

CHAPTER 13

*Social Support and Adjustment to
Myocardial Infarction, Angioplasty,
and Coronary Artery Bypass Surgery*

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Overview

In this chapter we examine social support during three acute cardiac events: myocardial infarction (MI), angioplasty, and coronary artery bypass graft (CABG) surgery. The first event, MI, is life threatening and is characterized by sudden onset as a result of coronary artery thrombosis. Patients are commonly hospitalized for 7 to 10 days, and recovery periods (including participation in cardiac rehabilitation programs) can range up to 6 weeks or longer. Close to one half of the 1.3 million persons experiencing MI each year survive to leave the hospital (Garrity, 1981). Of these, approximately 10% will die during the following year. Subsequently, nonfatal reinfarctions occur at an average annual rate of 3%, and coronary artery disease deaths occur at a rate of 5%, three to four times higher than that of the general population (Kannel, Sorlie, & McNamara, 1979). Myocardial impairment and severity of the underlying disease are the strongest predictors of early mortality (Henning et al., 1979; Sanz, Castaner, Betriu, & Magria, 1982). Three to five percent of patients will undergo CABG surgery within 3 months following an MI (Davidson, 1983).

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CABG surgery is a procedure involving the creation of a saphenous vein or mammary artery "bypass" to allow blood to flow around the narrowed or blocked portion of a coronary artery. Patients are hospitalized for about 6 to 7 days, and recovery periods can range up to 6 months. It is estimated that more than 1 million patients have undergone this procedure since its development (Davidson, 1985), and more than 250,000 surgeries are performed yearly in the United States (Politser & Cunico, 1988); approximately 45% of these involve three or more grafts (National Heart, Lung, and Blood Institute [NHLBI], 1988). The number of bypasses performed on a given patient generally ranges from two to five per patient, and approximately 5% to 10% of surgeries are reoperations (Davidson, 1983). For patients with more extensive or specific forms of coronary artery disease (i.e., main artery disease or three-vessel disease), surgery has been shown to prolong life (Hall et al., 1983; NHLBI, 1988). This outcome, however, has not been demonstrated for the majority of patients having undergone the procedure (Deire et al., 1985; Murray & Beller, 1983). Some groups (e.g., patients with stable ischemic heart disease) are no longer viewed as candidates for CABG unless symptoms worsen (CASS Principal Investigators, 1983a). Symptomatic improvement occurs in 70% to 80% of CABG patients (Davidson, 1985; NHLBI, 1988), although 10% to 20% experience a recurrence of symptoms (Murray & Beller, 1983).

Percutaneous transluminal coronary angioplasty (PTCA) is a procedure performed in the cardiac catheterization laboratory with a cardiac surgery team standing by in case an emergency CABG surgery is required. Indicators for the procedure are generally chest pain and angioplasty with blockage or prior MI. It is estimated that 5% to 10% of patients who are candidates for coronary bypass surgery meet recommended selection criteria for having PTCA as an adjustment treatment (Greenspon & Goldberg, 1983). Furthermore, a small proportion of PTCA patients go on to have emergency or elective CABG because the procedure is not successful (Greenspon & Goldberg, 1983). During PTCA, a catheter is introduced into the coronary arteries via an artery in the arm or groin. A second, smaller catheter with a balloon at the end of it is passed through the first one. The balloon tip is then inflated, compressing the atherosclerotic plaque and dilating the soft inner wall of the artery. The procedure widens the coronary artery and thereby increases blood flow to the heart. Patients are usually discharged within 2 days or less and frequently return to normal activities within 1 week following the procedure; however, 20% to 30% of patients require the procedure again within 6 months (Jutzy, Berte, Alderman, Ratts, & Simpson, 1982; Kent et al., 1982). In 1983, 20,000 PTCAAs were performed in the United States and predictions estimate that in 1987, this number will have increased to 140,000 (American Heart Association, 1986).

Early results were encouraging as to the value of PTCA in preventing coronary events in selected patients (P. Block, 1985). Comparison of PTCA and CABG outcomes for patients matched demographically and by cardiac condition showed the PTCA group was functioning significantly better 6 and 15 months posttreatment (Raft, McKee, Popio, & Haggerty, 1985). Results from the TIMI-II trial in Boston, however, indicate that MI patients do not need angioplasty if they quickly receive clot-dissolving medications.

A common issue for all three of these patient groups (MI, CABG, PTCA) is their underlying coronary artery disease and the physical, psychological, and social implications of that diagnosis (Davidson, 1983; Doehrmann, 1977; Garrity, 1981). Each of these patient groups is aware that their heart is the object of concern, a body organ with considerable symbolic meaning (Goldman & Kimball, 1985; Carr & Powers, 1986). Patients are faced with the threat of both symbolic and actual losses ranging from loss of affection to loss of life. Moreover, patients commonly experience pain in the form of postsurgical discomfort and occasionally angina, significant physical deconditioning from forced inactivity, extended rehabilitation, further treatment decisions, and the threat of recurrence resulting from the ongoing disease process. In the case of CABG or PTCA, many patients have experienced increasing disability over an extended period of time prior to treatment and therefore may experience severe disappointment if blockage or narrowing of the artery occurs again (restenosis) or if angina or chest pain occur following initial treatment (Shaw et al., 1986). Despite many commonalities, however, these three types of cardiac patients each experience distinct events and reactions.

Substantial data indicate that the social and psychological contexts surrounding these acute cardiac episodes influence cardiac outcomes and the overall quality of life of patients and their families (Case, Moss, Case, McDermott & Eberly, 1992; Fletcher, Hunt & Bulpitt, 1987; Folks, Blake, Fleece, Sokol & Freeman, 1986; LaMendola & Pellegrini, 1979; Lloyd & Cawley, 1983; Ruberman, Weinblatt, Goldberg & Chaudhary, 1984; Waltz, 1986b; Williams et al., 1992). Furthermore, social support from both primary network members and professional caregivers is assumed to be an important resource in patients' perceptions of their experiences and in the coping strategies they employ to adapt to the changing life circumstances that result from the event (Caplan, 1976; Dean & Tausing, 1986).

