

**Not Entitled to Their Own Facts:
Data Shows Ambulance Fees Will Deter
Emergency Calls for Help**

Prepared By:

**Montgomery County Volunteer Fire/Rescue Association
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Executive Summary

Ambulance fee supporters, most prominently County Executive Isiah Leggett, repeatedly have said that his proposal to charge \$300 to \$800 or more for emergency transport to the hospital will not discourage people from calling 911 in a medical emergency. They say there's no evidence showing ambulance fees will discourage such calls, and they cite the experience of neighboring jurisdictions with such fees as support.

While fee proponents are entitled to their own opinions, they are not entitled to their own facts. And the fact is: There is abundant evidence – rigorous scientific studies, professionally done population surveys, and data analysis from Fairfax County and elsewhere – that fees *do* create a barrier to activation of the EMS system and pose a serious risk to public health and safety.

Multiple Data Sources: Ambulance Fees Will Discourage Calls for Help

Scientific Survey Data

- A study released on **May 6, 2010**, by the Heart Foundation of Australia – whose emergency medical system is similar to that in the United States – found that almost 7% of people would be "very" or "somewhat" likely to delay calling an ambulance due to the cost involved.
- The Heart Foundation study results are similar to those of a **February 2008** survey of Montgomery County, MD, residents that found 74% of County residents believe that it is very or somewhat convincing that ambulance fees would cause patients needing transport to a hospital to hesitate or delay calling 911 – only 24% residents believed fees would not deter calls to 911.

Medical Studies

Two studies in peer-reviewed medical journals found that cost considerations may play a factor in delaying activation of the emergency medical system in cardiac emergencies.

- "Economic considerations may affect EMS system utilization among underinsured and low-income patients experiencing a cardiac event," cited in *Association between prepayment systems and emergency medical services use among patients with acute chest discomfort*

syndrome (for the Rapid Early Action for Coronary Treatment (REACT) Study), Ann Emerg Med. 2000 June; 35(6):573-8.

- "The results of this study indicate that indecision, self-treatment, physician contact, and **financial concerns** may undermine a chest pain patient's intention to use EMS," cited in *Demographic, Belief, and Situational Factors Influencing the Decision to Utilize EMS Among Chest Pain Patients*, Circulation (Journal of the American Heart Association), 2000:102; 173-178.
- "Lack of health insurance and financial concerns about accessing care among those with health insurance were each associated with delays in seeking emergency care for AMI [heart attack]." *Health Care Insurance, Financial Concerns in Accessing Care, and Delays to Hospital Presentation in Acute Myocardial Infarction*, JAMA, 2010; 303(14):1392-1400.

The Experience in Fairfax County and Elsewhere

- An analysis of Fairfax County fire/rescue data shows that EMS calls in Fairfax County (when adjusted for population) dropped the year ambulance fees were imposed and have not returned to their pre-fee levels.
- In New Brunswick, Canada, the number of 911 calls for emergency assistance dropped approximately 15% after ambulance fees were reinstated. Between July 1 and December 31, 2008, the local ambulance service received 53,402 emergency calls – 6,893 fewer than in the same period in 2009. The CEO of the ambulance service has stated that the fees were a likely factor in the drop in 911 calls.

In the face of these numerous sources of direct and indirect data supporting the common sense notion that if you charge hundreds of dollars for ambulance transport people will be less willing to call 911 and/or be transported to the hospital, fee supporters have offered no studies or analyses to support their position. Not one. They rely almost exclusively on the fact that other jurisdictions claim no problems or drop in calls (which, described in this report, is contradicted by the actual data in Fairfax County). It is not surprising that these jurisdictions claim ambulance fees have no affect on emergency calls – the jurisdictions have become addicted to ambulance-fee revenue and have no interest in determining whether such fees pose a threat to public health and safety. In fact, the four neighboring jurisdictions cited most often by fee supporters – Fairfax, Prince George's, and Frederick counties and Washington, DC – have not published or released a single analysis or study of what impact their fees have on the willingness of citizens to call 911 when help is needed most. Not one.

The consequences of the ambulance fee debate are profound, particularly the potential threat to public health and safety. There is compelling evidence, from multiple credible sources, that ambulance fees will deter emergency calls for help or discourage patients from being transported to a hospital. Until ambulance fee supporters can marshal sufficient evidence to the contrary, they should stop misleading the public with their sweeping claims and promises and promptly withdraw the ambulance fee proposal.

Scientific and Professional Survey Data

Heart Foundation Survey

On May 6, 2010, the Heart Foundation of Australia¹ – the highly respected Australian counterpart to the American Heart Association – released a survey of more than 3,000 people. The study's primary finding:

"6.7% of all respondents stated that they were very or somewhat likely to delay calling an ambulance due to the cost involved, despite respondents recognizing heart attack as a medical emergency."²

Extrapolated to the total Australian population aged 35-65 years, this suggests that up to 650,000 people would delay calling an ambulance when experiencing heart attack warning signs because of cost considerations. According to the Heart Foundation report:

"There is evidence that some people suffering medical emergencies, including heart attack victims, delay calling an ambulance. Fear of incurring substantial cost is one factor causing such delay. . . . Best practice care for many medical emergencies requires early assessment, stabilisation and rapid transport to an appropriate hospital facility. Worse outcomes, and unnecessary deaths, occur if access to ambulance care is delayed."

The Heart Foundation study also noted that jurisdictions that already charge for ambulance service are moving away from "soft" billing practices toward more aggressive billing collection policies:

"Proposals from within some state governments could have the opposite effect [of decreasing barriers to early EMS access]. A 2008 review of the NSW ambulance service noted that the level of bad debt is increasing. It suggested urgent action:

¹ The Heart Foundation of Australia is the highly respected Australian counterpart to the American Heart Association. The Foundation's report was prepared by Dr. Bill Coote, who previously served as the head of the Australian Medical Association, which is the Australian equivalent of the American Medical Association.

² Universal Ambulance Cover Consultation Information, Heart Foundation, May 6, 2010, available at [www.heartfoundation.org.au/Professional Information](http://www.heartfoundation.org.au/Professional%20Information) ("Heart Foundation Report").

"Of the patients who constituted primary transports in 2006/2007, only about 16% were directly chargeable. This takes into account all exemptions and payments by third parties. Of this 16%, less than two-thirds are actually charged by the ambulance service. The ambulance service should assess all available options to recover debt in accordance with a hardship policy to be developed in line with government guidelines."

The willingness of community members to call an ambulance in an emergency may be reduced if the public became aware that ambulance services were to pursue all available options to recover debt.

The Foundation's report describes the Australian EMS system in considerable detail, which closely resembles the EMS system in the United States generally and Montgomery County specifically.³

2008 Montgomery County Survey

The Heart Foundation Study results are consistent with the results of a 2008 study commissioned by the Bethesda-Chevy Chase Rescue Squad. The survey found that 74% of County residents believe that it is very or somewhat convincing that ambulance fees would cause patients needing transport to a hospital to hesitate or delay calling 911 – only 24% residents believed fees would not deter calls to 911.⁴

³ See Heart Foundation Study at 16-17.

⁴ The February 2008 survey was conducted by Global Strategy Group, a prominent public opinion research company in Bethesda, Maryland. The survey of 400 residents had a margin of error of +/- 4.9%.

Medical Studies

Two studies in peer-reviewed medical journals found that cost considerations may play a factor in delaying activation of the emergency medical system in cardiac emergencies. These studies are particularly relevant to the ambulance fee debate, as public health authorities know that early activation of the EMS system will have a direct and positive impact on outcomes for patients experiencing heart attacks, strokes, and similar medical emergencies. Barriers to such early activation, including financial barriers, can pose a serious public health and safety risk.

The first study appeared in the June 2000 edition of the *Annals of Emergency Medicine*. The study, which looked at the impact of financial considerations on whether low-income and under-insured patients call 911 for emergency medical assistance when experiencing a heart attack or other cardiac-related emergency. A key finding of the study:

"Economic considerations may affect EMS system utilization among underinsured and low-income patients experiencing a cardiac event."⁵

A second study around the same time looked at what factors may impede a chest pain patient's decision to seek emergency medical treatment. The study concluded:

"The results of this study indicate that indecision, self-treatment, physician contact, and financial concerns may undermine a chest pain patient's intention to use EMS."⁶

Most recently, a study in the April 2010 Journal of the American Medical Association (JAMA) examined whether financial concerns from the patient's perspective about accessing medical care in those with health care insurance is associated with prehospital delays. The study noted that "acute myocardial infarction [heart attack] is a clinical condition for which delays in seeking care can have significant, adverse consequences on patients' outcomes." Almost one million individuals in the United States each year suffer an AMI, "and the benefits of early treatment have been demonstrated to be clear and substantial," the study noted. Because prehospital delays are associated with higher AMI deaths

⁵ *Association between prepayment systems and emergency medical services use among patients with acute chest discomfort syndrome (for the Rapid Early Action for Coronary Treatment (REACT) Study)*, Ann Emerg Med. 2000 June; 35(6):573-8.

⁶ *Demographic, Belief, and Situational Factors Influencing the Decision to Utilize EMS Among Chest Pain Patients*, Circulation (Journal of the American Heart Association), 2000:102; 173-178.

and serious adverse outcomes in patients with "no insurance or those with insurance but reporting financial concerns about accessing care are at higher risk for prehospital delays is important because it would suggest that reducing financial barriers to care could reduce delays and improve outcomes," according to the authors. Key provisions of the study are excerpted below.⁷

Results Of 3721 patients, 2294 were insured without financial concerns (61.7%), 689 were insured but had financial concerns about accessing care (18.5%), and 738 were uninsured (19.8%). Uninsured and insured patients with financial concerns were more likely to delay seeking care during AMI and had prehospital delays of greater than 6 hours among 48.6% of uninsured patients and 44.6% of insured patients with financial concerns compared with only 39.3% of insured patients without financial concerns. Prehospital delays of less than 2 hours during AMI occurred among 36.6% of those insured without financial concerns compared with 33.5% of insured patients with financial concerns and 27.5% of uninsured patients ($P_{.001}$). After adjusting for potential confounders, prehospital delays were associated with insured patients with financial concerns (adjusted odds ratio, 1.21 [95% confidence interval, 1.05-1.41]; $P=.01$) and with uninsured patients (adjusted odds ratio, 1.38 [95% confidence interval, 1.17-1.63]; $P_{.001}$).

Conclusion Lack of health insurance and financial concerns about accessing care among those with health insurance were each associated with delays in seeking emergency care for AMI. (Emphasis added)

⁷ Health Care Insurance, Financial Concerns in Accessing Care, and Delays to Hospital Presentation in Acute Myocardial Infarction, *JAMA*, 2010; 303(14):1392-1400.

