting on my chest." His pulse rate is 60 and irregular, blood pressure 100/60, respiratory rate 22. You help him transfer from the stretcher to the bed.

___ relieve the patient's pain

___ listen to the heart and lungs

___ wait five minutes and take the BP

___ ask what medications he has been taking at home

___ talk with the family in the waiting room

Do you think you answered this test differently from the last test? If so, why?

Appendix C

Behavioral Checklist

Behavioral Checklist

Directions: This checklist is designed to determine, in an actual clinical setting, what priority critical care nurses give to various nursing interventions when interacting with a patient with the diagnosis of acute myocardial infarction. If the patient complains of pain, what does the nurse do first?

___ Listens to the patient's heart and lungs.

___ Talk with the family in the waiting room.

___ Ask what medications the patient has been taking at home.

___ Wait five minutes and retakes the patient's vital signs.

___ Relieve the patient's pain.

___ Call the doctor with physical findings.

___ Ask about prior episodes of pain.

___ Assess the cardiac rhythm.

___ Let the patient rest quietly.

Brief Assessment of Patient Status

Admitting diagnosis

or

Current diagnosis _____

Age _____

Sex _____

Weight _____

IV access line present Yes No

Rhythm strip demonstrates _____

Lung sounds _____

Skin _____

Last pain medication: Type _____

Time _____

All information is to be obtained from patient's chart or nurse.

Appendix D

Delphi Form Used for Consent Validity

Darlene D. Foresman, RN,
Graduate Student
O.H.S.U.

October 7, 1987

Dear Ms. _____,

I am a graduate student in nursing in the acute illness tract of the department of Adult Health and Illness at the Oregon Health Sciences University. I am seeking my master's in nursing with specialization as a cardio-vascular clinical nurse specialist.

In the research I plan to conduct, "The Effect of Education Concerning Pain Relief in Acute Myocardial Infarction on Setting Nursing Care Priorities," I will use three paper and pencil tests, two of which were constructed by Barbara Riegel, MN, RN, CS. The tools are designed to measure only one variable, the priority nurses give to pain relief of a patient with an acute myocardial infarction. The intent of my research is not to answer "why" the nurses rank pain relief interventions in the order of priorities they choose, but to identify only "what" priorities exist and to document changes after my teaching intervention.

In order to establish content validity and equivalence for all three instruments, I would greatly appreciate your careful examination of these tools for their relevance in assessing priorities. I would also appreciate it if you would view the Behavioral Checklist (enclosed), to assess its clarity and the inclusion of pertinent variables.

Enclosed are the following for your use:

1. The three instruments to be used.
2. The Behavioral Checklist to be used.

I recognize the valuable, precious time required for your complete confidential assistance in this endeavor. Establishing solid content validity is a major task. However, content validity in my measurement tools is one of the key, the most vital and essential part of this research. Without it, all the data collected are meaningless. Thank you for your attention, time and efforts.

Sincerely,

Darlene D. Foresman

ddf.

Steps to Establishment of Content Validity

for Each "Pain Measurement" Tool

1. Read each tool (Original - orange, Alternate A - blue, Alternate B - green). Rank each scenario as per directions on each tool.
2. On the purple form: circle either agreement or disagreement with the rank given pain relief in that item. Please, respond on this form by circling either agree or disagree.
3. If you disagree at any point, please comment. All comments are welcomed. A space is provided for comments.
4. Evaluate whether or not you also agree that the alternative forms of each question are equivalent.

The following is an example: After reading Question 1 on the original (orange) form, I ranked the scenario as follows:

_2_ listen to his heart and lungs
_1_ relieve the patient's pain
_5_ talk with the family in the waiting room
_3_ ask what medications he has been taking at home
_4_ wait five minutes and take the BP again

Therefore, on this form (purple) I would circle agree. Then I would read Question 7 on the Alternate Form A and do the ranking. Then I would return to this form (purple) and

circle agree. Finally, I would read Question 12 on the Alternate Form B and repeat the process. . .

The Correct Priorities for Pain Relief Are as Follows:

Question #1 on the Original. Pain relief is the first priority.

Agree Disagree

Comments:

This question is equivalent to #7 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #12 of Alternate B.

Agree Disagree

Comments:

Question #2 on the Original. This item is a detractor to keep the true focus of the test from becoming obvious to the participants. Therefore, this scenario did not include relief of pain in the nursing interventions and the answers will not be scored.