In this chapter we examine the effects of social support as they may influence the patients' recognition of symptoms and their health care-seeking behavior, treatment decision making, hospitalization, and early psychosocial adaptation (approximately 2 to 3 months postdischarge). The experience of the patients' families will be examined in terms of their roles as both support providers to the cardiac patient and recipients of profes-

sional caregiver support. Supportive care by health care practitioners will be considered primarily through a review of extant intervention research. Finally, we set a future research agenda.

Symptom Recognition and Health Care-Seeking Behavior

The ability to respond quickly to life-threatening cardiac arrhythmias (irregular heart rhythm) in coronary and intensive care units has resulted in substantial reductions in hospital mortality (Gillum, Feinleib, Margolis, Fabstz, & Barsch, 1976). Furthermore, there is evidence that the potential effectiveness of medical interventions for limiting the extent of myocardial necrosis is inversely related to the interval between the onset of the ischemic episode and the time the intervention is applied (Turi et al., 1986). The majority of deaths from MI, however, occur before patients reach a hospital (Gillum et al., 1976), and considerable delay between symptom recognition and receipt of medical care has been documented (Davidson, 1979; Gentry, 1975; Hackett & Cassem, 1969).

Some evidence suggests that individuals engage in several stages or processes of symptom recognition and evaluation before initiating contact with the formal medical care system (Berkanovic, Telesky, & Reeder, 1979; Gentry, 1975; Matthews, Siegel, Kuller, Thompson, & Varat, 1983; Safer, Tharps, Jackson, & Leventhal, 1986). It has been proposed that the decision to seek treatment for cardiac symptoms involves three distinct cognitive steps: (a) awareness of the symptoms, (b) an interpretation of their meaning and seriousness, and (c) recognition of the need to obtain medical care (Greene, Moss, & Goldstein, 1974).

Of direct relevance to this discussion is evidence that consultation with members of one's personal social network commonly occurs during symptom appraisal and in decision making prior to seeking health care services (Berkanovic & Telesky, 1982; Coulton & Forst, 1982; Horowitz, 1978; Krantz, 1980; McKinlay, 1973, 1981). Research on the role of others in response to a life-threatening coronary event has been very sparse; however, there is evidence that patients consult laypersons during acute cardiac episodes (Alonzo, 1986; Ell et al., 1993). The extent to which this process is a factor in delay is an important area for study (Alonzo, 1986; Cowie, 1976; Davidson, 1979; Hackett & Cassem, 1969). Research has found that delay is greater when the spouse or others initiate the decision to seek medical care than when the decision is the patient's (Hackett & Cassem, 1969; Moss, Wynar, & Goldstein, 1969). Hackett and Cassem (1969) found further that median delay time was considerably higher when spouses were assisting than when friends or others assisted, perhaps as a result of spouse anxiety. Thus efforts to locate a family member for advice may forestall prompt action, and consultation with others could result in

discouraging the seeking of health care or in use of home remedies. A family member, though, could strongly encourage or initiate the decision to seek immediate aid. Physician factors such as denial or misdiagnosis may also be a source of delay in referring to emergent care (Gentry, 1975; Hackett & Cassem, 1969).

Treatment Decision Making

Factors associated with patient's decisions to undergo either CABG or PTCA are a neglected but fertile area for psychosocial study. For example, recent data indicate that CABG may be an overutilized coronary treatment (Graboyes, Headley, Lown, Lampert, & Blatt, 1987), especially in view of evidence that survival may not be extended for all patients beyond that of more conservative medical treatments. Moreover, psychosocial outcomes are not optimal for many patients (Gundle, Reeves, Tate, Raft, & McLaurin, 1980; Murray & Beller, 1983). The role of social networks in patients' coronary treatment decisions merits careful examination. For example, the roles of both physicians and family in influencing patients to undergo treatment such as surgery are likely to be critical. Physicians exert influence in their manner of communicating the diagnosis and treatment recommendation; those who provide emotional support as well as information are likely to be the most influential (Dunkel-Schetter, 1984). Encouragement and reassurance by family members (or lack thereof) may exert influence on the patient also, as would their general availability and dependability for assistance during recovery and rehabilitation.

Hospitalization

Hospitalization for CABG, PTCA, or MI is distinguishable by the circumstances preceding hospitalization. Patients having an MI require emergency hospitalization; CABG patients may have either emergency or elective surgery; and PTCA is generally elective. The impact of a scheduled hospitalization for surgery is presumably influenced by treatment expectations and presurgical functional status, such as the extent to which the patient was debilitated by angina or other cardiac symptoms. For example, there is some evidence that postsurgical hospitalization may be less psychologically stressful than waiting for the surgery (Gillis, 1984; Radley & Green, 1986). Emergency hospitalization for any of these procedures has not been researched much with respect to later adjustment, but it is of interest in that these patients are obviously unprepared psychologically.

Admission to a hospital for either a sudden MI or for CABG (and probably for PTCA) is usually a frightening and painful event. Not

surprisingly, the vast majority of patients experience significant psychological distress during hospitalization (Acker, 1978). The most common emotional reactions are anxiety and depression (Cay, 1982; Dracup, Meleis, Baker, & Edlfsen, 1984; Michela, 1987; Minckley et al., 1979; Taggart & Carruthers, 1981; Winefield & Martin, 1981-82). Patients undergoing CABG have also been found to be subject to much higher rates of postoperative delirium or psychosis than following other surgical procedures (Rabiner & Willner, 1976; Sveinsson, 1975). The majority of patients experiencing severe psychiatric disturbances recover without specific psychiatric intervention (Rabiner & Willner, 1976), however, and more recent studies suggest that this problem may be occurring less frequently with improved operative technology (Jenkins et al., 1983).