Experience of Fairfax and Elsewhere

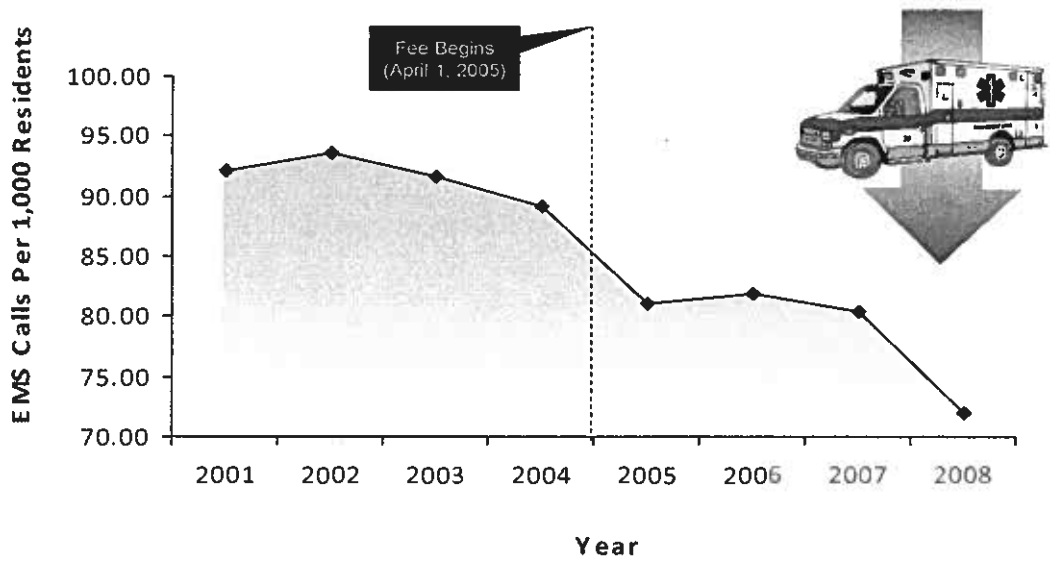
Analysis of Fairfax County Data⁸

Ambulance fee supporters point to Fairfax County as a jurisdiction that has implemented EMS fees with no ill effects. But an analysis of data from the Fairfax County Fire and Rescue Department shows that EMS calls decreased (when adjusted for population) in the year an ambulance fee was introduced and remain below the pre-fee level. In the year immediately after the imposition, EMS calls dropped 9% (as opposed to an average decrease of 2.4% over the two years before (2002 to 2003 and 2003 to 2004). Also, the decrease from 2004-2008 has been 19% compared to a modest 3% decline from 2001 to 2004. The chart (below) describes this precipitous drop.

Year (Fiscal)	EMS Calls	Population	EMS Calls/1,000 Residents
2001 (7/1/2000-6/30/2001)	88,913	964,712	92.17
2002	90,287	964,712	93.59
2003	90,175	984,366	91.61
2004	89,785	1,007,800	89.09
Ambulance Fee Starts April 1, 2005			
2005	84,331	1,041,200	81.00
2006	85,929	1,049,333	81.89
2007	86,499	1,077,000	80.31
2008	76,696	1,065,178	72.00

⁸ Source: www.fairfaxcounty.gov/fr/stats/factshts.htm

Fairfax County EMS Calls: Before & After EMS Transport Fee



Experience of New Brunswick, Canada⁹

A drop in call volume immediately after imposition of ambulance fees also occurred in New Brunswick, Canada, which saw the number of 911 calls for emergency assistance drop by approximately 13% after ambulance fees were reinstated recently. Between July 1, 2008, and December 31, 2008, Ambulance NB (the local ambulance service) received 53,402 emergency calls. During the same period in 2009 – *i.e.*, after an ambulance fee was reestablished -- the service received 46,509 calls - a decrease of 6,893 (13 percent).

Alan Stephen, CEO of Ambulance NB, said since it's only been seven months since the fees were introduced, he's hesitant to link them to the decrease. But he said he knows it's a likely factor. "We could not categorically say it's not as a result of (the fees)," according to a local press report.

⁹ "Fewer 9-1-1 calls made since fees introduced," The Daily Gleaner (New Brunswick), February 6, 2010.

Conclusion

In the face of numerous studies, surveys, and analysis of actual EMS call data that charging hundreds of dollars for ambulance transport people will deter people from calling 911 and/or being transported to the hospital, fee supporters have offered no studies or analyses to support their position. They rely on the fact that other jurisdictions claim no problems or drop in calls – which the data contradicts.

It is not surprising that these jurisdictions claim ambulance fees have no affect on emergency calls – the jurisdictions have become addicted to ambulance-fee revenue and have no interest in determining whether such fees pose a threat to public health and safety. In fact, the four neighboring jurisdictions cited most often by fee supporters – Fairfax, Prince George's, and Frederick counties and Washington, DC – have not published or released a single analysis or study of what impact their fees have on the willingness of citizens to call 911 when help is needed most.

The consequences of the ambulance fee debate are profound, particularly the potential threat to public health and safety. There is compelling evidence, from multiple credible sources, that ambulance fees will deter emergency calls for help or discourage patients from being transported to a hospital. Until ambulance fee supporters can marshal sufficient evidence to the contrary, they should stop misleading the public with their sweeping claims and promises and promptly withdraw the ambulance fee proposal.

Tab 1

Heart Foundation Report

Media Release



6 May 2010

UNIVERSAL AMBULANCE COVERAGE COULD PREVENT HEART ATTACK DEATHS

The National Heart Foundation of Australia today released a discussion paper which recommends that ambulance coverage become a universal entitlement to reduce the number of deaths from heart attacks.

Cardiovascular disease is the number one cause of death in Australia, with one person dying every ten minutes - 46,000 deaths a year.

A Heart Foundation survey conducted in August 2008, found that almost one in ten people would delay calling an ambulance due to the cost involved, despite recognising heart attack as a medical emergency.

50% of people who die from heart attack never make it to hospital.

The Heart Foundation's Warning Signs of Heart Attack strategy aims to reduce death and disability from coronary heart disease by reducing patient delay in responding to the warning signs of heart attack and calling Triple Zero (000).

"An essential part of this strategy is to work with government and health services in reducing any barriers to people seeking help," Dr Lyn Roberts, National CEO of the Heart Foundation, said today.

The paper, *Universal ambulance cover*, was commissioned by the Heart Foundation and written by Dr Bill Coote. The paper has been released during Heart Week for consultation and discussion.

"We know that travelling to hospital by ambulance is strongly associated with shorter pre-hospital delay times and we know any delays in seeking treatment can be fatal," Dr Roberts said.

"This paper indicates that up to 650,000 people would delay calling an ambulance when experiencing heart attack warning signs because of cost considerations.

"We think this means it's time to consider universal coverage for ambulance for all Australians, and we'd like start a discussion with governments and health services across the country," she said.

A targeted consultation process will take place in May and June to seek feedback from key stakeholders to inform a formal Heart Foundation position on universal ambulance cover. Interested groups and members of the public can find the paper at: http://www.heartfoundation.org.au/Professional_Information. Feedback must be received by 6 July 2010.

For more information please contact:

Kirsten Andrews, National PR Manager Mobile 0413 777 404 or Desk (02) 9219 2468



Universal ambulance cover consultation information

Introduction

The Heart Foundation has commissioned a discussion paper that explores the issues around universal ambulance cover, and would like your feedback.

Background

Acute myocardial infarction or heart attack is a time-critical condition that contributes significantly to the 23,000 lives lost to coronary heart disease in Australia each year. Over half of all deaths from heart attack occur before the person reaches hospital. The shorter the time interval between an acute coronary event and treatment, the better the clinical outcome.

Patient delay, the time from the onset of heart attack warning signs to when a patient initiates seeking medical care (i.e. calling Triple Zero (000)), remains the principal delay to receiving early treatment for heart attack. Additionally, calling Triple Zero (000) allows assessment and treatment to commence as soon as possible, which can also be life saving.

Warning Signs of Heart Attack Strategy

The Heart Foundation has developed a multi-faceted Warning Signs of Heart Attack Strategy that aims to reduce death and disability from coronary heart disease by reducing patient delay in responding to the warning signs of heart attack and calling Triple Zero (000). The strategy encompasses social marketing campaigns to ensure all Australians can better identify, know and respond to the warning signs of heart attack.

Another key component of the Warning Signs of Heart Attack Strategy is positively influencing health service systems and structures that affect people's capacity to respond appropriately and quickly to heart attack warning signs.

Cost as a barrier to ambulance use

Evidence demonstrates that travelling to hospital by ambulance is strongly associated with shorter pre-hospital delay times for suspected heart attack, thereby reducing time to treatment.

In August 2008, the Heart Foundation conducted a national-based survey of over 3,176 people on the potential barriers to responding quickly to heart attack warning signs. Key findings from the survey showed:

- 6.7% of all respondents stated that they were 'very' or 'somewhat likely' to delay calling an ambulance due to the cost involved, despite respondents recognising heart attack as a medical emergency
- the Northern Territory (17%), Western Australia (12%) and the Australian Capital Territory (9%) had the highest rates of respondents reporting cost as a barrier to calling an ambulance for suspected heart attack
- only 2% of respondents from Queensland reported cost as a barrier to calling an ambulance for suspected heart attack – not surprisingly, because in 2003, the Queensland Government introduced state-wide universal ambulance coverage.

As a result of identifying cost as a major barrier to ambulance usage, the Heart Foundation commissioned Dr Bill Coote, a consultant, to develop an independent discussion paper that explores the issue of universal ambulance coverage. In particular, the report looks at current ambulance service funding arrangements within Australia, trends in ambulance service activity and demand, and the factors that impact ambulance usage, especially in emergency situations. The discussion paper concludes with a clear recommendation that ambulance coverage should be a universal entitlement, with one option for achieving this being to include it as an entitlement under Medicare.

Feedback wanted

The *Universal ambulance cover* discussion paper will be released during Heart Week on **6 May 2010**.

In the two months following the paper's release, the Heart Foundation will conduct a formal consultation process, seeking comments from identified key stakeholders to inform the development of a Heart Foundation position statement. Feedback from other interested groups and members of the public is also welcomed during this consultation period.

You can access the discussion paper and information about the consultation process on the Heart Foundation website at www.heartfoundation.org.au/Professional_Information/Clinical_Practice/Drafts_for_Consultation.

Consultation questions

Below are a series of consultation questions to guide feedback on the *Universal ambulance cover* discussion paper, commissioned by the Heart Foundation.

For the purposes of the consultation, universal ambulance cover relates to the provision of emergency ambulance care.

Question 1

Do you believe the current ambulance cover arrangements for accessing pre-hospital emergency ambulance care in states and territories across Australia is acceptable, equitable and efficient?

