Pre-Hospital Policies for the Care of Patients with Acute Coronary Syndromes in India: A Systematic Review and Policy Document Analysis

Amisha Patel, MD, Northwestern University Feinberg School of Medicine, Chicago, USA

Dorairaj Prabhakaran, MD, DM, MSc, Centre for Chronic Disease Control, Gurgaon, India

P.P. Mohanan MD, DM, Westfort Hi-Tech Hospital, Thrissur, India

RoseMary Hedberg MLIS, Northwestern University Feinberg School of Medicine, Chicago, USA

Mark Berendsen MLIS, Northwestern University Feinberg School of Medicine, Chicago, USA

Mark D. Huffman, MD, MPH, Northwestern University Feinberg School of Medicine, Chicago, USA
Introduction

Cardiovascular disease (CVD) is the number one cause of death in India and accounted for approximately 21% of deaths in 2010, with 11.4% of these deaths due to ischemic heart disease (1). A frequent, acute manifestation of ischemic heart disease is acute coronary syndrome (also known as ACS), which includes ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI), and unstable angina. Deaths due to acute coronary syndromes often occur suddenly and outside of the hospital setting. In high-income countries, short-term case fatality rates for acute coronary syndromes, including acute myocardial infarction, have fallen dramatically from approximately 25% in the early 1980s to as low as 4% in the current era, due at least in part to a combination of medical therapy, reperfusion, and better overall intensive care, including availability of defibrillation (2-5). However, treatment of patients with acute coronary syndromes in India is highly variable and often suboptimal (6), with increased symptom-to-presentation (pain-to-door) times and increased presentation-to-treatment (door-to-drug) times compared to high-income countries (7).

Early recognition of acute coronary syndrome symptoms by patients through public education campaigns and use of emergency medical services have been demonstrated to be effective ways to reduce time to first medical contact in patients with acute coronary syndrome. One recent study in Dublin, Ireland showed a lowering in median delay time by over 5 hours in acute coronary syndrome patients who received two individualized education sessions to reduce decision delay (1.7 vs. 7.1 hours, p<0.001) (8). In addition to these measures, use of a pre-hospital electrocardiogram (ECG) has been associated with reduced pre-hospital delay time, increased use of reperfusion interventions, earlier diagnosis, and faster time to treatment (9). In the United States, analysis of a large national registry including nearly 290,000 patients with acute myocardial infarction demonstrated that a pre-hospital ECG was associated with more timely initiation of reperfusion and lower 30-day mortality rates (7.4% vs. 8.2%, adjusted OR 0.94, 95% CI 0.91 to 0.96) compared to those who did not have a pre-hospital ECG (10). Thus, a combination of public education, increased use of emergency medical services, expeditious arrival at an equipped medical facility, and initiation of diagnostic and therapeutic measures in the pre-hospital setting improve outcomes in patients with acute coronary syndromes.

Despite the potential utility of these individual interventions, it is unclear if there are local, regional, or national policies in place to guide pre-hospital acute coronary syndrome care in many low- and middle-income countries, including India. Since India has the highest number of deaths due to ischemic heart disease in the world (11), there is a pressing need to address this growing problem. In recent years, the Government of India has tried to tackle these issues through the formation of the National Rural Health Mission, National Urban Health Mission, and the development of a government-sponsored insurance scheme for those who live below the poverty line. The existence and
implementation of pre-hospital acute coronary syndrome policies through these avenues may be important to ensure equitable and accessible emergency care, taking into account potential barriers to emergency care, including infrastructure and cost. A nation-wide documentary analysis of pre-hospital acute coronary syndromes systems of care policies will be undertaken to address this gap in knowledge.

Objectives

1. To assess how many Indian states and Union Territories have an emergency, pre-hospital acute coronary syndrome policy published after 2000.

2. To analyze the content of the existing policies for pre-hospital acute coronary syndrome care and compare to existing established recommendations by international cardiovascular professional societies, like the American College of Cardiology/American Heart Association and the European Society of Cardiology, and public health organizations, like the World Health Organization.