Agree Disagree

Comments:

This question is equivalent to #3 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #11 of Alternate B.

Agree Disagree

Comments:

Question #3 on the Original. Take BP first and Pain Relief is second.

Agree Disagree

Comments:

This question is equivalent to #12 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #10 of Alternate B.

Agree Disagree

Comments:

Question #4 of the Original. Pain relief is the first priority.

Agree Disagree

Comments:

This question is equivalent to #6 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #9 of Alternate B.

Agree Disagree

Comments:

Question #5 of the Original. Pain relief is the first priority.

Agree Disagree

Comments:

This question is equivalent to #1 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #2 of Alternate B.

Agree Disagree

Comments:

Question #6 of the Original. This item is a detractor.

Agree Disagree

Comments:

This question is equivalent to #8 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #7 of Alternate B.

Agree Disagree

Comments:

Question #7 of the Original. Pain relief is the first priority.

Agree Disagree

Comments:

This question is equivalent to #11 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #4 of Alternate B.

Agree Disagree

Comments:

Question #8 of the Original. Take blood pressure first. Pain relief is second.

Agree Disagree

Comments:

This question is equivalent to #9 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #5 of Alternate B.

Agree Disagree

Comments:

Question #9 of the Original. Listen to the lungs is first. Pain relief is second.

This question is equivalent to #2 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #6 of Alternate B.

Agree Disagree

Comments:

Question #10 of the Original. Run monitor strip first. Pain relief is second.

This question is equivalent to #5 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #3 of Alternate B.

Agree Disagree

Comments:

Question #11 of the Original. Pain relief is the first priority.

Agree Disagree

Comments:

This question is equivalent to #10 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #8 of Alternate B.

Agree Disagree

Comments:

Question #12 of the Original. Run monitor strip first. Pain relief is second.

Agree Disagree

Comments:

This question is equivalent to #4 of Alternate A.

Agree Disagree

Comments:

This question is equivalent to #1 of Alternate B.

Agree Disagree

Comments:

Original

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situations, but in the test, please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mr. Smith, a 54 year-old male, has just arrived in the coronary care unit via stretcher from the emergency room with a diagnosis of probable anterior myocardial infarction. He is alert and oriented but complaining of severe, substernal chest pain that the describes as "an elephant sitting on my chest." His pulse rate is 60 and regular, blood pressure 100/60, respiratory rate 22. You help him transfer from the stretcher to the bed.

   ___ listen to his heart and lungs

   ___ relieve the patient's pain

   ___ talk with the family in the waiting room

   ___ ask what medications he has been taking at home

   ___ wait five minutes and take the BP again

2. Mr. Desters, a 75 year-old male was brought to your critical care unit a few minutes ago. You were told by the nurse in the E.R. that he has had an acute anteroseptal MI. Taking his blood pressure 88/56; respiratory rate 26/minutes; pulse rate 48/minutes, he answers slowly when you ask him how he feels. You put him on the monitor and assess that he is in a Mobitz type II AV block.

___ call the doctor

___ give Atropine per standing order

___ run a monitor strip for later comparison

___ wait 5 minutes and take another BP

___ ausculate the lungs

3. Mrs. McAdams, a 68 year-old female, has just been wheeled into the intensive care unit in a wheel chair from the admitting office, as a direct admission. her diagnosis is probable myocardial infarction. She has jaw pain for the last three hours. She is still uncomfortable. You help her into bed and put the monitor leads on her and discover that her heart rate is 92 with approximately 4 PVCs per minute. Her respiratory rate is 18 per minute with no complaints of difficulty breathing. You put an IV in.

___ ausculate her heart and lungs

___ ask about prior episodes of jaw pain

___ take a blood pressure reading

___ relieve the patient's jaw pain

___ call the doctor and tell him about the PVCs

4. Mrs. Coverton, a 35 year-old mother of two, has just been admitted to the intensive care unit with a diagnosis of inferior infarction. Her only risk factors are that she takes birth control pills and smokes one pack of cigarettes per day. Her blood pressure on admission is 110/72, her respiratory rate is 20 per minute, and after putting her on the monitor you see she is in borderline sinus tachycardia, rate 104. She appears very frightened and restless in the bed; as you approach her, you hear her moaning. You ask her if she is having chest pain and she sarcastically snaps, "No, I feel great."