Question 2

Given the issues highlighted in the discussion paper, is the recommendation that universal ambulance cover be included as an entitlement under Medicare appropriate?

Question 3

Is there additional information that should be considered in developing or strengthening a position regarding universal ambulance cover?

Question 4

What other organisations should the Heart Foundation consider liaising with to strengthen/influence a position regarding universal ambulance cover?

Question 5

Would your organisation be interested in providing further input into the development of a position statement on universal ambulance cover? If so, please provide relevant contact details.

Please provide any further comments.

Send your responses to Sarah Donaldson at the Heart Foundation by 6 July 2010 via:

- email: warningsigns@heartfoundation.org.au
- mail: Heart Foundation
PO Box 7174 Hutt Street
Adelaide SA 5001.

Discussion paper

Universal ambulance cover

May 2010

Written by Dr Bill Coote

**Commissioned by the National Heart Foundation
of Australia**

Draft for consultation only.

Strictly not for citation, circulation or publication.

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Executive summary

The Heart Foundation is concerned that some Australians are reluctant to call an ambulance when they suffer symptoms suggestive of a heart attack because they are concerned about the possible cost. An overriding policy aim of the Heart Foundation is the removal of impediments to early treatment for heart attack patients.

In August 2008, the Heart Foundation surveyed 3,176 Australians aged 35–65, of which 6.7% of respondents indicated that if they had symptoms that might indicate they are having a heart attack “they are very or somewhat likely to wait before calling an ambulance because it’s too expensive”.¹ Extrapolated to the total Australian population aged 35–65 years, this suggests that up to 650,000 people would delay calling an ambulance when experiencing heart attack warning signs because of cost considerations.

Best practice care for many medical emergencies requires early assessment, stabilisation and rapid transport to an appropriate hospital facility. Worse outcomes, and unnecessary deaths, occur if access to ambulance care is delayed. This suggests that ambulance cover in emergencies should become a universal health entitlement to ensure Australians don’t delay calling for help because of the costs involved.

Current ambulance funding arrangements are complex and vary from state to state. It is unlikely that many Australians are aware of the confusing rules and restrictions that may apply if they do have ambulance cover, for example, if they require care while away from their home state. The circumstances in which emergency ambulance care is or is not free at the point of service defy concise summary.

The financing and operations of Australia’s ambulance services are at a similar stage of development to what the broader health system was when Medicare was proposed. Similar initiatives to Medicare, such as universal funding, may be required to ensure Australians have access to emergency ambulance services as part of their basic health entitlement.

Two options for ensuring Australians are guaranteed free ambulance access in a medical emergency include:

1. introducing incremental change building on existing complex funding arrangements, for example, states could introduce a charge similar to the Queensland ambulance levy that is collected with electricity bills
2. a coordinated national approach funded through an increase in the Medicare levy or directly funded from existing Commonwealth revenues.

More recent developments, including the growing sophistication of services that can be provided by paramedics and the need to ensure ambulance services and personnel are appropriately regulated and integrated into health ‘networks’, suggest the need for a more coordinated national approach of Australia’s ambulance services.

Introduction

The Heart Foundation is concerned that some Australians are reluctant to call an ambulance when they suffer symptoms suggestive of a heart attack because they are concerned about the possible cost.

One of the Heart Foundation's functions is to identify and remove barriers which impede Australians from receiving essential healthcare in a timely manner.

Best practice management of heart attacks is a complex process involving early pre-hospital care, acute care in hospital and careful follow-up. Outcomes are dramatically improved if treatment, including complex interventional procedures in cardiac units, commences as early as possible after the onset of symptoms. Delay can be fatal. In Australia, approximately one in four heart attack victims die within one hour of their first symptom. It is critically important that people with symptoms suggestive of heart attack seek urgent care.

In August 2008, the Heart Foundation surveyed 3,176 Australians aged 35–65, of which 6.7% of respondents indicated that if they had symptoms that might indicate they are having a heart attack “they are very or somewhat likely to wait before calling an ambulance because it's too expensive”.² Extrapolated to the total Australian population aged 35–65 years, this suggests that up to 650,000 people would delay calling an ambulance when experiencing heart attack warning signs because of cost considerations.

As well as heart attack, best practice for other common medical emergencies increasingly requires ambulance services to be effectively integrated with other health services.

- There is evidence that some people suffering medical emergencies, including heart attack victims, delay calling an ambulance. Fear of incurring substantial cost is one factor causing such delay. A complex of rules and regulations, which vary from state to state and circumstance to circumstance, can create gaps in ambulance cover.
- Best practice care for many medical emergencies requires early assessment, stabilisation and rapid transport to an appropriate hospital facility. Worse outcomes, and unnecessary deaths, occur if access to ambulance care is delayed. Ambulance services should be considered a part of, and integrated into, the wider health system.

This paper argues that ambulance cover in emergencies should become a universal health entitlement. However, it is important to note that funding is only one of a range of broader issues that would need to be considered as affecting ambulance services. Other issues include ensuring Australians have access to best practice ambulance services, and the education and training of ambulance staff.

Universal ambulance cover would provide a consistent national approach to funding of pre-hospital emergency ambulance care and a framework for the further development of ambulance services.

This paper provides a preliminary survey of some relevant issues.

Earlier proposals

Uniform national policy on ambulance cover is not a new concept. In 2001, following an inquiry by the Senate Community Affairs Legislation Committee, the Secretary of the Commonwealth Department of Health and Ageing wrote to ambulance jurisdictions proposing a working group to consider funding, access and service delivery of Australian ambulance services. However, this did not proceed.³

A 2007 academic study by Latrobe University examined the future of Australia's ambulance services and recommended "a national Commonwealth-state framework for ambulance services should be established to ensure sustainable, equitable, efficient and effective ambulance services... The Commonwealth and the states/territories should establish a national funding and performance framework to support the ongoing development of ambulance services."⁴

The New South Wales (NSW) Government discussed guaranteed ambulance cover in a 2008 'performance review' of its ambulance service. It commented that:

"The question of incorporating an ambulance component into the Medicare levy is largely a question for the Commonwealth Government to consider in negotiation with relevant state governments. This could be taken up at a later stage in the Council of Australian Governments (COAG) discussions on the reform of Commonwealth/state arrangements in health and community services."⁵

The Council of Ambulance Authorities (CAA), representing Australia's state ambulance services, has stated:

"The fact that Australians do not have equitable and consistent access to emergency pre-hospital care in the event of a medical crisis across the various states and territories is a major concern and a significant point of difference between Australia and many of the countries with which the federal government has reciprocal healthcare agreements. As is the case with hospital services, ambulance services are the responsibility of the states and territories. However, unlike hospital services, there are no agreements that provide universal and consistent access to emergency ambulance services for all Australians."⁶

In April 2010, the Prime Minister and the state premiers, following extended negotiations on the future of Australia's health sector, announced changes they regard as "the most significant reform to Australia's health and hospitals system since the introduction of Medicare, and one of the largest reforms to service delivery in the history of the federation. These reforms will deliver better health and hospitals by:

- helping patients receive more seamless care across sectors of the health system
- improving the quality of care patients receive through high-performance standards and improved engagement of local clinicians
- providing a secure funding base for health and hospitals into the future."⁷

The proposals in this paper reflect these principles.

Australia's ambulance sector

The ambulance sector is a large and increasingly sophisticated network of independent state-based services. The size of the sector and its contribution to healthcare are not well understood or discussed in debates about the health system.

Ambulance services are provided directly by state and territory governments, except in Western Australia and the Northern Territory, where the state contracts St John Ambulance Australia to provide ambulance services.

In 2005–2006, Australia's ambulance services attended 2,719,000 incidents, of which 1,057,000 (38.9%) were emergency incidents, 895,000 (32.9%) were non-emergency and 759,000 (27.9%) were urgent.¹ In 2007–2008, there were approximately 160 responses per 1,000 people and 130 patients per 1,000 people.⁸ Between 2004 and 2006, there were increases of about 7% in all these categories.⁹

Across Australia in 2006–2007, 84.5 % of hospital emergency department (ED) patients in triage category 1 (the most urgent category requiring immediate care) and 47.6 % of patients in triage category 2 arrived by ambulance, air ambulance or helicopter rescue services.¹⁰

Ambulance services are controlled and coordinated by complex communications infrastructure using telephone triage and computer controlled dispatch systems.

Demand for emergency ambulance services is increasing.

The NSW ambulance service has stated "demand for emergency ambulance responses is increasing across NSW. Emergency incidents increased by 16% in 2006/2007 over the previous year. Emergency incidents are growing faster than non-emergency incidents."¹¹

In Victoria in 2008–2009, demand for emergency ambulances in metropolitan and rural regions increased to a record level. Ambulance Victoria responded to 433,549 emergency road cases during the year, a 1.3% increase over the previous year. Including non-emergency incidents, Ambulance Victoria responded to a total of 714,362 incidents during the year.¹²

The 2008–2009 annual report of the South Australia Ambulance Service (SAAS) states:

"this year, SAAS saw an 8% increase in ambulance responses. In 2007–2008, there were more than 252,000 ambulance responses across South Australia, up from 232,000 in 2006–2007. Similarly, actual incidents requiring ambulance attendance increased by 7%, up to around 232,500 from some 216,000 in the previous year. Of the total incidents, 105,828 were potentially life-threatening cases (requiring a lights and sirens response), a 10% increase on the previous year. Of total incidents, a further 57,337 were urgent cases (undelayed response without light and sirens), and 69,136 were non-urgent cases, such as stable patient transfers."¹³

¹ The numbers of incidents, responses and patients are interrelated. Multiple responses/vehicles may be sent to a single incident, and there may be more than one patient per incident. There may also be responses to incidents that do not have people requiring treatment and/or transport.

The sophistication and capability (and the costs) of ambulance services have been increased with the adoption of air ambulance services. All states have the capacity to provide care in major emergencies by both fixed wing and helicopter services. There is a variety of arrangements for air ambulance or aero-medical services throughout Australia.

For example, Air Ambulance Victoria (AAV) operates a state-wide fleet of fixed-wing and helicopter air ambulances with a minimum of four fixed-wing air ambulance aircraft available at any one time. Three air ambulance helicopters based in Essendon, Morwell and Bendigo transport time-critical patients to hospitals. A fourth helicopter, providing 24-hour, seven-day-a-week neonatal and adult retrieval commenced operating in 2008–2009. A fifth helicopter to be based at Warrambool, complementing the current fleet and providing coverage to south-west Victoria, will be operational in 2009–2010. In 2008–2009, Air Ambulance Victoria attended 2,500 emergency medical, surgical and trauma cases. Ambulance Victoria also provides state-wide adult retrieval services, including critical care advice and coordination of critical care bed access.¹⁴

A recent academic study concluded:

“There are indications that revenue growth is not keeping pace with demand. Real revenue for ambulance services within Australian jurisdictions increased by 12% from 2003–2004 to 2005–2006. Over, the same period incidents grew by 24%. Ambulance services within Australian jurisdictions have therefore tended to experience an increase in average response times over the recent past, together with increased activity/output levels.”¹⁵

Increased demand for ambulance services is being driven by many factors, including change in other components of the health system. The CAA notes the following factors.

