Dispatcher-assisted first aid in chest pain: proposal of an evidence-based algorithm

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Dear Editor,

Chest pain is one of the most common reasons to seek emergency care, and 12% to 20% of persons who present to an emergency department with chest pain are ultimately diagnosed with acute coronary syndrome (ACS)—a major cause of death worldwide. Although increased time from symptom onset to treatment is strongly associated with increased mortality from ACS, most individuals with chest pain do not receive timely aid, potentially leading to poor outcomes.

Along with mass public awareness and education campaigns aiming at promoting early recognition of chest pain as a threatening sign of ACS and rapid activation of emergency medical services (EMS), broad implementation of practice where EMS dispatchers provide pre-arrival instructions (PAI) on first aid over the telephone may contribute to a reduction in delay to treatment in ACS. Nevertheless, this subject has received scant attention in the research literature, and no unified evidence-based approach to dispatcher assistance in chest pain exists to date.

As a first step toward development of a standardized algorithm for dispatcher assistance in chest pain, in July 2022, a comparative analysis of recommendations on first aid in chest pain from English-language guidelines was carried out. The analysis revealed disagreement between the guidelines (see dataset). In particular, a number of guidelines, including those published since 2020, lack recommendations to limit physical activity of the person who suffers chest pain, assist them to take prescribed antianginal medication, monitor responsiveness and breathing to arrival of an ambulance, and immediately start cardiopulmonary resuscitation if the person becomes unresponsive and stops breathing normally. Some guidelines do not explicitly recommend prompt EMS for persons with acute chest pain, and most guidelines do not emphasize that transportation of such individuals to a healthcare facility should not be performed via private vehicle. All but one guideline encourage adults with nontraumatic chest pain to take aspirin while awaiting EMS, unless contraindications exist.

Additional analysis was conducted to investigate content of dispatch PAI on first aid in chest pain. Five sets of English-language PAI were found through Google search, all developed in the US, dated from 2008 to 2022 (see dataset). Of these, four sets do not include the instruction to stop physical activity of the person with chest pain; four sets and one set do not encourage the person to take aspirin or prescribed antianginal drug, respectively; and three sets contain a non-evidence-based instruction to loosen the person’s tight clothing. Absence of simple and well-justified recommendations on first aid from PAI, as well as inclusion of nonevidence-based instructions, could lead to suboptimal care of ACS and impair outcomes of this time-sensitive emergency.
Fig. 1. Algorithm for telephone dispatcher assistance in chest pain. CPR, cardiopulmonary resuscitation; EMS, emergency medical services. If the person is responsive, the dispatcher should inquire about symptoms of possible acute coronary syndrome, including pain location and duration; changes of the pain when moving or breathing; and combination of the chest pain with profuse sweating, nausea, vomiting, weakness, dizziness, dyspnea, syncope, confusion, or rapid heart rate.
Based on the analysis and considering related work, an algorithm of telephone dispatcher assistance in chest pain was designed and is proposed for scientific discussion and further experimental and clinical evaluation (Fig. 1). Founded on the guidelines' integrated evidence, the algorithm could contribute to creation of a standardized framework for large-scale implementation of dispatcher-assisted first aid in chest pain.

CONFLICT OF INTEREST

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