___ give a narcotic to relieve her discomfort

___ assess the cardiac rhythm

___ listen to heart and lungs

___ talk with her family in the waiting room

___ call the doctor with your physical findings

5. Mr. Rotund, a 60 year-old obese male, has been newly admitted to the coronary care unit to rule out a myocardial infarction. He had an hour of left arm discomfort associated with sweating and "indigestion"

prior to admission and came immediately to the hospital because his Adult Nurse Practitioner told him his weight was a risk factor for heart disease. His arm discomfort persists. Taking his vital signs you find he has a regular pulse of 94, respiratory rate is 18 to 20, blood pressure 152/86. You establish IV access.

___ run an admission monitor strip for later comparison

___ wait five minutes and take another BP

___ give a narcotic to relieve the discomfort

___ listen to his heart and lungs

___ let the patient rest quietly

6. Mrs. Lasser, a 58 year-old female was admitted to your critical care unit one hour previously to rule out an acute myocardial infarction. She has had an a has had an incident of "fainting" prior to admission which may have been due to an arrhythmia. She was stable on admission: BP 114/76; sinus rhythm, rate 88; respiratory rate 14/min; lungs clear. But she has just had a short burst of 5 PVCs in a row at a rate of 16 min.

___ give a lidocaine bolus per standing order

___ take her blood pressure

___ call the doctor

___ ask her whether she felt like she was going to faint again

___ let the patient rest quietly

7. Mr. Lucas, a 71 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest and left arm pain associated with intermittent nausea and diaphoresis for the last three hours. You put him on the monitor and find his heart rate is 90, sinus rhythm, but taking his blood pressure you discover it is 180/110.

___ wait five minutes and take the BP again

___ call the doctor to tell him the BP reading

___ let the patient rest quietly

___ administer an antiemetic per order

___ relieve the patient's pain

8. Mr. Figlio, a 52 year-old male, has just been transferred back to the intensive care unit from the sixth floor. He had been a patient in your unit for three days with an uncomplicated myocardial infarction. Thirty minutes ago he complained of severe chest pain and was too nauseated to eat his lunch. His ECG shows acute ST and T wave changes, and a heart rate of 52 per minute.

___ get out his old ICU records and check the monitor strips for his past rhythms

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

9. Mrs. Hornbeck, a 52 year-old female, has been a patient in your unit for 3 days with the diagnosis of an anterior myocardial infarction. At noon, you assessed her and found her skin warm and dry, BP 148/96, sinus rhythm 60, respiratory rate 16, lungs clear, normal S1 and S2 on cardiac auscultation. She has been resting since lunch until a few minutes ago when she put her call light on. When you go into her room, she complains of shortness of breath and some chest pressure. Her respiratory rate is now 32/minute, pulse rate 74 and sinus. Her skin is cool and clammy.

___ call the doctor with her physical findings

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

___ take her blood pressure

___ give a narcotic to relieve her discomfort

10. Mr. Stilton, a 45 year-old male, has just been brought into the critical care unit by the emergency personnel, laughing and talking all the while. His diagnosis is probable myocardial infarction. As you approach him you realize his pupils are dilated and he is perspiring. He admits he has discomfort in his chest. The monitor shows sinus tachycardia with 4 PVCs per minute. His blood pressure is 150/92. You help him into the bed.

___ stay with him and talk to him to decrease his anxiety

___ run a monitor strip for later comparison

___ listen to his heart and lungs

___ relieve the patient's chest discomfort

___ call the doctor with your physical findings

11. Mrs. Hastings, a 68 year-old female, has just arrived in the critical care unit via stretcher from the emergency department with a diagnosis of probable myocardial infarction. Her admission ECG shows an evolving anterior infarct. She is restless and moaning and nods "yes" to your inquiry about chest pain. Taking her blood pressure you find it to be 98/66. She is in sinus rhythm. Her respiratory rate is 18 per minute.

___ give an IV narcotic to relieve the pain

___ wait 5 minutes and take another BP reading

___ listen to her lungs

___ call the doctor with your physical findings

___ run a monitor strip for later comparison

12. Mrs. Sochaux was admitted to the critical care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical. You were sitting in front of the monitors a few minutes ago writing a nursing care plan for your new patient when you noticed that her heart rate had increased from 90 to 112 and she had begun having occasional PVCs. You go into Mrs. Sochaux's room and find her crying. She says that both arms are aching and she has a feeling of impending doom. Taking her BP, you find it 160/110.

___ ask her what brought on this sudden change in symptoms

___ run a monitor strip for later comparison

___ call the doctor with your physical findings

___ sit with her until she has stopped crying

___ give an IV narcotic to relieve the arm pain

Do you think you answered this test differently from the last test? If so, why?