- **Demographic change** – the ageing of the population will result in an increase in demand for services. A dispersed population may result in disadvantaged groups in outer metropolitan areas who require an increased number of ambulance transports.
- **Social change** – changing health system practices and policy can influence demand for services. For example, the closure of rural hospitals and other rural health services often results in ambulance services being the only accessible health option for rural and remote communities.
- **Clinical and epidemiological factors** – a greater number of people are living longer with serious chronic disease, in part due to advances in medicine and medical technology.
- **Changes in medical practice and patient management** – the efficient functioning of acute hospitals and advances in medical treatment and technologies (more patient movements for day surgery, more chronically ill people cared for at home and transport of patients to access high cost technologies that are provided on a regional or state-wide basis).
- **Accessibility of alternative services** – limited access to medical services and lack of available GPs (including in rural areas, outer urban areas and after hours) may see an increase in non-emergency related transports.
- **Community expectations, including awareness of benefits of early intervention** – the public expect the ambulance service to provide care for a wider range of circumstances and not just emergency care.¹⁶

Evolving role of ambulance services

The challenge of ensuring universal ambulance cover in emergencies must be considered in light of broader developments in the health system that affect ambulance services.

In a submission to a NSW Parliamentary Inquiry, the NSW Health Department has stressed that the ambulance service was seeking to integrate services more effectively with hospital and medical services:

“The Ambulance Service is an integral part of the NSW health system providing emergency pre-hospital care and transport, medical retrieval and health transport services. The Ambulance Service employs over 3,700 people at 291 locations and delivers services to 6.9 million people, making it one of the largest ambulance services in the world. There have been substantial organisational reforms in recent years and NSW paramedics have embraced a range of new clinical skills and interventions... further reform of work practices is planned to give frontline Ambulance Service managers the flexibility to match resources to demand and the skills to manage a diverse and dispersed group of clinicians and technical practitioners.”¹⁷

The Australian College of Ambulance Professionals (ACAP) in its response to the Interim Report of the National Health and Hospitals Reform Commission (NHHRC) argued “the role of emergency health service practitioners and community paramedics has not been appropriately recognised...greater efforts must be made to achieve a fuller integration and more flexible utilisation of paramedics within the health workforce.”¹⁸

Enhanced ambulance services may improve health services in rural areas. An Australian academic study examined the roles that expanded scope paramedics (ESP) can perform in linking rural communities with urban-based health services, and increasing general community capacity. It concluded that “leadership, management and communication skills are important for paramedics undertaking expanded scope roles, and should be considered in any future ESP curriculum. This knowledge can inform the development of other rurally based expanded scope practitioner roles.”¹⁹

Access to ambulance services is an integral part of the modern management of many critical conditions and must be incorporated when treatment protocols and health financing policy are being developed.

Specific examples

Several examples demonstrate that in many circumstances the ambulance component of the patient journey is critical, comprising of more than simple transport to another site for treatment. Australian ambulance services are actively involved in working with others in the health sector to devise more effective protocols.

Heart attack

Cardiovascular disease (CVD) is a major cause of premature death in Australia. Heart, stroke and vascular diseases are Australia’s largest health problem, accounting for 46,134 deaths (35% of all deaths) and affecting 3.7 million Australians in 2005.²⁰ Coronary heart disease is the leading specific cause of death in both sexes, accounting for nearly one-fifth of all deaths each year.²¹

Most of the CVD burden is due to years of life lost (YLL) to premature death, representing 29% of total YLL for Australia in 2003. Years of 'healthy' life lost due to poor health or disability (YLD) arising from CVD accounted for 8% of Australia's total YLD in 2003. The CVD burden increases markedly with age, particularly from 60 years of age.²²

Each year in Australia there are more than 48,000 major coronary events, half of which are fatal. The chance of survival from an out-of-hospital cardiac arrest in Australia is less than 10%. Sudden cardiac death is usually due to ventricular fibrillation, which is eminently treatable with prompt cardiopulmonary resuscitation (CPR) and defibrillation.²³

Death from sudden cardiac arrest accounts for approximately half of all deaths related to CVD. CPR and early defibrillation can significantly improve the chance of survival from cardiac arrest.²⁴

The Heart Foundation's comprehensive ongoing plan to reduce patient response time for suspected heart attack includes advice that people with symptoms suggestive of heart attack should call Triple Zero (000) and ask for an ambulance.²⁵

"Coronary reperfusion with thrombolysis or angioplasty during the first one to two hours may reduce the death rate by half, but the benefit rapidly declines with delays in treatment. Shortening the response time for suspected heart attack may substantially reduce the burden of cardiac damage and save many lives each year... Patient decision time constitutes most of the pre-hospital delay... It has been estimated that about a quarter of people who have a heart attack die within an hour of their first ever symptoms."²⁶

Efforts to improve outcomes following heart attacks now include coordinated arrangements between ambulance services and hospital cardiac units. In some Australian sites, appropriately trained paramedics can now decide, on the basis of ECG findings, whether to transport heart attack victims directly to cardiac units, bypassing secondary hospitals or EDs. The quicker the access to modern treatments, the higher the survival rate and the lower the risk of disability. Coordinated cardiac services aim for a time of one hour or less from a patient first ringing the ambulance to commencement of percutaneous imaging and treatment.

Other initiatives support improved access to definitive treatments. In their article 'Call-to-needle times for thrombolysis in acute myocardial infarction in Victoria', published in the *Medical Journal of Australia* in 2003, Kelly et al reviewed strategies for improving so called 'call to needle' (CTN) time in rural Victoria. "It is our view that strategies to reduce CTN should be region-specific, taking into account case load, geography and resources, and should be developed and 'owned' by local healthcare services. This approach is most likely to produce a system that will work and be sustainable."²⁷ They concluded:

"Improving outcomes following cardiac arrest in rural areas requires improvements in each link of the 'chain of survival'. The first link is the call to the ambulance. In rural areas in Victoria, manual call-taking and dispatching is used, and this might be associated with delays or inaccuracy in dispatch time recording. Computerised dispatching may improve ambulance responses to cardiac arrest. One study comparing computerised dispatch with standard call-taking procedures found a doubling in the number of cardiac arrests correctly identified compared with a non-computerised system."²⁸

Assumption of a more active role in assessment and treatment by ambulance personnel is a complex issue and raises 'cultural' issues that challenge the established role definitions of health practitioners.

An Australian ambulance service in 2002 summarised its experience assessing possible heart attacks:

"The first steps to pre-hospital advanced care provision in the field were by a real time remote medical control. In this system, medical acts are authorised on an individual basis as they occur, using radio communication to facilitate contact between the medical authority and field practitioner... In practice there are some considerable logistical problems with this system..."²⁹

During the last decade, thinking and practice has developed further. For example, the current protocols of the South Australian Cardiology Clinical Network provide for trained advanced paramedics, on the basis of their assessment and ECG findings, to initiate transport of appropriate patients directly to cardiac units with catheter laboratories. Four major Adelaide hospitals now admit certain heart attack patients directly to cardiac units, bypassing EDs. In some cases 'call to balloon' time is down to 40 minutes.³⁰

Such developments are not confined to Australia. In some areas of the UK, ambulance personnel are also trained to assess suspected heart attack and decide the appropriate facility to which to transport patients. The London Ambulance trust reports:

"We started to take heart attack patients to specialist centres in 2008, and were the first UK ambulance service to do so. Our latest research shows that in 2007/2008, 1,280 patients, or 86% of those diagnosed by our staff with a ST-elevation myocardial infarction (a common type of heart attack), bypassed their local A&E and went straight to a heart attack centre."³⁰

Stroke

The role of modern paramedical services in the management of suspected stroke is not as well developed as with heart attacks. However, analogous changes are evolving with key roles for ambulance personnel in initial assessment and in deciding where patients should be transported.

There are approximately 60,000 new or recurrent strokes in Australia per year. Around half occur in people over the age of 75 years. As the population ages, the number of strokes occurring each year is expected to increase.³¹

Guidelines for stroke management developed by the National Stroke Foundation (still in draft in early 2010) state that thrombolytic therapy with intravenous (IV) recombinant tissue plasminogen activator (rt-PA) is the most effective hyperacute intervention proven to reduce the combined endpoints of death and disability for ischaemic stroke.

However, "in 2008, only 3% of stroke patients receive intravenous rt-PA" and the National Stroke Foundation identified barriers to early delivery of thrombolytic therapy. These include "difficulties in patient recognition of stroke symptoms", "delay in seeking appropriate emergency help" and "delays in reaching hospital by ambulance: while 80% of patients arrived in ED by ambulance, only 59% of patients reached hospital within three hours."³²

The draft national guidelines for stroke management stress early management. Ambulance services must provide a central, coordinating role:

“Early recognition and subsequent response of individuals to having a stroke and the timing and method by which people are transferred to hospital are important to ensure optimal outcomes. In this hyperacute phase of care, the ambulance service provides a central, coordinating role. Stroke patients should not only receive a high triage priority, comparable to other similarly lethal or disabling medical emergencies, but the system should facilitate early notification of the receiving hospital and ensure that the correct hospital is selected (i.e. one with a stroke unit) where a choice exists.”³³

A recent study in the Hunter region of NSW assessed access to early treatment for stroke victims. The authors stressed the importance of adequately trained and organised ambulance personnel able to detect probable stroke victims:

“Audits of tPA use in Australia currently indicate that only 0.9% of all ischaemic stroke patients receive this treatment. Given the international evidence that changes in the process of care can substantially increase tPA use, and given the cost effectiveness of tPA therapy, there is a clear need to develop support systems and care models to help stroke clinicians in Australia redesign pre-hospital and emergency care systems for acute stroke.”

Patient access to tPA could be improved by extending organised stroke care by a cooperative system that crosses the traditional clinical and administrative boundaries of the pre-hospital sector, ED and acute stroke unit.

These researchers argue that:

“Collaboration with ambulance services is recognised as key to decreasing the time to presentation for patients with acute stroke. Pre-hospital stroke screening tools, such as the Los Angeles Pre-hospital Stroke Screen (LAPSS) and the Face Arm Speech Test (FAST), aid this process. These tools have acceptable diagnostic accuracy in the field and are important components of protocols for pre-hospital stroke care.”³⁴

Major trauma

Modern trauma care requires efficient skilled ambulance support. In most cases, financial cost to individuals is not an issue because costs are covered by statutory accident or workers compensation insurance. In contrast, with stroke care, coordinated network arrangements are well established and provide an example of the value of close integration between ambulance services and other health facilities.