Discharge from Hospital and Early Convalescence

Discharge from the hospital marks a new context for social-psychological distress that continues through early convalescence. Mayou (1984) found that psychosocial assessment at this time period was even more predictive of long-term MI adjustment than hospital assessments. Depression after returning home from the hospital is the most common affective syndrome among MI patients (Davidson, 1983; Garrity, 1981). Depression is also experienced by postsurgical patients; however, patients recuperating from CABG (Davidson, 1983) or PTCA (Shaw et al., 1986) may also display undue optimism that requires repeated emphasis on the need for comprehensive secondary prevention and risk factor modification (Murray & Beller, 1983).

During early convalescence, patients also begin to test their physical capacities and to reformulate perceptions of health status (Bramwell, 1986; Garrity, 1981). For some patients, early negative perceptions persist long after convalescence and are associated with ongoing depression, low morale, and poor functional outcomes (Garrity, 1973a,b). Feelings of uncertainty and ambiguity are major cognitive-emotional problems for the postdischarge MI patient (Garrity, 1981) and for the postsurgical CABG patient as well (Gillis, 1984). Some patients also experience stress as a result of what is perceived to be excessive family surveillance (Bilodeau & Hackett, 1971; Fiske, Coyne, & Smith, 1991).

Research on Early Psychological Adjustment

Adjustment to acute cardiac events can be divided into short- versus long-term responses at about the 2- to 3-month mark. Although the focus

of this chapter is on short-term adjustment, research on long-term adjustment is also pertinent. Several general themes emerge from extant research on both short- and long-term psychosocial adjustment of patients having an acute cardiac event. First, the majority of patients with MIs experience fairly rapid psychological recovery and demonstrate little or no long-term psychosocial or affective impairment (Croog & Levine, 1977; Lloyd & Cawley, 1983; Mayou, 1981). There is evidence, however, that approximately one third of MI patients continue to experience debilitating effects in overall psychosocial functioning and quality of life (Mayou, Williamson, & Foster, 1978; Wells et al., 1989) and that an even smaller minority (15% to 20%) experience persistent major depressive symptoms (Ladwig et al., 1992; Schleifer et al., 1989).

The evidence regarding the effects of CABG on psychosocial adjustment is equivocal in part because of such methodological problems as simplistic measures of outcomes, small sample sizes that do not allow for controlling patient presurgical status, and short follow-ups (i.e., 1 year or less; NHLBI, 1988; Wenger, 1986). Some studies document improved overall quality of life following CABG for a majority of patients (CASS Principal Investigators, 1983b; Kornfield, Heller, Frank, Wilson, & Malin, 1982; Folks et al., 1986; Jenkins et al., 1983) especially at the 1-year point; however, it has also been found consistently that a small number of patients report postsurgical deterioration in psychosocial functioning (Gundle et al., 1980; Horgan, Davies, Hunt, Westlake, & Mullerworth, 1984; Zyzanski, Rouse, Stanton, & Jenkins, 1982). Impaired sexual functioning is most commonly reported (Horgan et al., 1984) with some evidence that women are less negatively affected in this area than men (Althof, Coffman, & Levine, 1984). The effects of CABG on employment seem variable and inconclusive or negative (Horgan et al., 1984; Kinchla & Weiss, 1985; NHLBI, 1988). It is estimated that 50% of CABG patients or fewer resume household activities, and that depression decreases but does not disappear after 1 year (NHLBI, 1988). Definitive studies on quality of life after CABG are only now in progress (NHLBI, 1988).

In the cases of MI and CABG, poorer perceived health status, greater symptomatology, lower functional status, and greater premonitory physical and psychosocial impairment are associated with posthospitalization psychosocial impairment and ongoing affective distress (Gundle et al., 1980; Lloyd & Cawley, 1983). Objective measures of cardiac damage and function and of postoperative physical recovery are inconsistently related to the psychosocial adaptation of patients (A. Block, Boyer, & Imes, 1984; Cay, Vetter, Philip, & Dugard, 1972; Croog & Levine, 1977; Horgan et al., 1984). Substantial evidence indicates that patients' affective and cognitive perceptions of their health status during acute cardiac events are signifi-

experiences and reactions in the face of MI in the emergency room, in the admitting area, and in the intensive care unit. He found that during intensive care stays, family members were not only more frequently distressed than patients but also were more pessimistic and fearful of the patient's death and more worried about the future. This may be in part because patients are frequently heavily medicated at this time and are less aware of their circumstances. Speedling (1982), though, proposed that the medical caregiving structure, which is appropriately designed to provide technically sophisticated patient care, has a negative effect on family members. He argued further that restricted family visits, although potentially beneficial to patients, prevent family members from observing and participating in early and subtly manifested aspects of the patient's recovery.

Family visitation and participation in bedside care are areas where further research is merited. For example, data on whether family visits have beneficial effects on patients is conflicting (Fuller & Foster, 1982). This may be mediated by the quality of premorbid family relationships. Male family members have been shown to be less likely to desire to participate in bedside care than female members (Boycoff, 1986). There is also evidence that family members desire strong but supportive nursing management of visitation during intensive care stays (Boycoff, 1986).

Studies also attest to the high degree of distress experienced by family members of coronary patients (e.g., Speedling, 1982). Lack of control of hospital events, lack of opportunities to express distress, lack of information, and inadequate or poor social support for well-meaning friends were reported to be major stressors following CABG in one study (Gillis, 1984). The hospital experiences of spouses of patients with MI in another study were characterized by fear of loss of the spouse, the spouse's health, or financial security; fear of the hospital environment in general; and fear of changes in family roles and personal life goals (Bedsworth & Molen, 1982). High anxiety, depression, and illness coincident with the coronary events also have been found among spouses (M. Stern & Pascale, 1979) and among children of patients who experience an acute coronary event (Dhooper, 1983). Family members also report being stressed by lack of information and express a desire for more information about patients' recommended general activity level (Bramwell, 1986; Thompson & Cordle, 1988) as well as specific information regarding sexual activity (Papadopoulos, Larrimore, Cardin, & Shelley, 1980). Finally, failure to use opportunities to be supportive to family members may result in depriving the practitioner of valuable information about the patient's usual support needs under stress (Speedling, 1982).