Alternate A

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situation, but in the test, please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mr. Randall, a 56 year-old obese male has just arrived in the coronary care unit to rule out a myocardial infarction. He had an hour of retrosternal chest discomfort associated with nausea and diaphoresis. He had thought at first that this was a severe case of indigestion, but realizing that his weight is a risk facto for heart disease, he came to the hospital. He states that his chest discomfort persists. His pulse is regular at 94, respiratory rate 18, blood pressure 154/84. You put in an IV line.

   ___ run an admission monitor strip for later comparison

   ___ wait five minutes and take another BP

   ___ give a narcotic to relieve the discomfort

   ___ listen to the heart and lungs

   ___ let the patient rest quietly

2. Mrs. Reynolds, a 54 year-old female, was admitted to the critical care unit a few days ago with an anterolateral myocardial infarction. You assessed the patient at the beginning of your night shift and found her BP 144/92, pulse 62 and sinus, normal S1 and S2, respiratory rate 14, lungs clear, skin warm and dry. She has been sleeping since her snack you brought her until a few minutes ago when she put her light on. When you go into her room, she says she is short of breath and having

some chest pressure. Her respiratory rate is now 32/minute, pulse rate 76/minute and sinus. Her skin is cool and clammy to the touch.

___ call the doctor with her physical findings

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

___ take her blood pressure

___ give a narcotic to relieve her discomfort

3. Mr. Lockman, a 74 year-old man has just been brought into the CCU. His diagnosis is acute anteroseptal myocardial infarction. His blood pressure is 88/60; pulse rate 46; respiratory rate 26/min; he is slow to answer your questions. As you glance at the monitor, you see a slow irregular heart beat. You assess the cardiac rhythm and find the patient is in Mobitz type II AV block.

___ call the doctor

___ give Atropine per standing order

___ run a monitor strip for later comparison

___ wait 5 minutes and take another BP

___ ausculate the lungs

4. Mrs. Pershall was admitted to the coronary care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical immediately, and leave her to rest. A few minutes ago, you noticed on the monitor that her heart rate had increased from 88 to 110 and she had begun to have occasional PVCs. You immediately go into your patient's room and find her crying and clutching her fist to her chest. She says she hurts. You take her blood pressure and find it to be 170/110.

___ ask her what brought on this sudden change in symptoms

___ run a monitor strip for later comparison

___ call the doctor with her physical findings

___ sit with her until she has stopped crying

___ give an IV narcotic to relieve the pain

5. Mr. Thelan, a 48 year-old male, has just been brought into the coronary care unit by paramedic personnel. He is telling them jokes and laughing raucously. His diagnosis is probable lateral myocardial infarction. As you approach him you see that his pupils are dilated and he is perspiring noticeably. He admits he has discomfort in his chest. You hook him up to the monitor and note he is in sinus tachycardia, with about 4 PVCs/minute. His blood pressure is 154/94.

___ stay with him and talk to decrease his anxiety
___ run a monitor strip for later comparison
___ listen to his heart and lungs
___ relieve the patient's chest discomfort
___ call the doctor with your physical findings

6. Mrs. Tucker, a 35 year-old mother of two, has just arrived in the coronary care unit with a diagnosis of inferior infarction. Her ECG shows an apparent inferior infarction. In your initial assessment you determine her risk factors or coronary disease are a history of smoking a pack of cigarettes a day for 16 years, and an excess of 30 lbs. of weight. Her blood pressure on admission is 120/84, respiratory rate 20/minute, and after putting her on the monitor you see she is in sinus tachycardia, rate 106. She appears frightened and restless in the bed. As you enter her room you find her moaning. You ask her if she is having pain and she says sarcastically, "No, I feel terrific."

___ give a narcotic to relieve her discomfort
___ assess the cardiac rhythm
___ listen to heart and lungs
___ talk with her family in the waiting room
___ call the doctor with your physical findings

7. Mr. Laird, a 56 year-old male, has just arrived in the coronary care unit via stretcher from the emergency department with a diagnosis of probable myocardial infarction. He is alert and oriented but complaining of severe substernal chest pain. His pulse rate is 62 and regular, blood pressure 100/56, respiratory rate 22. You help him into the bed.