A recent Victorian study has emphasised the benefits of such coordinated services for major trauma:

“Treatment of critically ill patients with multiple injuries requires expert, multidisciplinary, high-cost, coordinated and timely interventions. This is difficult to guarantee without a system of trauma care that integrates all regional health facilities. But few regions in the world have a fully integrated system of trauma care involving pre-hospital providers, all acute health services and rehabilitation facilities.”

This study concluded “there has been a significant reduction in the risk of death among major trauma patients in the state of Victoria since the introduction of a regionalised, inclusive trauma system.”³⁵

Mental health

Patients with mental health problems often do not have ambulance cover. Ambulance services are rising to the challenge of assisting these people. They are the source of many of the 'bad debts' incurred by ambulance services.

Changes to mental health services, such as reduced availability of institutional care, has resulted in increased numbers of mental health patients presenting to emergency services. Police services are seeking to reduce their responsibility in areas outside their expertise. A consequence is that the initial care of people with acute, serious mental illness often falls to ambulance personnel. "Emergency personnel come into contact with patients experiencing mental health problems more than ever before [and] are often required to manage a variety of mental health problems, often complex and chronic in nature."³⁶

The South Australian Ambulance Service (SAAS) has described its involvement in mental health service provision:

"SAAS continued to work collaboratively with mental health services to enhance mental health triage systems. In 2007–2008, the joint mental health initiative between SAAS and the Assessment and Crisis Intervention Service (ACIS) was expanded, increasing the number of mental health nurses now located in SAAS's Emergency Operations Centre (EOC) on a 24/7 basis. This has enhanced the level of care SAAS provides patients with a mental illness."³⁷

In 2007–2008, SAAS took on a new role as the lead agency responsible for escorting mental health patients who require medical treatment, a role previously undertaken by police. This shift of responsibility to SAAS demonstrates the professionalism of ambulance personnel and a commitment to fair and equal treatment of all patients in the community, irrespective of condition. The response from patients and the rest of the health service has been very positive, indicating that this is an improvement to patient care in South Australia.³⁸

Conclusion

The above examples have been included in this paper to illustrate that in recent decades, the skills and expertise required of ambulance personnel have increased significantly. In addition, they show that the provision of modern, high-quality health services includes close integration of ambulance services into the broader health system.

The Council of Australasian Ambulance Authorities has summarised this evolving and expanding role of ambulance services:

"The ambulance industry has extended its support of the healthcare system by broadening paramedic expertise to provide pre-hospital clinical care for patients with chronic and mental health conditions, as well as extending care to work closely with the local medical programs to support the healthcare needs of the rural and remote community. Models in urban settings are emerging to complement existing services, allowing appropriately authorised paramedics to refer patients directly to chronic and primary care services without the need to unnecessarily travel through the hospital ED system. Although these models reduce the burden to some parts of the health system and improve patient access, they result in additional costs in training and education resources within ambulance services."³⁹

These Australian developments mirror changes in other countries. However, in some areas, Australia is leading this innovation.

These developments are also reflected in debate about appropriate measures to assess ambulance performance in dealing with critical conditions. For example, a recent national review of English ambulance services, *Taking Healthcare to the Patient: Transforming NHS Ambulance Services* published by the UK Department of Health, recommended that pre-hospital care research topics should be prioritised to ensure that service provision and developments are evidence-based.

The subject nominated as the highest priority for research in the UK was the development of new performance measures for ambulance services, other than emergency ambulance response times. Other highly ranked priorities for research included:

- treatment of stroke, cardiac conditions, children, and people who self-harm
- alternatives to accident and emergency (A&E) treatment
- patient information sharing across care providers
- access issues
- decision support systems
- demand management systems for pre-hospital care.

"These priorities reflect three key issues: measuring activity to benefit patients; development of safe non-A&E care; and providing appropriate evidence-based clinical care in the pre-hospital environment."⁴⁰

As well as the funding and organisation of ambulance services, the development of integrated services requires systematic attention to the development and maintenance of skills among ambulance staff. A summary of some professional issues is provided in Appendix 2.

A wider perspective

Recent developments and emerging pressures affecting Australia's ambulance services resemble the situation with medical and hospital care before the development of Medibank and then Medicare.

In the 1970s, arguments for the establishment of Medibank (later Medicare) included the universality and simplicity of the proposed financing arrangements. All Australians would be guaranteed medical insurance and be certain of access to free hospital care anywhere in the country. Efficiencies would follow if revenue was raised through the general taxation system rather than through a myriad of sources, particularly when that system, despite its complexity, left many Australians uncertain of their hospital and medical cover.

The introduction of Medicare was also a response to costly technical developments during the 1960s and 1970s, such as coronary care units, intensive care units and the availability of new coronary, orthopaedic and other procedures. The costs of common medical episodes grew beyond the resources of many individuals, with many procedures not adequately covered by private insurance. Medicare spread costs more equitably across the community.

Forty years later, analogous changes are influencing ambulance services. The financing and operations of Australia's ambulance services are at a similar stage of development to what the broader health system was when Medicare was proposed. Similar initiatives to Medicare, such as universal funding, may be required to ensure Australians have access to emergency ambulance services as part of their basic health entitlement.

A history of Australia's ambulance services notes a consequence of increasing professionalism of ambulance services is rising costs:

“Professionalism has served to increase the financial cost of ambulance transport. The price of ambulance transport has risen to the extent that few people without private health insurance could afford the full cost of a trip to hospital in an ambulance. For example, by 2008 in the ACT, where the average distance of an ambulance trip is perforce the shortest in Australia, the basic fee for a non-emergency road trip was almost \$500 for both transport and treatment; and for an emergency trip, the fee was almost \$700.”⁴¹

In March 2010, the Prime Minister announced major reforms to Australia's health sector and stated “the Commonwealth will use its strengthened financial position in the hospital system to drive system-wide reform and create a better integrated, more unified national health system, with national standards and increased transparency and accountability. These changes will ultimately improve performance and health outcomes.”⁴²

The CAA has stated:

“Currently the organisation, structure and funding arrangements across Australian ambulance services varies significantly and is unsustainable into the future due to the increasing demand on services. Independent research commissioned by the CAA investigating factors in ambulance demand and funding options reported that ambulance funding requires both a nationally consistent activity-based funding system and a national revenue system that allocates funds according to activity.”⁴³

In its submission to the NHHRC, the ACAP summarised a number of characteristics of emergency medical services (EMS) in Australia:

- jurisdiction-bound public sector EMS providers having various administrative arrangements leading to different funding bases, equipment, practice standards and operational metrics resulting in fragmentation when viewed at a national level
- lack of coverage by Medicare and a myriad of payment and cost recovery arrangements with potentially inequitable distribution of access and costs to the community
- a growing number of private EMS providers that employ paramedics outside the ambit of the traditional ambulance sector and without the protection of a nationally accepted regulatory framework for defining the scope of practice and the licensing of paramedics
- the relative absence of common equipment and systems, communication resources and other physical assets that would permit greater operational efficiencies and more cost-effective procurement, facilitate inter-operability and enable the rapid and smooth aggregation of resources for catastrophic events regardless of location
- the absence of a nationally recognised and independent framework for community engagement and complaint mechanisms for service providers and paramedic practitioners
- the absence of a nationally recognised external accreditation system for paramedic education within the COAG framework (notwithstanding the CAA/ACAP model)
- the diversity of educational routes to paramedic qualification and the growth of university-based paramedic education programs.⁴⁴

The Heart Foundation's interest in assessing Australia's ambulance services relates to access to emergency treatment. Concern about growing demand for free services in less acute circumstances is appreciated. For example, *Queensland Ambulance Audit Report 2007* noted that, when patient fees were abolished in 2003 and the funding of the ambulance service was replaced by the Community Ambulance Cover levy (gathered through electricity bills), there was an increase in ambulance use. However, the report stressed many factors other than the abandonment of charges contributed to this growing demand: "the growth in demand for ambulance services in recent years has been unprecedented and the service is now responding to roughly 2,000 incidents per day... The level of demand is much higher in Queensland and is continuing to grow at rates faster than any other jurisdiction."⁴⁵ This was especially the case with low acuity patients.

Issues associated with non-acute ambulance transport are complex and have been the focus of considerable analysis. A summary of some Australian and overseas initiatives for better managing less urgent cases can be found in *Queensland Ambulance Audit Report 2007*. The summary notes: "Options identified revolve around managing less acute cases using alternative response strategies in order to deliver effective ambulance service responses to those that most need them, in addition to delivering a more appropriate service response to less acute cases."⁴⁶

Funding of ambulance services

It is unlikely individual Australians give much consideration to, or have concerns about, ambulance cover. People pay for cover directly with their state ambulance service or through their private health insurance cover, or have coverage because of their pension or other welfare entitlements. Accident and workers compensation insurance covers ambulance costs associated with accidents.

It is also unlikely that many Australians are aware of the confusing rules and restrictions that may apply to their ambulance cover, for example, if they require care while away from their home state. The circumstances in which emergency ambulance care is or is not free at the point of service defy concise summary. Examples of some of these complexities are summarised in Appendix 1.

In 2006–2007, Australia's ambulance services had revenues of \$1,556.7 million. Government grants provided 65.2% of this revenue, transport fees 23.3% and other sources (subscriptions, donations and miscellaneous revenue) comprised 11.4%. Appendix 1 shows the sources of funds for Australia's eight ambulance services.⁴⁷

Total expenditure on ambulance service organisations per person was \$82.46 in 2007–2008, with total government grants and indirect government funding of ambulance service organisations covering \$53.93 per person.⁴⁸

Ambulance funding derived from individual subscriptions, private insurance levies and fees charged to individuals is not a large component of the total revenues that fund ambulance services and could be replaced with direct government funding. Collection of these fees requires a substantial administrative infrastructure. For example, the NSW ambulance service has 49.45 full time equivalent staff engaged in revenue accounting functions.⁴⁹

The 23.3% of revenue raised from transport fees in 2006–2007 totalled \$362.7 million. This included fees received from workers' compensation and motor vehicle accident insurance, from the Department of Veterans Affairs, and from inter-hospital transfers. About one third of transport fee revenue, \$133.9 million, comprised 'other fees from citizens'.