Further information on stress and coping in spouses of MI patients is

cant predictors of longer-term outcomes (Affleck, Tenne, Croog, & Levine, 1987; Bar-on, 1987; Byrne, 1982; Byrne, Whyte, & Butler, 1981; Croog & Levine, 1977; Garrity & Klein, 1975; Maeland & Havik, 1987; Mayou, 1984; Stanton et al., 1983; Trelawny-Ross & Russell, 1987; Wiklund, Sanne, Vedin, & Wilhelmsson, 1984). Finally, and of major import in a discussion of social network support, a recently growing body of research strongly suggests that adjustment to serious illness (including acute cardiac events) is best understood within the context of primary social relationships, especially marital relationships (Aho, 1977; Bruhn, 1977; Coyne, Ellard, & Smith, 1990; Coyne & Smith, 1991; Davidson, 1979; Dhooper, 1983; Kulik & Mahler, 1984; Litman, 1974; Melamed & Brenner, 1990; New, Ruscio, Priest, Petritsi, & George, 1968; Radley & Green, 1985, 1986; Radley, 1988; Speedling, 1982; Waltz, 1986a,b). In the next section of this chapter, we explore social support during acute coronary events.

Social Support during Acute Coronary Events

In what ways may social support operate during acute coronary events? During this time, patients have access to two primary sources of support: family and friends, and health care professionals. Three types of support would seem applicable: emotional, informational, and instrumental support. The preceding discussion underscores potential avenues of influence of both family and caregivers on patients' affective status and on cognitive appraisals of their situation. Family members' ability to provide support to patients during hospitalization will undoubtedly be influenced by the degree of distress they experience and by their appraisals of the patient's status. Furthermore, family members' ability to obtain informational and emotional social support themselves during this time may be an important factor in their ability to support the patient (Ell & Northern, 1990; Finlayson & McEwen, 1977; Unger & Powell, 1980). Our focus in this section is on the family support issues.

Families' Needs for Support

The lack of extensive research on family responses to patients' acute coronary events is remarkable. Several preliminary studies, however, are heuristic in their identification of stressors experienced by spouses. Noteworthy are a few studies that suggest that spouses were more frequently distressed than patients during acute hospitalization (Mayou, Foster, & Williamson, 1978; Michela, 1987; Speedling, 1982). Speedling (1982) conducted an extensive ethnographic examination of patient and family

provided by Nyamathi (1987), who interviewed 40 spouses of MI patients within the first year after the hospitalization. During hospitalization, coping focused on reducing the effect of the MI on the husband, family, and self. Almost all of them sought emotional support and help for themselves at some point, although the prevalence of this diminished over time. In general, behavioral coping techniques (e.g., seeking information or problem solving) were preferred over cognitive ones (e.g., distancing or reinterpreting).

Homecoming and the first weeks of convalescence are periods of significant distress for family members of patients with MI and CABG also, especially spouses (Bramwell, 1986; Carter, 1984; Dhooper, 1983; Finlayson & McEwen, 1977; Gillis, 1984; Greenhill & Frater, 1976; Lange-luddecke, Tennant, Fulcker, Barid, & Hughes, 1989; Skelton & Dominian, 1973; Speedling, 1982). Speedling (1982) suggests that problems that remained below the surface during hospitalization become more salient when the family is home and coping without professional help. Conflict around spouse roles in the patient's resumption of activities is reported to be highest during early convalescence (Bramwell, 1986; Gillis, 1984; Wishnie, Hackett, & Cassem, 1977). There is evidence that incongruence between patients' and family members' perceptions of the patient's status is a primary source of conflict and causes affective distress for both patients and family members (Finlayson & McEwen, 1977; Wishnie et al., 1977). Again, at discharge family members are less likely than patients to have been given adequate information regarding recommended physical activity levels for patients (Bramwell, 1986; Gillis, 1984; Rudy, 1980; Taylor, Bandura, Ewart, Miller, & DeBusk, 1985). Furthermore, family members are frequently dissatisfied or distressed by what is perceived to be infrequent outpatient visits and lack of communication with medical staff during the days immediately after discharge (Bramwell, 1986; Mayou, Williamson, & Foster, 1976).

Effects of Family Support

The salutary effects of support from spouses can be inferred from data indicating higher death rates among unmarried hospitalized MI patients (Chandra, Szklo, Goldberg, & Tonascia, 1983) and among post-MI patients reporting high stress in combination with social isolation (Ruberman et al., 1984). In each of these studies, the effect of the social relationship variable was maintained when potentially confounding physical risk factors were controlled. There is also evidence that family support, especially from spouses, during acute episodes enhances patients' psychological well-being during recovery (Ell & Haywood, 1984, 1985-86; Waltz, 1986a,b;

Winefield, 1982) and is an important influence on patients' cognitive restructuring processes (Radley, 1988; Waltz, 1986a,b). Of interest is evidence that having family members touch patients and orient patients frequently to time and place may reduce the manifestations of postoperative psychiatric disturbances (Chatham, 1978). Furthermore, a recent study with male CABG patients found high levels of contact with the spouse during hospitalization was associated with taking fewer pain medications and quicker discharge from ICU and from the hospital compared to patients who had low levels of spousal contact (Kulik & Mahler, 1984). Unmarried patients, however, were between the two groups in outcomes.

There is also evidence that some types of family members' support for patients may not be helpful during hospitalization. For example, visits by family members who had no preparation for the coronary care unit were found to increase patient anxiety (Doerr & Jones, 1979). Speedling (1982) found that advice from family members to patients regarding activity in the unit was frequently in direct conflict with the directions patients received from medical staff. He posited that this dilemma was in large part attributable to failure on the part of health care providers to incorporate family members adequately into the overall care of the patient and to provide the family with sufficient information. Family visits characterized by this form of conflict were stressful for both patients and family members.

