The delivery of definitive treatment for acute coronary syndrome (ACS) should begin as soon as possible after symptom onset to decrease associated morbidity and mortality. Every 30 minutes of delay results in a 7.5% increased relative risk for 1-year mortality. Unfortunately, the time between the onset of cardiac symptoms and admission to the hospital is far beyond optimal. Median times range from 1.5 to 6.0 hours, with the most recent times reported to be slightly more than 2 hours. A major limitation to achieving timely treatment is related to the patient’s indecision and reluctance to seek treatment. To date, efforts to reduce prehospital delay have shown limited success, despite 2 decades of research and multiple randomized, controlled trials of educational strategies directed toward the general public, healthcare professionals, and patients with ischemic heart disease.

In early research in this area, investigators identified the sociodemographic and clinical characteristics that were associated with prolonged prehospital delay. Knowing that older individuals, women, or patients with a history of angina are more likely to delay does not suggest appropriate interventions to reduce delay time, because none of these characteristics are amenable to change. In this issue of *Circulation: Cardiovascular Quality and Outcomes*, Sullivan et al address an alternate understanding of prehospital ACS care delay. Along with examining delay to treatment in terms of patient sociodemographic and clinical characteristics, they tested a developmental model of attachment theory to characterize patterns of interpersonal functioning. More specifically, they asked patients to answer a series of questions that reflected their trust of others and their view of themselves as worthy of care. The investigators targeted patients with suspected ischemic heart disease who were scheduled for clinically indicated rest/stress myocardial perfusion imaging to evaluate the association between attachment styles and the intention to seek treatment early in the face of ACS symptoms.

Possible behavior related to treatment seeking was assessed by using a single statement originally developed for the Rapid Early Action for Coronary Treatment trial. The statement was phrased as follows: “If I thought I was having a heart attack, I would wait until I was very sure before going to the hospital.” Responses ranged from “strongly agree” to “strongly disagree.” Respondents with a higher trust of others and a positive view of self were more likely to disagree with the statement, suggesting that they would not delay in making the decision. Using a multivariable regression model, the investigators found that negative trustworthiness of others, as well as increased physical limitations related to angina symptoms and a negative revascularization history, were independently associated with an increased intention to wait until very sure before going to the hospital (ie, these respondents would want to be sure that they were having a heart attack before taking action). Their findings were confirmed in a logistic regression. Patients who were categorized as trusting others were 15% more likely to disagree with the statement that they would wait to be sure it was a heart attack (odds ratio, 0.85; 95% CI, 0.78 to 0.94). On the basis of these results, the authors concluded that the intention to seek care promptly for ACS is associated with a higher level of trust of others even after adjustment for objective and perceived ACS risk.

The findings of this study provide an insight into the very complex phenomenon of prehospital delay. It is now well established that knowledge alone is not sufficient to decrease prehospital delay. Knowledge of the nature of ACS symptoms and the importance of calling the emergency medical services system is necessary but not sufficient. Even having experienced a previous myocardial infarction does not reduce prehospital delay time in the case of a second event. Patients may or may not identify their symptoms correctly as being cardiac in nature, they may or may not share their symptom experience with someone else, and they may or may not decide to access the emergency medical services system. The hypothesis that attachment theory can help us identify who might be at risk for prolonged delay and might also provide a target for intervention by physicians is intriguing.

The critical question posed by Sullivan et al was the following: Does attachment theory provide new insight to our understanding of who might label symptoms appropriately as cardiac in nature or who might share their symptoms with another person and call emergency medical services promptly? The answer to this question is confounded on 2 levels. First, a limitation of the study, which was acknowledged by the authors, is that a question about intent to behave in the future was used as a surrogate measure for prehospital delay time and the association between the 2 measures is unknown. As every parent of a teenager knows, hypothetical questions about future choices may or may not reveal what...
the individual will choose to do in a unique, potentially difficult situation in the future. In the study by Sullivan et al, attachment theory did indeed help explain the participants’ responses to the question about whether they would delay seeking treatment for ACS symptoms to make sure that it was a heart attack. However, only a prospective study conducted over time will tell us whether attachment theory can be used to predict prehospital delay times. Second, the questions used to assess an orientation toward self and others may not extend into the realm of medical care. If someone had 1 or more negative experiences in the emergency department when seeking care, the response to a general set of questions about trust and closeness in relationships may not accurately reflect what that person will do when experiencing the symptoms of a heart attack.

Despite the acknowledged limitations of this cross-sectional study, the findings are a positive step in understanding the emotional components that may affect prehospital delay times in ACS. Combined with other studies that suggest delay times are longer in those patients who score low on their ability to recognize changes in emotions or bodily sensations, we can begin to design interventions tailored to individual differences.\(^{12}\) Rather than attempting to alter a patient’s lack of trust in others or reduced sensitivity to bodily sensations, for example, it may be possible to adapt our education and counseling of patients to focus specifically on the personality barriers that they bring to the decision to seek care quickly in the face of ACS symptoms.

The factors influencing time from symptom onset of ACS to admission to the hospital have been studied for more than 2 decades, with no significant change in prehospital delay times.\(^{10}\) Although we now know the profile of patients most at risk for prolonged delays, we have been unsuccessful in using that knowledge to reduce delay time. In the future, physicians and other healthcare professionals will want to combine the information on ACS symptoms and recommendations for action in counseling patients with the awareness that patients bring personality variables to the decision that affects the amount of time they delay seeking care. More studies are needed to understand the social, cognitive, and emotional reasons for delay among patients at risk for ACS. Unexplored theoretical models from social and behavioral sciences must be tested to better understand coping response and decision making in patients with ACS, particularly among demographically and socioeconomically diverse populations. The study by Sullivan et al highlights the complexity of understanding and implementing meaningful interventions to decrease delay time for early definitive treatment among patients with ACS. It also reveals the limitations of cross-sectional designs in a research area that demands prospective trials with significant follow-up. Pre-hospital delay to treatment in ACS is a problem yet to be solved.

**Disclosures**

None.

**References**


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