The Heart Foundation's aim is to reduce financial barriers to access to emergency care. Proposals from within some state governments could have the opposite effect. A 2008 review of the NSW ambulance service noted that the level of bad debt is increasing. It suggested urgent action:

"Of the patients who constituted primary transports in 2006/2007, only about 16% were directly chargeable. This takes into account all exemptions and payments by third parties. Of this 16%, less than two-thirds are actually charged by the ambulance service. The ambulance service should assess all available options to recover debt in accordance with a hardship policy to be developed in line with government guidelines."⁵⁰

The willingness of community members to call an ambulance in an emergency may be reduced if the public became aware that ambulance services were to pursue "all available options to recover debt."⁵⁰

Substantial co-payments may also deter ambulance access. An option recently raised by the Queensland Treasury would be administratively complex and probably lead people to defer calling an ambulance in emergencies:

“Under a co-payment model, a relatively modest contribution of \$100 for emergency cases, \$50 for non-emergency case and \$25 for attendance only could be introduced... Any co-payment or user charge should be applied across all users, but with discounted rates for pensioners and concession card holders. A safety net could be provided such that no-one would be expected to pay more than \$500 per year on emergency ambulance services under the co-payment model.”⁵¹

An analysis of the future demand for ambulance services by Latrobe University suggested:

“There are significant risks to the medium and long-term capacity of ambulance services to meet demand pressures. There are, however, significant opportunities to introduce a national reform program to improve the sustainability and performance of ambulance services. This program should involve development of an equitable activity-based funding model, backed by agreement on a national system of funding. For example, imposition of an additional Medicare levy component of 0.3% would provide sufficient funds for all Australian ambulance services, at a cost of about \$3.30 per week for a person on average all-time weekly earnings.”⁵²

Options

The following measures may be implemented to ensure Australians are guaranteed free ambulance access in a medical emergency.

Incremental change

Incremental change would build on existing complex funding arrangements.

One option would be for all states to introduce a charge similar to the Queensland ambulance levy that is collected with electricity bills. This would create little disruption to existing organisational arrangements, probably reduce administrative costs and give all residents certainty that they would have ambulance cover in emergencies.

Alternatively, a national activity-based or casemix schedule could be developed that would fund ambulance attention and transport provided in medical emergency situations. There are examples from Canada and the USA of such fee schedules in which payments are based on careful definition of emergencies, the distance a patient is transported and other factors. Such a schedule could be a national schedule funded by the Commonwealth and managed either by the Health Insurance Commission or individual states on behalf of the Commonwealth. This schedule would cover all medical emergencies (e.g. heart attacks, strokes, asthma, mental health patients) requiring ambulance attention and transport to a hospital ED.

Established funding arrangements for major trauma, already covered in most cases by third party, accident or workers compensation insurance arrangements, would be left in place.

Non-urgent situations (e.g. planned hospital transfers, transport to health facilities for scheduled visits) would continue to be funded as at present.

Under such incremental change, all existing streams of funding would be maintained. Direct grants from states would continue to provide the bulk of ambulance service costs.

Australians not covered for ambulance services by pensioner, welfare entitlements or Department of Veteran Affairs arrangements could continue to buy 'cover' from their state ambulance service for non-urgent use of ambulance services.

However there are strong arguments against such incremental change:

- it would make an existing complex funding system even more complex and add to administrative costs
- it would open up the funding of ambulance services to disputes between the Commonwealth and states about 'cost shifting' and 'blame shifting' when, in the broader health system, attempts are being made to change funding arrangements partly because of the essentially unresolvable nature of such disputes
- it would be moving in the opposite direction to the current debate between the Commonwealth and the states around broad health system funding, which is moving towards more national funding, control and direction to create a better integrated, more efficient health system
- such an arrangement would not have direct incentives to ensure ambulance services are efficiently coordinated with other health services.

A coordinated national approach

A piecemeal, incremental approach might hinder as much as facilitate the evolution of the ambulance services Australia needs in the 21st century. Those most closely involved in the ambulance sector argue that a series of interrelated changes are needed to achieve fundamental change.

For example, organisations such as the CAA are already driving evolution of national standards and guidelines around issues such as equipment.

The ACAP has suggested that “to achieve the laudable goals outlined by the NHHRC”, a number of prerequisites must be met. A suite of initiatives is needed and the ACAP proposes:

- a single, uniform and national regulatory regime for all paramedics embracing the private, public, not-for-profit and defence sectors under the general umbrella of the COAG arrangements
- an independent, community represented and professionally accountable system of accreditation for paramedic educational programs
- replacement of the current multitude of jurisdictional EMS governance and funding arrangements by a national system of funded infrastructure providers with a mandated national system of provider accreditation
- specific recognition of EMS and paramedicine as a distinct field of allied healthcare, with consequent access to educational support and scholarships, specific rural and remote support, continuing professional development assistance, and coverage by Medicare benefits consistent with those applying (after the present reforms) to other allied health professions.

State ambulance services could be funded by the Commonwealth through grants or episodic payment for defined services. This could be funded through an increase in the Medicare levy or directly funded from existing Commonwealth revenues and provided under a performance-based contract between state ambulance bodies and the Commonwealth. The Queensland Treasury has commented on this concept:

“The main barrier...is that this would require a nationally agreed approach since the Medicare levy is a Commonwealth tax and any changes would need to apply across all jurisdictions. While this is likely to present difficulties and represents a fundamental shift in the current coverage arrangements for Medicare...this should not mitigate against it being seriously considered as an alternative funding option. This is especially the case since ambulance services across most jurisdictions are experiencing funding pressures and are an integral part of the overall health system...”⁵³

Under a national funding arrangement, state ambulance services would be expected to manage their existing services, including land and air transport, and to manage call and dispatch operations. Performance standards, for example, around response times and other more specific outcome measures, could be developed with financial incentives for achieving efficiencies. National oversight and direction could be provided by a national ambulance council that reports to the federal health minister.

Summary

An overriding policy aim of the Heart Foundation is the removal of impediments to early treatment for heart attack patients. There is evidence that concern about cost is a deterrent to some Australians seeking emergency ambulance treatment.

Australia's ambulance services evolved from local community initiatives in the 19th and early 20th centuries. Consolidation into state-wide entities funded, administered and controlled by state governments was a feature of ambulance services during the last decades of the 20th century. This development reflected the fiscal pressure of providing modern emergency services.

More recent developments, including the growing sophistication of services that can be provided by paramedics and the need to ensure ambulance services and personnel are appropriately regulated and integrated into health networks, suggest the need for a more national approach to the development and regulation of Australia's ambulance services.

Perhaps it is appropriate to conclude this discussion paper with reflections from the document *A National Health and Hospitals Network for Australia's Future*, released by the Commonwealth Government in March 2010:

"Health systems are complex and dynamic, characterised by constant change and innovation in the organisation, delivery and funding of health services. Health systems operate in a context of changing social, economic and political environments. Responsiveness to change is therefore essential and driven by the emergence of new health needs and priorities within the population... There is also a need to ensure equitable service provision and value for money services, both in terms of clinical effectiveness and cost-efficiency".⁵⁴

Is it time to apply such thinking to Australia's ambulance services?

Appendices

Appendix 1

Major Sources of ambulance service organisations revenue (2006-07 dollars) (a)

	UnH	NSW (b)	Vic (c)	Qld	WA	SA	Tas	ACT	NT	Aust
Australian	%	–	1.5	–	–	0.2	0.9	–	–	0.5
State/Territory	%	72.5	55.6	78.5	32.4	45.4	87.2	78.2	65.5	64.8
Local	%	–	–	–	–	–	na	–	–	–
Subscription fees	%	–	18.8	–	1.7	14.1	–	–	2.1	8.4
Transport fees	%									
Interhospital	%	12.5	4.3	7.9	4.1	9.0	–	–	–	7.8
Other fees from citizens	%	6.7	9.1	1.4	31.5	19.5	1.0	–	6.0	8.6
Workers' compensation	%	na	1.1	0.7	–	0.4	0.5	–	0.3	0.5
Motor accident insurance	%	3.3	4.1	2.5	3.5	4.4	5.1	–	2.2	3.4
Veterans' Affairs	%	2.8	–	3.9	3.9	2.9	3.7	0.6	0.5	2.3
Other	%	–	0.8	0.5	–	0.1	0.6	20.2	0.6	0.8
Donations	%	–	0.2	0.3	0.8	0.1	–	–	1.1	0.2
Miscellaneous	%	2.2	3.6	4.3	22.1	3.9	1.0	1.0	21.8	4.8
Indirect government revenue	%	–	0.5	–	–	–	–	–	–	0.1
Total share	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Government grants	%	72.5	57.3	78.5	32.4	45.7	88.1	78.2	65.5	65.2
Indirect government revenue	%	–	0.5	–	–	–	–	–	–	0.1
Other revenue (d)	%	2.3	22.6	4.5	24.5	18.1	1.0	1.0	25.0	11.4
Transport fees	%	25.3	19.6	17.0	43.1	38.2	10.9	20.8	9.5	23.3
Total	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Government grants	\$m	337.6	245.2	289.9	34.7	54.7	26.6	14.7	11.6	1015.0
Indirect government revenue	\$m	–	2.2	–	–	–	–	–	–	2.2
Other revenue (d)	\$m	10.6	96.5	16.8	26.3	21.7	0.3	0.2	4.4	176.9
Transport fees	\$m	117.7	83.7	62.7	46.2	43.4	3.3	3.9	1.7	362.7
Total	\$m	466.0	427.8	369.5	107.3	119.8	30.2	18.9	17.7	1556.7

a) REPORT ON GOVERNMENT SERVICES 2008 differ from data in agency annual report and other sources.

b) NSW has a subscription scheme but funds are deposited to the consolidated revenue of the NSW Treasury

c) Victoria's 2002-03 other revenue includes profit on sale of non-current assets of \$489 million

d) Other revenue is equal to the sum of subscriptions, donations and miscellaneous revenue.

e) na Not available - Nil or rounded to zero.

Source: ABS Cat. No. 3303.0 (unpublished), State and Territory government (unpublished).

Appendix 2: Who is covered?

It is unlikely that many Australians appreciate the limitations on their ambulance cover, including what is covered and what is not. Advice provided by ambulance authorities or private health funds is confusing and complex.

Circumstances vary from state to state. Australians are automatically covered, at least in their home state, if they are welfare beneficiaries. Others are covered through their membership of a private health fund. Whether or not a particular event is covered depends on the nature of the event (whether or not it is an emergency, as defined in the different jurisdictions) and whether or not there are reciprocal arrangements between one state ambulance service and another.

If an event occurs in a state that is not the patient's home state, a bill may be raised and the patient then has to seek re-imburement in their home state.

The following extracts of advice are selected as examples of what is a complex and somewhat daunting set of rules.

A resident of South Australia seeking information on their coverage will find the following advice on the SAAS's website.