___ listen to the heart and lungs

___ relieve the patient's pain

___ talk with the family in the waiting room

___ ask what medications he has been taking at home

___ wait five minutes and take the BP again

8. Ms. Likert, a 56 year-old female was brought to he ICU approximately an hour ago after passing out at home. The doctor in the Emergency Department admitted her to rule out an acute myocardial infarction. He felt her syncope could be related to an arrhythmia. On admission, her BP was 112/80; lungs clear; respiratory rate 16/min.; sinus rhythm rate 92/min. Just now the monitor alarm has gone off for a short run of ventricular tachycardia of 5 beats at a rate of 160/minute.

___ give a lidocaine bolus per standing order

___ take her blood pressure

___ call the doctor

___ ask her whether she felt like she was going to faint again

___ talk with her family in the waiting room

9. Mr. Backhaus, a 52 year-old male, has just been transferred back to the critical care unit from the 4th floor. He had been a patient in your unit for four days with an uncomplicated myocardial infarction. He was transferred to the floor two days ago. Twenty minutes ago he complained of severe, crushing chest pain and extreme nausea. His ECG shows acute ST and T wave changes, and a heart rate of 54/minute.

___ get out his old ICU records and check the monitor strips for his past rhythms

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

10. Ms. Holiday, a 68 year-old female, has just arrived in the intensive care unit via stretcher, with the diagnosis of myocardial infarction. `He ECG shows an evolving anterior myocardial infarction. She is restless and can't seem to get comfortable in the bed. When you ask her she admits to discomfort in her chest. Taking her blood pressure you find it to be 180/110. You put her back on the monitor and find she is in sinus rhythm. Her respiratory rate is 20/minute.

    ___ give an IV narcotic to relieve pain
    ___ wait 5 minutes and take another BP reading
    ___ listen to her lungs
    ___ call the doctor with your physical findings
    ___ run a monitor strip for later comparison

11. Mr. Watkins, a 72 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest pain and left arm pain associated with diaphoresis for the past three hours. He tried to eat a bowl of soup while at home but he was too nauseated. you put him on the monitor and find he is in sinus rhythm, rate 90, but taking his blood pressure you find it is 98/66.

    ___ wait 5 minutes and take the BP again
    ___ call the doctor to tell him the BP reading
    ___ let the patient rest quietly
    ___ administer an antiemetic per order
    ___ relieve the patient's pain

12. Mrs. Lockman, a 67 year-old female, has just been wheeled into the critical care unit in a wheel chair from the admitting office. She had called her private physician from home after she had three hours of jaw pain. He had her admitted directly through the admitting office with the diagnosis of probable myocardial infarction. She continues to have jaw pain. As you put on the monitor, you find that she is in borderline sinus tachycardia, rate 96, with 4 PVCs per minute. Her respiratory rate is 18 per minute without complaint of shortness of breath. You put an IV in.

___ ausculate her heart and lungs
___ ask about her prior episodes of jaw pain
___ take a blood pressure reading
___ relieve the patient's jaw pain
___ call the doctor to tell him about the PVCs

Do you think you answered this test differently from the last test? If so, why?

Alternate B

Direction: This test is designed to determine what priority critical care nurses give to various nursing interventions in the care of patients with an acute myocardial infarction (A.M.I.).

All choices are appropriate and correct. Please rank the nursing interventions following each case in order of your priority (1 as first, 5 as last priority). DON'T LEAVE ANY OUT.

Some situations would be done almost simultaneously in the real situation, but in the test please choose based on what you think is the most important to do first. Assume all necessary orders have been written.

Of course, not all appropriate choices are offered. Rank what is given. No answer is contingent upon any other. For instance, don't "call the doctor" next because you are going to find crackles when you "listen to the lungs." RANK ALL the choices offered according to what you feel is important.

1. Mrs. Zuffrea was admitted to the critical care unit two hours ago with the diagnosis of possible acute myocardial infarction. She was in no acute distress upon admission and you were able to do an admission history and physical. You were sitting in front of the monitors a few minutes ago writing a nursing care plan for your new patient when you noticed that her heart rate had increased from 90 to 116 and she had begun having occasional PVCs. You go into Mrs. Zuffrea's room and find her crying. She says that both arms are aching and she has a feeling of impending doom. Taking her BP, you find it 164/108.