The reported conflict between patients and spouses at this time is of concern in light of data suggesting that the presence of conflict is most detrimental to the provision of support from a person's closest relationship (Abbey, Abramis, & Caplan, 1985; Eggert, 1987) and that unmet expectations of support from others increases negative affect (Fiore, Becker, & Coppel, 1983). Indeed, Ell and Haywood (1984) found that unhelpful network support canceled out helpful support during cardiac recovery. In that study, the net number of helpful network members was a stronger predictor of outcomes than the number of either helpful or unhelpful network members.

It would seem that conflicting perceptions about the patient's status that may have developed in the hospital are even more intense at home, and presumably they are acted upon in ways that are distressing for both patients and family members. For example, spouses engage in a process of searching for explanations or causes for the cardiac events (causal attributions), and they evaluate their potential role in influencing patients' post-hospitalization behaviors (Bar-on & Dreman, 1987; Bramwell, 1986; Cowie, 1976; Rudy, 1980). Spouses may adopt a supportive role of providing reassurance or understanding, or they may become advocates for changes in life-style and compliance with medical regimens (Aiken, 1975). Lack of

adequate and accurate information may lead to spouses' support having negative effects as a result of their assuming an overprotective stance toward patients (Jenkins et al., 1983; Wishnie et al., 1977). Emotional overinvolvement of family at this time may also unduly stress patients (Coyne & DeLongis, 1986; Coyne, Wortman, & Lehman, 1988; Greenhill & Frater, 1976). In contrast, if spouses believe their role to be slight in relation to the patient's life-style changes and health behaviors, patients may be deprived of an important emotional support for their efforts (Aho, 1977). Similarly, incongruent perceptions between patients and spouses of patients' overall health status may result in conflict (New et al., 1968). In an interesting study, congruent causal attributions between post-MI patients and their spouses—regardless of the attributions' content—affected short-term convalescence (Bar-on & Dreman, 1987). Incongruence of the couples' denial pattern was positively related to patient's return to work and functioning during subsequent long-term rehabilitation. Thus, if spouses do not engage in a denial pattern similar to their partners, they may encourage patients to later adopt appropriate secondary prevention health behaviors.

Intervention Research

Taken together, the data reviewed in the preceding sections lend strong support to the proposition that close contact of patients and family members with health care practitioners during acute cardiac episodes provides health professionals with a "window of opportunity" to (a) assess known risk factors for psychosocial impairment, (b) intervene to modify the environments of caregiving, and (c) provide patients and family members with informational and emotional social support. Alternatively, failure to meet these challenges may result in acute care being a dangerous opportunity for negatively affecting patients' and family members' self-perceptions and, ultimately, patient's long-term outcomes (Mumford, Schlesinger, & Glass, 1982). For example, there is evidence that support for smoking cessation is most effective if initiated in the hospital (Sivarajan et al., 1983).

Given the strong justification for employing supportive intervention during acute cardiac episodes, what recommendations to health care practitioners can be made? Most important, what is known about the effectiveness of specific intervention strategies. In general, it can be said that few patients require either extensive psychiatric treatment or elaborate psychosocial intervention (Cay et al., 1972; Lloyd & Cawley, 1983; Mumford et al., 1982). Physicians and nursing staff are advised to provide

patients and family members routinely and repeatedly with adequate expert information and with opportunities for safe expression of feelings, fears, and perceptions (Fleming, 1980; Winefield & Katsikitis, 1987). In addition, the distress experienced by both patients and family members during hospitalization and their persistence through early convalescence, in combination with evidence of the salutary effects of social support, provide a strong rationale for developing and testing supportive psychosocial interventions. At present, patients and families are infrequently aware of the psychosocial services that may be available to them (Dhooper, 1983), and the majority of patients make little or no use of such services (Croog, Lipson, & Levine, 1972; Jenkins et al., 1983). Therefore medical staff are advised to integrate psychosocial supportive care provided by other health professionals (e.g., social workers, psychologists, and nurse specialists) routinely into standard medical and surgical treatment protocols (Pozen, Stechmiller, Harris, Smith, & Voigt, 1977; Stewart & Gregor, 1984).

Theories about families suggest that the patient's adjustment to the illness and ability to make future life-style choices will develop within the context of interaction and communication within intimate personal relationships. Indeed, there is evidence of this mutuality among patients and their spouses in coping with cancer (Cassileth et al., 1985; Ell, Nishimoto, Mantell, & Hamovitch, 1988a,b; Coyne, Ellard & Smith, 1990; Gotay, 1984) as well as among cardiac patients (Bar-on & Dreman, 1987; Radley & Green, 1985, 1986; Waltz, 1986a,b). The family context, and most frequently the marital relationship, must be viewed in terms of its structure and content prior to illness and its usual patterns of coping with stress as well as its response to the situational stressors associated with the acute cardiac episode (Croog & Fitzgerald, 1978; Waltz, 1986a,b). This perspective explains findings that family members influence patient's emotional adaptation, acceptance or nonacceptance of the prescribed medical regimen, and behavior during early convalescence.

Routinely providing care to family members is emphasized because evidence indicates that this aspect of care may be most frequently neglected (Ell & Northern, 1990; Sikes & Rodenhauer, 1987) and because family-directed care is assumed to result in direct benefits to patients. Given what is generally known about family coping, intervention will be helpful to most family members when it is directed to easing immediate stressors and enhancing coping responses. Second, identifying family who may be at risk as a result of preillness problem relationships and targeting these families for more extensive psychosocial supportive care is recommended.