"The cost of an emergency ambulance is around \$700. But if you are covered with us, you won't have to pay a cent. Ambulance costs are not covered by Medicare. In fact, even if you have private insurance, you may not be fully covered. Many private health insurance schemes only cover you and your family for emergency ambulance services. Almost a third of our work is non-emergency, which would leave you to pay the bill."⁵⁵

The SAAS website also provides advice to people with private health insurance who may be uncertain whether or not they are fully covered. Questions to ask a health fund are suggested, however, how many South Australians would know what an Emergency 1 or 2 case is?

"Am I covered for all ambulance services? Specifically, am I covered for the services fees charged by SA Ambulance Service for:

- a. Emergency 1 cases (\$688 call out plus \$4.00 per km rate)
- b. Emergency 2 cases (\$496 call out plus \$4.00 per km rate)
- c. non-emergency cases
- d. treatment at the scene without transport
- e. repatriation from interstate by air ambulance or RFDS?

- If you are covered for all of these situations, then you are most likely to have full ambulance cover. However, as indicated by the questions set out below, there may still be gaps or limitations in your ambulance cover.

Am I eligible for a rebate under my private health insurance policy if I join [SAAS] Ambulance Cover? If yes, how much?

Am I 100% covered for ambulance treatment and transport if I have a pre-existing condition (e.g. asthma, diabetes, heart trouble)? Is there a waiting period for coverage of a pre-existing condition? What do you class as pre-existing?

- While it's difficult to predetermine each set of circumstances, many cases of illness or injury require additional patient transportation: for tests, ongoing treatment or transfer to another hospital. This ambulance transport is generally classified as non-emergency transport. Non-emergency transport fees start at \$170."⁵⁶

Official advice in Victoria includes:

"People who do not hold a pensioner concession card or a healthcare card, or who are not insured against the cost of ambulance services, are liable to pay the full cost of ambulance treatment and/or transport.

If you are residing in Victoria and are simply travelling interstate on holidays, your membership will cover you in the event that you have treatment or are required to travel back home for a medical reason. This transport must be approved by Ambulance Victoria and authorised by a doctor or hospital."⁵⁷

It also outlines that "Interstate visitors who are members of ambulance subscription schemes in their state of origin may be entitled to the same benefits as Victorian Ambulance Membership Subscription Scheme members under reciprocal arrangements. Current reciprocal arrangements should be confirmed with the relevant ambulance service."⁵⁸

The official website of the NSW ambulance service advises:

“Medicare does not cover ambulance costs. The person treated by paramedics (i.e. the patient) is responsible for paying any fees associated with their treatment and/or transport, regardless of whether or not they were the individual who requested an ambulance.

The NSW Government covers the cost of ambulance transport by the Queensland or South Australian ambulance services. NSW pensioners who have received an invoice from the Queensland Ambulance Service or the South Australian Ambulance Service can arrange payment or claim reimbursement for emergency services using the claim form provided.

From 1 July 2008, residents of NSW and any other Australian state or territory that is party to a reciprocal arrangement will be charged at the rate of 51% of the actual cost of the provision of primary emergency ambulance services. The Ambulance Service of NSW now recovers 100% of the cost of ambulance services provided to residents of states that do not have a reciprocal arrangement with NSW.⁵⁹

Australians living in NSW or the ACT who purchase private hospital insurance compulsorily buy ambulance cover as part of their premium. In other states, some private insurance products will reimburse ambulance subscription fees. The 2008–2009 Private Health Insurance Administration Council annual report stated “\$146 million was paid in levies applied by the NSW and ACT governments (an increase of \$9 million) which entitle privately insured patients to emergency ambulance transport within Australia.”⁶⁰

An Australian with private health insurance seeking enlightenment on whether or not they will be covered will receive the following advice from one of Australia’s largest private health funds, MBF.

“Ambulance services are funded in different ways in different states. The basis on which MBF pays benefits for emergency ambulance transport varies from state to state. Also, some people who receive federal government pensions or social security entitlements may be covered for ambulance services through those entitlements.

If you already have either MBF Hospital Cover (except Public Hospital Cover only), MBF Extras cover or an MBF package, then you are covered for emergency ambulance services provided by MBF-recognised providers. Emergency ambulance services are provided free to most Tasmanian residents. In NSW and ACT, as all hospital cover premiums cover the ambulance levy, customers with hospital cover are entitled to ambulance services without charge. Customers in NSW or ACT who hold **Department of Social Security** cards may be exempt from the ambulance levy. From 1 July 2003, Queensland residents will be covered by Community Ambulance Cover by making contributions through electricity accounts. This will provide Australia-wide cover for ambulance services. MBF does not pay a benefit for these contributions.

For customers with hospital cover in other states (with the exception of Public Hospital Cover which has no ambulance benefit), MBF will only pay a benefit for ambulance services where the services are provided by a state government service or an organisation recognised by MBF. Benefits are only available for emergency or casualty transportation where, in the opinion of a medical officer, a customer requires immediate treatment in circumstances where there is serious threat to the customer’s life or health. Benefits are not payable for transportation from a hospital to your home, nursing home or other hospital, or for transportation for ongoing medical treatment.”⁶¹

The Private Health Insurance Ombudsman (PHIO) is an office established by the federal government to receive and investigate complaints about private health insurance coverage. The PHIO annual report for 2008–2009 indicates that in 2007–2008 there were 41 complaints to the PHIO relating to the benefits and coverage available under private health insurance, and in 2008–2009 there were 44 complaints. The report states: “the most significant concerns for consumers were inadequate levels of cover, inadequate benefit amounts, delays in benefit payments and providers not being recognised.”⁶²

Appendix 3: Professional Issues

Issues to do with ensuring emergency ambulance services are put on a more secure financing base cannot be seen in isolation from the education and training of ambulance staff.

Enhancement of the training of the paramedical workforce could include the provision of opportunities for regular maintenance of skills both through traditional methods and more innovative e-learning processes. Academic centers could offer diploma and degree courses for paramedical professionals, and associated research programs could be developed to support service improvements.

In Australia in 2006, there were 9,097 ambulance officers and paramedics.⁶³ The work of paramedics is becoming more complex because of changes in both medical practice and the environment in which paramedics work. Early active intervention by trained paramedics in a range of medical emergencies has been shown to enhance survival. A national perspective is developing around the education and training needs of ambulance and paramedical staff as the scope of ambulance work expands. The Commonwealth, given its control over the funding of tertiary education services, will inevitably be drawn more into policy debates in this area.

Many commentators have pointed to the increasing professionalism of ambulance work. A recent academic review stated that ambulance care has

“moved rapidly from a simple response, deliver first aid and transport model to an integrated role within the primary healthcare continuum. Paramedics now deliver a wide range of interventions, many of which are invasive. There has been a migration of traditional in-hospital technologies to the out-of-hospital field, which now enables paramedics to deliver definitive care pre-hospital. The transition from strict protocol-driven practice to procedures requiring the paramedic to use knowledge and experience to problem solve and provide solutions is creating a more complex practice for paramedics.”⁶⁴

An historical review of Australia’s ambulance services discusses these changes and the consequent emergence of an academic association of paramedics:

“The emergence of the college was symptomatic of the steady professionalism of ambulance work and the consequent emergence of a separate and distinct paramedical patient-care profession during the second half of the 20th century... The proliferating array of the ‘high-tech’ life support aids changed the simple ambulance of yesteryear into something more appropriately called a ‘mobile intensive care unit’”.

The increasing education attainments that will be required of ambulance personnel means that the days of volunteers and staff with minimal training are passing. The education of

paramedics will more and more involve the formal tertiary sector and therefore inevitably involve the Commonwealth.

National accreditation guidelines have been issued by the CAA for university paramedic courses. As the ambulance workload across Australia increases, the demand for university paramedic graduates with a high level of clinical skill will also increase. Students must have practical placement experience to gain their qualifications. Currently ambulance services provide these clinical placements at no cost to the university. This will not be sustainable in the medium and long term as the number of paramedic students increases. Financial support will become a Commonwealth responsibility.⁶⁵

The ACAP represents professionals engaged in the delivery of pre-hospital emergency medical systems. It provides a national platform for policies and representation to enhance the quality of pre-hospital emergency patient care in Australia. The ACAP views ambulance and paramedical work as a profession "unrelated to jurisdictional issues, funding or administrative arrangements".⁶⁶

An academic review of the development of the education and training needs of ambulance staff suggests that eventually these areas will get drawn into the broader education and vocational regulation structures now being developed by the Commonwealth.

"Regulation has been viewed as a necessary adjunct in the evolution of a profession now requiring enhanced educational foundations, and with practitioners engaged in clinical roles and exercising professional independence in unpredictable environments. Among the catalysts for regulation is the public interest in quality standards and the need for accountability in emergency healthcare. New roles for paramedics employed outside the traditional state-based agencies also demand greater mobility and portability of professional recognition that is likely to be facilitated by regulation."⁶⁷

Other writers have considered the implications of the increasing complexity of ambulance practice in the context of the changing Australian healthcare system for ambulance services and funding bodies. In their article 'From stretcher-bearer to paramedic: the Australian paramedics' move towards professionalization', published in the *Journal of Emergency Primary Healthcare* in 2009, Williams et al argued that "paramedics has responded proactively to demands for better, more efficient, and more effective practice, but cannot progress beyond piece-meal patches and localised responses unless it develops nationally coordinated registration and regulation." They suggest there needs to be coordination of "the various education and training providers to educate future paramedic practitioners with a nationally agreed-upon set of graduate attributes. These developments will in turn create a distinct pool of knowledge and skills that will define and delineate the extent of paramedics' sphere of influence and recognised expertise."⁶⁸

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Tab 2

**Global Strategy Survey of
Montgomery County Residents**



Hello, my name is _____ from GSG, a national research firm. We're conducting a poll on Maryland issues. This is not a sales call. I won't ask for a contribution or donation. This number was selected at random. According to the research procedure, I would like to speak to the [ALTERNATE: YOUNGEST/OLDEST] [ALTERNATE: MALE/FEMALE] at this address who is registered to vote.

Q0. Are you officially registered to vote at this address in Montgomery County? [IF YES] Regardless of how you might feel about the parties, at the present time are you officially registered as a Democrat, as a Republican, or in some other way?

YES: Democrat..... 56%
YES: Independent..... 16
YES: Republican..... 23
YES: Other..... 4
No/(Don't know)..... → TERMINATE

Q1. Regardless of how you are officially registered, do you generally think of yourself as a Democrat, an Independent or a Republican?

Democrat..... 54%
Independent..... 21
Republican..... 22
VOL: (Other/Don't know)..... 3

Q2. Of the following issues facing Montgomery County, which two are of the greatest concern to you personally?

	First	Total
Education.....	32%	45%
Crime and public safety.....	20	44
The local economy.....	15	34
Property taxes.....	16	30
Development and growth.....	10	22
Fire and emergency medical services.....	5	14
VOL: (Other).....	3	6
VOL: (Don't know).....	1	5

Q3. Now I'd like to ask your impressions of people and groups in public life. As I read each one, tell me if that is someone you recognize and, if you do, whether your impression of them is very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable. Here's the first one: [READ ITEM] Have you heard of [HIM/THEM]? [IF YES] Is your impression of [HIM/THEM] very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable?