   ___ ask her what brought on this sudden change in symptoms

   ___ sit with her until she has stopped crying

   ___ call the doctor with her physical findings

   ___ give an IV narcotic to relieve the arm pain

   ___ run a monitor strip for later comparison

2. Mr. Tonrund, a 60 year-old obese male, has been newly admitted to the coronary care unit to rule out a myocardial infarction. He had an hour of left arm discomfort associated with sweating and "indigestion" prior to admission and came immediately to the hospital because his Adult Nurse Practitioner told him his weight was a risk factor for heart disease. His arm discomfort

persists. Taking his vital signs, you find he has a regular pulse of 92, respiratory rate 18 to 20, blood pressure 156/86. You establish intravenous access.

___ run an admission monitor strip for later comparison

___ listen to heart and lungs

___ give a narcotic to relieve the discomfort

___ wait five minutes and take another BP

___ let the patient rest quietly

3. Mr. White, a 46 year-old male, has just been brought into the critical care unit by the emergency personnel, laughing and talking all the while. His diagnosis is probable myocardial infarction. As you approach him you realize his pupils are dilated and he is perspiring. He admits he has discomfort in his chest. The monitor shows sinus tachycardia with 4 PVCs per minute. His blood pressure is 152/90. You help him into bed.

___ run a monitor strip for later comparison

___ stay with him and talk to him to decrease his anxiety

___ call the doctor with your physical findings

___ relieve the patient's chest discomfort

___ listen to his heart and lungs

4. Mr. Cote, a 71 year-old male, has just been admitted to the intensive care unit and you are his nurse. His diagnosis is inferior myocardial infarction. He has had chest and left arm pain associated with intermittent nausea and diaphoresis for the last three hours. you put him on the monitor and find his heart rate is 92, sinus rhythm, but taking his blood pressure you discover it is 182/110.

___ relieve the patient's pain

___ let the patient rest quietly

___ wait five minutes and take the BP again

___ call the doctor to tell him the BP reading

___ administer an antiemetic

5. Mr. Beckin, a 52 year-old male, has just been transferred back to the intensive care unit from the eighth floor. He had been a patient in your unit for three days with an uncomplicated myocardial infarction. Thirty minutes ago, he complained of severe chest pain and was too nauseated to eat his lunch. His ECG shows acute ST and T wave changes, and a heart rate of 54 per minute.

___ ask him what he was doing when his chest pain began

___ take a blood pressure reading

___ get out his old ICU records and check the monitor strips for his past rhythms

___ relieve the patient's pain

___ call his wife and tell her that her husband has been transferred back to the ICU

6. Mrs. Haynes, a 55 year-old female, has been a patient in your unit for three days with the diagnosis of an anterior myocardial infarction. At noon, you assessed her and found her skin warm and dry, BP 150/96, sinus rhythm rate 62, respiratory rate 16, lungs clear, normal S1 and S2 on cardiac ausculation. She has been resting since lunch until a few minutes ago when she put on her light. When you go into her room, she complains of shortness of breath and some chest pressure. Her respiratory rate is now 32/minute, pulse rate 76 and sinus. Her skin is cool and clammy.

___ take her blood pressure

___ call the doctor with her physical findings

___ give a narcotic to relieve her discomfort

___ stay with her a few minutes to relieve her anxiety

___ listen to her lungs

7. Mrs. Cantin, a 56 year-old female, was admitted to your critical care unit one hour previously to rule out a myocardial infarction. She has had an incident of "fainting " prior to admission which may have been due to an arrhythmia. She was stable on admission: BP 118/76, sinus rhythm, rate 88, respiratory rate 14/min., lungs clear. But she has just had a short burst of 5 PVCs at a rate of 16 min.

___ take her blood pressure

___ call the doctor

___ give a lidocaine bolus per standing order

___ ask her whether she felt like she was going to faint

___ talk with her family in the waiting room

8. Mrs. Baney, a 68 year-old female, has just arrived in the critical care unit via stretcher from the emergency room with a diagnosis of probable myocardial infarction. Her admission ECG shows an evolving anterior infarct. She is restless, and moaning and nods "yes" to your question about chest pain. Taking her blood pressure you find it to be 98/68. She is in sinus rhythm. Her respiratory rate is 18 per minute.

___ give an IV narcotic to relieve the pain

___ listen to her lungs

___ wait five minutes and take another BP reading

___ run a monitor strip for later comparison

___ call the doctor with your physical findings

9. Mrs. Bletscher, a 35 year-old mother of two, has just been admitted to he intensive care unit with a diagnosis of possible myocardial infarction. Her ECG shows an apparent inferior infarction. Her only risk factors are that she takes birth control pills and smokes one pack of cigarettes per day. Her blood pressure on admission is 110/72, her respiratory rate is 20 per minute, and after putting on the monitor you see she is in borderline sinus tachycardia, rat 104. She appears very frightened and restless in the bed and as you approach her, you hear her moaning. You ask her if she is having chest pain and she sarcastically snaps, "No, I feel great."