To date, the literature consists of frequent calls for supportive psycho-

social services and numerous description of model programs (e.g., Bromberg & Donnerstag, 1977; Gardner & Stewart, 1978; Granger, 1974; Gullede, 1975; Hartly, 1988; Mitchell, 1976). Acute care interventions can be distinguished as being primarily educationally or emotionally directed (or a combination of both); as focused on modifying hospital environments or on posthospital adjustment; as involving professional or self-help aides; and as being directed to patients, families, or both. Numerous questions remain about how social support influences recovery processes from serious illness. Converging evidence, however, suggests that patients' social support experiences are amenable to professional intervention (Porrirt, 1979; Wortman & Conway, 1985). Moreover, although intervention research in acute cardiac care is relatively sparse and in some cases methodologically flawed, results encourage further study.

Supportive Patient Interventions

Preoperative preparation for surgery has been convincingly shown to reduce patients' psychological distress and to speed postoperative recovery by reducing use of analgesics (Andrew, 1970; Egbert, Battit, Welch, & Bartlett, 1964), and length of hospital stay (see Mumford et al., 1982; Reading, 1979, for reviews). In a controlled study, sensory and procedural information preparation, and information plus a coping preparation, were found to reduce psychological distress and the incidence of acute postoperative hypertension among patients having CABG (Anderson, 1987; see also Christopherson & Pfeiffer, 1980). Another interesting study examined the effects of preoperative roommate assignment on preoperative emotions and postoperative recovery in CABG patients (Kulik & Mahler, 1987). Whether the patient's roommate prior to surgery was hospitalized for cardiac surgery had no effects, but if the preoperative roommate was postoperative, CABG patients experienced less anxiety and later ambulated and were discharged quicker than if the roommate had been preoperative. Structured preparation for transfer from intensive care units has also been shown to reduce patient anxiety (Smith, 1976; T. Stern, 1985; Toth, 1980). Despite the advantages of information during hospitalization, it is noteworthy that CABG patients have had difficulty processing and retaining such information (Kinchla & Weiss, 1985), a fact that must be taken into account in cardiac interventions. Information seeking was evident as a coping strategy preoperatively in all CABG patients in one study, however, suggesting that patients want information even if it is hard to digest (King, 1985).

Mended Hearts is a self-help program that is built on a hospital visitation program, where accredited Mended Hearts visitors (recovered

patients) visit preoperative and postoperative heart patients in local hospitals. An evaluation of the impact of different elements of the program found that the greatest long-term benefits occur among retired patients who are active in the organization over an extended period of time (Videka, 1979). In that study, the impact of the hospital visits on long-term outcomes was not significant; more recently the visitation program has been extended to include patients with MI and PTCA. Crude measures of the effectiveness of a similar program in Canada suggests that the salutary effects of the pre- and postsurgical visits emerge from patients' exposure to the "living proof" model of successful recovery and from the emotional support provided by the lay helper (Meagher, Gregor, & Stewart, 1987). Also, King (1985) found that for CABG patients it was helpful preoperatively to talk to someone with similar experience as a source of information, but postoperatively family and friends were more helpful.

Descriptions of supportive psychological counseling of patients in the hospital are reported to result in improved recovery (see Garrity, 1981, for a review); however, counseling is generally directed to patients identified as having special needs. Few studies have used controlled research designs or objectively measured specific cardiac outcomes. Three studies are noteworthy for their methodological rigor. In one, 70 patients with a first MI were randomized into a treatment or control group (Gruen, 1975). The treatment consisted of daily psychotherapy during acute hospitalization. Treated patients showed significant favorable differences on intensive care and hospital days; development of arrhythmias and congestive heart failure; nurses' observations of weakness; physician assessment of depression; and self-report of social support, anxiety, and ability to engage in normal activity at a 4-month follow-up.

In the second study, 143 men were randomly assigned to an intensive rehabilitation or a control group (Naismeth, Robinson, Shaw, & MacIntyre, 1979). Treatment patients were first seen on the third day after MI and were subsequently seen periodically in the hospital and at home for a period of 6 months. Patients' wives were seen on several occasions, sometimes alone and sometimes with the patient. Psychological counseling was conducted by a nurse counselor at 6 months after discharge. Treated patients achieved significantly higher scores on social independence; no differences were found for return to work or physical and emotional stability.

Anderson (1987) evaluated the effects of preoperative preparation in male CABG patients on pre- and postoperative outcomes. Control group patients received routine hospital preparation. Two other randomly assigned groups received routine preparation plus detailed information on procedures and sensations. The intervention groups were significantly less anxious and fearful during the time prior to surgery, had a greater belief in

their control during recovery, reported less emotional distress post-operatively, and were judged by nurses as having better overall recoveries.

Educational and emotion-focused group treatments are commonly used in the care of post-MI patients, although their effectiveness has not been adequately examined. Indeed, in several studies of group intervention little change in physical or psychological factors was found (Horlick, Cameron, Firor, Bhalerao, & Baltzan, 1984; Ibrahim et al., 1974; Rahe, Word, & Hayes, 1979). Failure to establish significant intervention effects may be a result of providing patients with care regardless of the need for such care.

Targeting Interventions

Despite extensive descriptive data identifying patients at higher risk for poor cardiac outcomes, few interventions have been targeted or tailored to potential high-risk populations (Mumford et al., 1982; Sulman & Verhaeghe, 1985). The question of whether to screen patients for need and to tailor an intervention to specific patient groups is important. Research indicates that supportive interventions have little effect on patients with little need (Horlick et al., 1984; Naismeth et al., 1979). Furthermore, patients' decision to participate in cardiac groups may be differently influenced by their comfort with whether the cardiac group has a psychotherapeutic versus an educational format (Hackett, 1978). Finally, some patients may experience iatrogenic effects if they are the recipients of a mismatched intervention.

An example of this latter point was found in the controlled study referred to above (Naismeth et al., 1979). In additional analyses in that study, patients were classified (using the Eysenck Personality Inventory) as neurotic introverts and stable extroverts (Naismeth et al., 1979). Neurotic introverts achieved a much better outcome on all rehabilitation measures than their counterparts in the control groups following the psychological counseling program. No evidence was found that rehabilitation exacerbated neurosis; however, an impression was gained that for the stable extroverts, the program could have negative effects on established coping strategies.