Methods

Design:
We will conduct a qualitative analysis of publicly available acute coronary syndrome care guidelines or health policies published after 2000 to evaluate whether they include recommendations pertaining to pre-hospital acute coronary syndrome care. We will conduct an Internet search for all Indian states (n=29) and Union Territories (UT, n=7). Our Internet search will use the Google search engine to retrieve the policy documents from the following state and UT websites:

1. Ministry of Health and Family Welfare
2. Government portals
3. Cardiovascular professional organizations

If we are unable to retrieve a policy through the web search, we will send an official email requesting the official policy documents that are relevant to this study from Northwestern University to respective parties as outlined above. We will send the same request email to the World Health Organization South-East Asia regional office. If we do not find any official documents after the performance of these steps, we will document the state or UT as not having publicly available policies.

Inclusion criteria:
The following inclusion criteria must be met for any of the collected documents to be included in the analysis:
- Officially-approved policy by a cardiovascular or public health organization
- Publically available document
- Be related to acute coronary syndrome and/or pre-hospital acute coronary syndrome care through local, state-level, or national-level policies
- Published in English or any official Indian language

The definitions of policy, guideline, action plan, and program vary in the literature and among the local, statewide, or territory-wide documents. In this analysis, we will include all documents that include the objectives and guidelines for action in the domain of pre-hospital acute coronary syndrome care. We will retrieve and save all pre-hospital acute coronary syndrome policies that are publicly available for each state or UT. We will explore policy documents related to the following key words:

- Acute coronary syndromes (ACS)
- Pre-hospital care (including emergency care)

Methods for Comparative Analysis
State and UT policies eligible for the study will be analyzed as follows:

1. Data coding

We will subdivide and assign categories to the data in the policy documents. Two researchers will code these documents to minimize subjective coding results. For this study, we will code the contents of the eligible policy documents in two phases:

- Phase 1: Keyword Coding
  We will scan policy documents for pre-identified keywords that are relevant to the study objectives (Table 1). We will choose the keywords based on the elements that are deemed to be important in the framework of a policy document with focus on the diagnosis and management of patients with acute coronary syndrome in the pre-hospital setting. The coding will be done using Dedoose qualitative data analysis software v4.12 (Manhattan Beach, USA).

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Dedoose Query</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute coronary syndrome</td>
<td>acute coronary syndrome OR ACS</td>
</tr>
<tr>
<td>Analgesic</td>
<td>analgesic</td>
</tr>
<tr>
<td>Antiplatelet</td>
<td>antiplatelet</td>
</tr>
<tr>
<td>Ambulance</td>
<td>ambulance</td>
</tr>
<tr>
<td>Aspirin</td>
<td>aspirin</td>
</tr>
<tr>
<td>Beta blocker</td>
<td>beta blocker</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>clopidogrel</td>
</tr>
<tr>
<td>Defibrillator</td>
<td>defibrillator OR AED</td>
</tr>
</tbody>
</table>
• Phase 2: Assessment of coded text in phase 1.
After coding the documents in phase one, we will assess the text retrieved in the process to determine the context in which the keyword is being used and whether or not it corresponds to a pre-hospital systems of care component within the policy. Initially we will code the text using Dedoose to identify and name the different components of the policy in which the keywords were found. We will then merge these free nodes into the following tree nodes:

• Background: the text gives an introduction, context or background for the policy.
• Axis: the text describes the principles that determined the content of the policy.
• Objectives: the text states the aims, goals, vision, expected outcomes, and/or objectives of the policy.
• Strategies: the text describes the different strategies described in the policy in order to achieve other professional cardiology society recommendations. Actions, participating stakeholders, and law production are included in this category.
• Other context: text was included here when the keywords were used in a context other than the systems for pre-hospital acute coronary syndrome care.

2. Mapping of policy availability of the States and Union Territories

This step is related with study objective number 1. For this purpose, we will construct a consolidated policy database containing all the eligible
policy documents and a map will be produced. This map will provide an overview of availability of a regional policy on pre-hospital acute coronary syndrome care published by any Indian state or UT.

3. Analysis of eligible policy documents with established pre-hospital emergency acute coronary syndrome care recommendations by international cardiovascular societies and public health organizations.

This step is related with study objective number 2. We will construct a table to assist the comparison and analysis purposes. This table will be constructed with the data sourced out from the coded eligible documents.

Ethical considerations

There are no ethical concerns to be considered, as all information used for this report will be in the public domain.

To acquire clearance from the Indian states or UT for using their policy documents for this study, the request for the clearance will be included in the email sent to those states or UT where the policy documents were not obtained (states or UT with missing policy documents).
References