___ assess the cardiac rhythms

___ give a narcotic to relieve her discomfort

___ talk to her family in the waiting room

___ listen to her heart and lungs

___ call the doctor with your physical findings

10. Mrs. White, a 68 year-old female, has just been wheeled into the intensive care unit in a wheelchair from the admitting office, as a direct admission. Her diagnosis is probable myocardial infarction. She has had jaw pain

for the last three hours. She is still uncomfortable. You help her into bed and put the monitor leads on her and discover that her heart rate is 18 per minute with no complaint of difficulty breathing. You put an IV in.

___ listen to her heart and lungs

___ take a blood pressure reading

___ ask about prior episodes of jaw pain

___ call the doctor to tell him about the PVCs

___ relieve the patient's jaw pain

11. Mr. Daufel, a 75 year-old male, was brought to your critical care unit a few minutes ago. You are told by the nurse in the E.R. that he has had an acute anteroseptal MI. Taking his vital signs, you find his blood pressure 88/56, respiratory rate 26/min., and he answers slowly when you ask him how he feels. You put him on the monitor and assess that he is in a Mobitz type II AV block.

___ give Atropine per standing order

___ wait 5 minutes and take another BP

___ call the doctor

___ run a monitor strip for later comparison

___ listen to the heart and lungs

12. Mr. Waldron, a 54 year-old male, has just arrived in the coronary care unit via stretcher form the emergency room with a diagnosis of probable anterior myocardial infarction. He is alert and oriented but complaining of severe substernal chest pain that he describes as "an elephant sitting on my chest." His pulse rate is 60 and irregular, blood pressure 100/60, respiratory rate 22. You help him transfer from the stretcher to the bed.

___ relieve the patient's pain

___ listen to the heart and lungs

___ wait five minutes and take the BP

___ ask what medications he has been taking at home

___ talk with the family in the waiting room

Do you think you answered this test differently from the last test? If so, why?

Behavioral Checklist

Directions: This checklist is designed to determine, in an actual clinical setting, what priority critical care nurses give to various nursing interventions when interacting with a patient with the diagnosis of acute myocardial infarction. If the patient complains of pain, what does the nurse do first?

___ Listens to the patient's heart and lungs.

___ Talks with the family in the waiting room.

___ Asks what medications the patient has been taking at home.

___ Waits five minutes and retakes the patient's vital signs.

___ Relieves the patient's pain.

___ Calls the doctor with physical findings.

___ Asks about prior episodes of pain.

___ Assesses the cardiac rhythm.

___ Lets the patient rest quietly.

Brief Assessment of Patient Status

Admitting diagnosis

or

Current diagnosis _____

Age _____

Sex _____

Weight _____

IV access line present Yes No

Rhythm strip demonstrates _____

Lung sounds _____

Skin _____

Last pain medication: Type _____

Time _____

All information is to be obtained from patient's chart or nurse.

Appendix E

Consent Form Used for Human Research

Oregon Health Sciences University

Consent Form

I acknowledge that I have read the following and that in signing this consent, I agree to be a participant in this experimental study.

I hereby volunteer to participate in a study conducted by Darlene Foresman, R.N., B.S.N., under the direction of Dr. Charold Baer, R.N., Ph.D., to determine the priority nursing interventions in the care of patients with acute myocardial infarction, and further, to determine the effect of a teaching program on those nursing intervention priorities.

I understand that I have been asked to participate because I am a critical care nurse responsible for patients who have had a myocardial infarction and that as a subject I will be asked to take two or three multiple choice tests, requiring a total of 40 to 60 minutes of my time. I will also be asked to complete a demographic data form including questions regarding such things as formal education, work experience and continuing education. As a component of this research, I realize that there is a 50% possibility that I will be asked to attend a two-hour class during my free time. After attending the class, I should not discuss the content with my co-workers until the study is completed. I also am aware that my performance will be observed on the clinical unit three times throughout my participation in this study.

I understand there are no potential hazards or risks associated with participation in this study but there is a potential inconvenience in the commitment of one to three hours of my time. I understand that the selection of nurses to attend the class will be done randomly and that the researcher has no control over whether or not I am selected to attend the teaching program.