Recent studies of MI and PTCA patients lend further support to considerations of tailoring educational interventions to patient styles (Cromwell, Butterfield, Brayfield, & Curry, 1977; Shaw, Cohen, Doyle, & Palesky, 1985; Shaw et al., 1986; Weinberger, Schwartz, & Davidson, 1979). These studies have attempted to examine the effects of informational interventions on cardiac outcome among patients with different coping styles (specifically, repressors versus sensitizers). Information is one form

of social support that figures prominently in cardiac recovery in the acute phase. In one study, a mismatch between the information intervention and repressive coping style was associated with a higher number of heart alarms among hospitalized MI patients and with patients being rated less cooperative by the staff (Cromwell et al., 1977). Weinberger and colleagues (1979) found that repressors with high levels of cardiac risk information at post-MI discharge reported significantly more medical complications and poorer psychological functioning during the 6 months following discharge than repressors with low levels of risk information. Sensitizers with low levels of risk factor information at discharge reported poorer social functioning (Shaw et al., 1985).

Most recently, mismatch between information and repressive coping style was found to be associated with late medical complications following PTCA (Shaw et al., 1986). In that study sensitizers with a low level of cardiac information and whose PTCA was only moderately successful were at higher risk for restenosis of the artery that had been widened during the treatment. Taken together, these findings suggest that future intervention research should consider various approaches to identifying at-risk patients and to tailoring information and social support in general to patient dispositional characteristics.

Supportive Family Interventions

As already noted, the literature sets forth a strong theoretical and empirical rationale for interventions that influence the support family members naturally provide to patients. Family support has been demonstrated to have potentially salutary or negative effects on patient adjustment; in addition, there is some evidence that spouses perceive the health care practitioner's "bedside manner" and information-giving role to be important to their own psychological well-being (Boycott, 1986). Interventions therefore may be designed to provide family members with emotional and informational support, or family members can be instructed in specific supportive behaviors that they may direct to patients.

Again, admonitions to practitioners to provide supportive family care are numerous in the literature (Bromberg & Donnerstag, 1977; Davidson, 1979; Eil & Northern, 1990; Gardner & Stewart, 1978; Raymond et al., 1984). Descriptions of such are usually reported to be beneficial to both patients and family members (Pozen et al., 1977). For example, family group conferences conducted one evening a week by nursing staff and a psychiatric clinical specialist are reported to be helpful in reducing family members' anxiety during hospitalization (Holub, Ecklund, & Keenan, 1975), and a drop-in weekly support group for wives of MI patients is

reported to be helpful to participants and to provide valuable assessment information to staff (Harding & Morefield, 1976). Rigorous evaluations of family interventions, however, is rare (Thompson & Meddis, 1990).

Several examples illustrate areas for further research. In a preliminary study, 12 patients were randomly assigned to an experimental or control group (Doerr & Jones, 1979). Family members of patients in the treatment group were given an information manual concerning the coronary care unit and an opportunity to ask the nurse questions; control families were given no preparation. Pre- and postvisitation patient assessments using the Spielberger State Anxiety Inventory found patient anxiety declined among those whose families were prepared, whereas patients with unprepared families experienced an increase in state anxiety.

In another study, a treatment and control group—each consisting of 10 male patients undergoing CABG—were examined for postcardiotomy psychosis (Chatham, 1978). All patients received preoperative teaching, and all subjects were maintained on cardiopulmonary bypass for at least 60 minutes. A family member or friend of experimental patients received systematic instruction concerning the functions of the equipment used in the ICU, the postoperative care routine of the patient, and the patient's need for eye contact, frequent touch, and verbal orientation to time, person, and place. Patients in the experimental group were judged during hospitalization by nursing staff to be more oriented to time, person, and place; to be more appropriate and less confused, as demonstrated by speech and behaviors; and to have fewer delusions and longer sleep periods when compared to controls. No differences were found between groups on alertness, agitation, complaints, depression, activity, or anxiety during hospitalization.

It is disturbing that so little intervention research has examined either patient care or family-focused strategies during acute cardiac episodes. Several factors presumably contribute to this gap in the research to date. First, behavioral and social scientists with the requisite research skills are rarely active members of cardiac care teams; as a result, a necessary dialogue between clinicians and researchers is not fostered (Eil, 1985-86). Medical staff and nursing staff are oriented to meeting the demands inherent in providing the technical care that is lifesaving during acute cardiac events.

Furthermore, the structure of intensive care (and, to a great extent, hospital environments in general) excludes specific consideration of family needs and family roles during acute illness episodes. Finally, health care financing mechanisms commonly fail to include coverage for family-oriented care during acute events, and thus there is little administrative support for providing such care (Eil & Northerrn, 1990; Sikes & Roden-

hauser, 1987). It seems that many of the barriers to expanding supportive care during acute cardiac episodes would fall with substantial growth evidence of the utility of such care on cardiac outcomes and on the quality of life of both patients and families.

Research Agenda

Need for Conceptual Frameworks

Perhaps the greatest limitation of past research is its atheoretical nature. The work of Lazarus and colleagues (Lazarus, 1966; Lazarus & Folkman, 1984) is one such framework that might be fruitful for exploring the effects of acute cardiac events. Within this model, stress is defined as a transaction between a person and his or her environment that taxes or exceeds personal resources (Lazarus & Folkman, 1984). Resources include *dispositional factors* (e.g., self-esteem, attitudes, values and beliefs, and personal commitments), *social factors* (e.g., the presence of a social network and its responsiveness to stressful circumstances), and *material resources* (e.g., money and possessions).

When an environmental event or sequence of events is seen as taxing the individual's normal adaptive capacity, the person appraises the circumstances as stressful. Primary or first-order appraisals of stressful events include that they are threatening, challenging, or have already caused harm or loss. Regardless of the specific nature of the stress appraisal, the person must cope in some manner in order to alter the situation (problem-focused coping) and to manage the emotional consequences or distress (emotion-focused coping). Coping is defined as cognitive and behavioral efforts to manage the demands of the situation (Lazarus & Folkman, 1984). For example, a postcoronary bypass patient may attempt to maintain optimism to ward off feelings of depression and may also engage actively in healthy postoperative recovery behavior in order to regain functioning as quickly as possible. Studies on adaptation to acute cardiac events such as myocardial infarction, coronary bypass surgery, or angioplasty can be improved by using a framework such as this to guide research questions and hypotheses, development of measures, and interpretation of results.

Ultimately models that are specific to adaptation to cardiac events may need to be developed, but at this stage of our knowledge, much is to be learned from examining general processes of stress, coping, and adaptation. Conceptual models are needed not only to provide a framework for studying adaptation in cardiac patients, but also for guiding research on social support in this area.

*Factors Associated with Outcomes
and Avenues for Social Support*

One way in which future research on social support and acute cardiac events could be approached is to consider specific factors that have been associated with outcomes for MI, CABG, and PTCA patients as possible avenues for social support influences. Factors associated with outcome can be divided into patient and family factors. One of the most potent variables for both patient and family that may influence outcomes is the patients' and families' perceptions of the situation. For the patient, such perceptions include appraisals of the severity and extent of loss or harm, assessments of risk and future vulnerability, and attributions about the causes and controllability of the situation. Family members' perceptions of the status of the patient as disabled, functional, vulnerable, and so forth are also likely to be relevant. Research could be targeted to determine the supportive efforts that are most likely to influence these appraisal factors, thereby indirectly influencing outcome.

Another factor in determining outcome is the affective responses of both patient and family members. Patients who react to acute cardiac events in particular ways (e.g., with extreme depression) may be targeted for supportive interventions whose goal is to improve the patient's outcome by helping the person to work through or manage his or her emotions. Similarly, extreme emotional reactions on the part of family members may be important factors in outcome. A spouse who is extremely anxious is unlikely to be an effective source of support and is instead likely to be detrimental to the patient. Supportive efforts aimed at helping spouses manage and reduce their anxiety would be another possible way of indirectly influencing medical outcomes (Taylor et al., 1985).

Another set of factors associated with outcomes is patient decision making, adherence, and risk reduction behavior. Each of these has been associated with the outcomes of acute cardiac events. Supportive efforts aimed at improving any of these behaviors would be worth considering as further indirect means of influencing outcomes. As we gain a better idea of which factors influence recovery, they may provide potent avenues for applying social support. This information should also shed light on the processes by which social support works.

Unanswered Research Questions

A plethora of research questions remain unanswered about the role of social support in recovery from acute cardiac events and some research mandates:

Although effective and well-targeted support attempts are likely to be beneficial to acute cardiac patients, less effective or misdirected efforts are just as likely to have ill effects, to confuse the patients, and complicate the interpersonal situation. One example of this is when a family member is overinvolved in a distressed person's situation (Coyne, Ellard, & Smith, 1990; Coyne & Smith, 1991; Coyne, Wortman, & Lehman, 1988). Other specific behaviors (e.g., cutting off the patient's attempts to communicate distress because it is believed to reflect poor coping, or blaming the patient) have been discussed with respect to cancer (Dunkel-Schetter & Wortman, 1982; Wortman & Dunkel-Schetter, 1979), severe depression (Coyne, 1976; Coates & Wortman, 1980), and negative life events in general (Silver & Wortman, 1980; Wortman & Lehman, 1985). Little consideration of the matter, however, has taken place for heart disease in general or for acute cardiac events specifically. What things do family members and health care providers do that upset or detract from the recovery progress of MI, CABG, and PTCA patients? It is well established that social interaction is a two-edged sword, with possibilities for harm as well as benefit. Thus consideration in future research of the social interactions of coronary patients during the acute phase is necessary.

Very little has been written in the social support literature on the processes by which social support influences health outcomes (see Cohen, 1988; Cohen & Syme, 1985; House, Landis, & Umberson, 1988; Wortman & Dunkel-Schetter, 1982). Considerable epidemiological data exist linking social support to the development of cardiovascular disease (see Chapters 5 and 6), but these studies stop short of explaining the biopsychosocial processes involved. It is widely acknowledged that we must understand social support processes in order to take full advantage of any intervention opportunities or possibilities for application of basic research on social support effects. We need to understand not only the extent to which social support influences recovery from these events in the short term but, most importantly, the process by which any effects occur (House et al., 1988). For example, does support from family and health care providers during the acute phase help recovery rates by reducing physiological arousal and subjective feelings of anxiety? Another hypothesis is that support is most effective when it influences the person to cope in particular ways (e.g., by seeking information). Still a third possibility is that support functions to influence the person's appraisal of his or her cardiac condition; that is, effective and beneficial support might function to alter perceptions of the cardiac condition from one of a threatening and unalterable loss to that of a manageable and challenging situation. In summary, several non-mutually exclusive possibilities exist as the mechanisms by which social support efforts may benefit a cardiac patient during the acute care phase.

1. What types, sources, timing, and qualities of social support most strongly influence cardiac event adjustment?
2. Cardiac programs in acute care involving supportive components must be evaluated scientifically to determine their multiple effects. Do these interventions have negative as well as positive effects for patients and families?
3. Who is most likely to delay seeking care for a cardiac event? To what extent does interpretation, consultation, or a help seeking process increase delay? To what extent do background variables such as ethnicity contribute to delay, and what underlying mechanisms account for ethnic differences?
4. What role do physicians play in influencing patients to undergo risky or unproven treatments?
5. Can families be more involved during hospitalization in observing, learning, and participating in patient care? What benefits, risks, and barriers accompany such efforts?
6. What are the effects of specific supportive behaviors by health care providers in cardiac care on patient recovery?

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