I understand that the potential benefit to those attending the class is the acquisition of knowledge which may help give better nursing care to patients with acute myocardial infarction.

Any questions I may have at any time concerning details of the procedures performed as part of this study will be answered by Darlene Foresman, R.N., B.S.N.

I understand that I have the right to refuse to participate or to withdraw from this research at any time and that my identity will not be disclosed nor will my answers on the questionnaires be revealed and in no way will my responses be traced back to me or my institution.

Subject's signature: _____

Witness signature: _____

Date: _____

Appendix F

Demographic Questionnaire

Demographic Questionnaire

ID# _____

1. Age _____

2. Gender (Circle one): female male

3. What is your ethnic background? (Circle one)

   1. American Indian
   2. Black, Non-Hispanic
   3. Chicano, Mexican-American
   4. Other Hispanic
   5. Asian
   6. Pacific Islander
   7. White, Non-Hispanic
   8. Filipino

4. What education in nursing have you completed? (Circle ALL that apply)

   1. Vocational/practical nurse license
   2. Associate degree in nursing
   3. Diploma in nursing
   4. Baccalaureate degree in nursing
   5. Master's degree in nursing

5. Have you earned any certificates in nursing since graduating from your formal nursing program? (Circle ALL that apply)

   1. Basic coronary care
   2. Intermediate coronary care
   3. Advanced coronary care
   4. CCRN
   5. CEN
   6. MICN
   7. Other (list) _____

6. Have you taken a continuing education course in coronary care during the past 12 months? (Circle one)

   a. Yes b. No

7. How much work experience in Critical Care nursing have you had working a minimum of 20 hours/week since your graduation from your basic nursing program? (Circle one)

   1. Less than 1 year
   2. 1 to 3 years
   3. 4 to 6 years
   4. 7 to 9 years
   5. 10 to 12 years
   6. Greater than 12 years

8. How much of this Critical Care nursing experience has been in a unit which cares for patients who have had an Acute Myocardial Infarction?

   1. Less than 1 year
   2. 1 to 3 years
   3. 4 to 5 years
   4. 6 to 8 years
   5. 9 to 12 years
   6. Greater than 12 years

9. What is your current position in the unit where you now work?

   1. Staff nurse
   2. Charge nurse
   3. Assistant Head Nurse
   4. Head Nurse
   5. Other (specify) _____

10. How many professional (nursing or allied health field) journals do you subscribe to?

   1. none
   2. 1
   3. 2
   4. 3
   5. 4
   6. More than 4

11. What percentage of the content of these professional journals do you estimate you read every month?
    1. Less than 25%
    2. 25 - 50%
    3. Between 50% and 75%
    4. Greater than 75%
    5. I read every one of them cover to cover

Appendix G

Personal Experience with Pain Questionnaire

Personal Experience with Pain Questionnaire

Directions: Please circle yes or no in answer to each of the following questions.

1. Have you ever suffered from intense acute or chronic pain of any type? No Yes

2. Have you ever had to see a loved one suffer in pain? No Yes

3. Have you read more than three articles on pain in the last three months? No Yes

4. Have you read a professional book on pain in the last six months? No Yes

5. On a scale of 1 to 5, with 5 the highest, how would you rate your personal or professional interest in the subject of pain? (Circle one) 1 2 3 4 5

Abstract

The purpose of this research is to determine if nurses increase the priority of pain relief interventions for a patient with an acute myocardial infarction, following education dealing with pain relief and priority setting. Three paper-pencil tests and a demographic questionnaire involving 10-20 minutes of time were administered to subjects on and off work time. One half of the subjects were asked to attend a two hour class, given one time at a central location outside the hospital. The researcher was a registered nurse, in her second year of graduate school, who had completed her core course work in research design, methods, measurements, and analysis. The researcher observed patient-nurse interactions and marked a behavioral checklist. Subjects were accessed through nursing directors of area hospitals which admit patients with acute myocardial infarction to their critical care unit. Potential nurse subjects were contacted at unit staff meetings or by phone to obtain permission for interview and for validation of meeting criteria requirements. Data was collected over a two month period. A minimum of sixty subjects was contacted. Subjects and institutional anonymity was guaranteed by use of code numbers. Subjects received both oral explanations and full written informal consent. Results of the research were used to plan nursing interventions for patients with an acute

myocardial infarction aimed at reducing mortality and morbidity of these patients.

Principle Investigator