ROTATE	FAVORABLE			UNFAVORABLE		(Can't rate)	Not heard	TOTAL		RECOGNITION	
	Very	Some	(Mixed)	Very	Strong			Fav	Unfav	Effective	Total
• Montgomery County fire and emergency medical services.....	34%	42	11	4	1	8	1	76%	4	92%	99%
• The Montgomery County Council.....	5%	37	23	14	4	14	2	42%	18	84%	98%
• like Leggett.....	13%	24	20	15	5	14	9	37%	20	77%	91%

RESUME ASKING ALL RESPONDENTS

Q4. As you may know, Montgomery County currently faces a budget shortfall of more than \$400 million. To address that shortfall, should the county [ROTATE]

- Cut spending, even if that means reducing county services?..... 42%
- OR SHOULD THE COUNTY --**
- Increase revenues, even if that means higher county taxes and fees?..... 26
- VOL: (Both)..... 11
- VOL: (Neither)..... 6
- VOL: (Don't know)..... 15

Q5. Here are some suggestions that have been made for reducing the county's \$400 million budget shortfall. For each, tell me if you personally favor or oppose doing that to reduce the budget shortfall. [READ ITEM - PROMPT AS NEEDED] Do you favor or oppose that?

ROTATE	Favor	Oppose	(Don't Know)
• Cut the number of management positions in county government.....	79%	11	10
• Cut the number of overtime hours allowed for county employees.....	77%	16	7
• Cut funds for technology improvements.....	34%	47	19
• Increase property taxes.....	23%	67	10
• Cut funds for public libraries.....	19%	74	7
• Cut funds for early childhood education.....	11%	84	5
• Cut fire protection and ambulance services.....	7%	89	4

Q6. Ambulance service in Montgomery County is free for persons using the service. To help address the budget shortfall, some people have proposed that the county charge a fee of approximately \$300 for most calls and \$600 or higher for more serious cases for each time anyone gets an ambulance by calling 911 in the county. Do you personally favor or oppose the change that would begin charging \$300 to \$600 or more for each time someone uses the county or local fire-rescue department ambulance service? [IF RESPONSE:] Do you strongly or only somewhat [FAVOR/OPPOSE] that?

Strongly favor.....	10%
Somewhat favor.....	22
Somewhat oppose...	14
Strongly oppose.....	48
VOL: (Don't know).....	6
TOTAL FAVOR.....	32%
TOTAL OPPOSE.....	62

ROTATE ORDER OF ASKING Q7 AND Q9

Q7. I'm going to read statements IN SUPPORT OF charging an ambulance fee in Montgomery County. After each one, tell me if you find it a very convincing, a somewhat convincing, a not very convincing or a not at all convincing reason to SUPPORT an ambulance fee. [READ ITEM] Do you find that argument to be a very convincing, a somewhat convincing, a not very convincing or a not at all convincing reason to SUPPORT an ambulance fee?

SCRAMBLE

	CONVINCING		NOT CONVINCING		VOL: (OK)	TOTAL	
	Very	Some	Not very	Not at all		Convincing	Not
• Those who support the fee say it would only be charged to people whose health insurance would cover it. They even claim that any insurance co-payments would be waived for those who can't afford it. People with no insurance or whose insurance does not cover ambulance fees would still get free ambulance service.....	21%	32	24	21	2	53%	45
• Charging a fee for ambulance service is a way to cut down on people who abuse the service and call ambulances for non-emergency reasons.....	24%	26	19	27	4	50%	46
• Charging an ambulance fee will generate funds needed to address the County's budget shortfall.....	19%	26	23	27	5	45%	50
• Charging a fee for ambulance service is done in many other places in this area and is an accepted way to deal with budget problems.....	15%	26	24	30	5	41%	54

Q8. Sometimes during a survey like this people change their minds, and sometimes they don't. Do you personally favor or oppose the change that would begin charging \$300 to \$600 or more for each time someone uses the county or local fire-rescue department ambulance service? [IF RESPONSE:] Do you strongly or only somewhat [FAVOR/OPPOSE] that?

	Total	Read statements first:	
		Supporting	Opposing
Strongly favor.....	13%	13%	12%
Somewhat favor.....	19	22	17
Somewhat oppose.....	14	13	15
Strongly oppose.....	47	46	49
VOL: (Don't know).....	7	6	7
TOTAL FAVOR.....	32%	35%	29%
TOTAL OPPOSE.....	61	59	64

Q9. Next I'm going to read statements AGAINST charging an ambulance fee in Montgomery County. After each one, tell me if you find it a very convincing, a somewhat convincing, a not very convincing or a not at all convincing reason to OPPOSE an ambulance fee. [READ ITEM] Do you find that argument to be a very convincing, a somewhat convincing, a not very convincing or a not at all convincing reason to OPPOSE an ambulance fee?

SCRAMBLE

	CONVINCING		NOT CONVINCING		VOL: (OK)	TOTAL	
	Very	Some	Not very	Not at all		Convincing	Not
• In many cases, including strokes and heart attacks, early activation of emergency services is vital to saving lives. An ambulance fee will cause residents – especially elderly and poorer residents – to hesitate or delay in calling 911 when it is most important for them to act quickly.....	44%	31	16	9	1	74%	24
• Montgomery County residents already pay a fire district tax AND property taxes for fire and rescue services. They should not have to pay a fee in addition to these taxes.....	47%	24	17	9	3	70%	26
• It is not right to charge a fee for a system where many ambulances are staffed by volunteers who want to serve their communities for free.....	44%	21	17	13	5	65%	30
• If the fee is charged only to those with insurance, it could result in higher insurance premiums for everyone, whether or not they use ambulance services.....	38%	26	20	10	5	64%	30
• Adding this plan would end up raising more money from county citizens than it actually costs the county to provide ambulance and emergency services. It is not right for the country to make a profit from fires and medical emergencies.....	38%	25	18	13	6	63%	31

Q10. One last time, do you personally favor or oppose the change that would begin charging \$300 to \$600 or more for each time someone uses the county or local fire-rescue department ambulance service? [IF RESPONSE:] Do you strongly or only somewhat [FAVOR/OPPOSE] that?	Strongly favor	12%
	Somewhat favor	22
	Somewhat oppose	13
	Strongly oppose	48
	VOL: (Don't know)	4
	TOTAL FAVOR	34%
TOTAL OPPOSE	61	
Now I would like to ask you a few final questions for statistical purposes only.		
D100. Sex [OBSERVATION: DO NOT ASK]	Male	47%
	Female	53
D101. What is your age? [RECORD IN PROPER CATEGORY] [READ CODES IF NECESSARY]	18-24	2%
	25-29	7
	30-34	11
	35-39	14
	40-44	10
	45-49	10
	50-54	10
	55-59	11
	60-64	6
	65+	18
	VOL: (Refused)	2
D102. What is the last grade you completed in school?	Some grade school (1-8)	1%
	Some high school (9-11)	3
	Graduated high school	23
	Technical/Vocational	4
	Some college	18
	Graduated college	31
	Graduate/Professional	18
	VOL: (Don't know/Refused)	*
D105. When it comes to politics, do you generally think of yourself as liberal, somewhat liberal, moderate, somewhat conservative or conservative?	Liberal	16%
	Somewhat liberal	22
	Moderate	31
	Somewhat conservative	16
	Conservative	12
	VOL: (Don't know)	3
	TOTAL LIBERAL	38%
TOTAL CONSERVATIVE	28	
D107. Do you currently have any children under 18 living at home with you?	Yes	36%
	No	62
	VOL: (Don't know/Not sure)	2
D108. In terms of your job status, are you employed, unemployed but looking for work, retired, a student, or a homemaker?	Employed	72%
	Unemployed	2
	Retired	19
	Student	2
	Homemaker	4
	VOL: (Other)	1
	VOL: (Don't know/Refused)	*
D110. And what is your marital status -- are you single and never married, married, separated, divorced, or widowed? [IF SINGLE] Have you been married before or have you never been married?	Single - never married	14%
	Single - been married before	2
	Married	66
	Separated	2
	Divorced	6
	Widowed	9
	VOL: (Don't know/Refused)	1
D112. How long have you lived in Montgomery County -- have you lived there all of your life, less than that but more than 10 years, between five and 10 years, or less than five years?	Whole life	18%
	More than 10 years	55
	5-10 years	15
	Less than 5 years	11
	VOL: (Don't know)	1
D300. And just to make sure we have a representative sample of voters, could you please tell me your race? [IF NECESSARY] Well, most people consider themselves black or white?	Black	15%
	White	73
	VOL: (Other)	10
	VOL: (Don't know/Refused)	2
D301. Do you consider yourself a Hispanic, Latino, or Spanish-speaking American?	Yes	6%
	No	90
	VOL: (Refused)	3

Thank you for taking the time to complete this interview.

Popularity of Montgomery County Figures and Institutions

	Montgomery County Fire and EMS						Ike Leggett					The Montgomery County Council				
	Total	Fav	(Mixed)	Total Unfav	(CR)/NH	Net Fav	Total Fav	(Mixed)	Total Unfav	(CR)/NH	Net Fav	Total Fav	(Mixed)	Total Unfav	(CR)/NH	Net Fav
TOTAL	400	76%	11	4	8	72	37%	20	20	23	17	42%	23	18	16	24
REGIONS																
Southeast	144	71%	13	4	12	66	44%	19	15	22	29	43%	23	18	19	27
Southwest	129	76%	12	6	8	70	37%	20	23	20	13	44%	28	17	12	27
North	127	83%	9	2	8	81	30%	21	22	27	8	40%	20	21	18	19
RACE																
White	293	78%	11	4	7	74	38%	20	24	21	12	44%	23	19	14	25
Black	59	72%	12	7	9	65	42%	28	7	23	35	42%	27	17	14	25
Other	48	69%	12	2	18	67	39%	12	12	37	26	33%	17	18	33	17
SEX																
Male	187	78%	14	5	8	71	31%	20	25	23	6	41%	24	21	13	20
Female	213	77%	9	4	10	73	42%	20	15	23	27	43%	22	15	20	28
RACE & SEX																
White male	138	76%	14	5	5	70	28%	19	30	22	-2	42%	24	23	11	19
White female	154	81%	9	3	8	78	43%	20	18	19	25	48%	23	14	17	31
Non-white male	48	78%	14	3	8	73	40%	24	12	25	28	38%	26	17	19	22
Non-white female	59	87%	11	7	18	60	41%	19	8	33	33	37%	20	18	28	21
AGE																
18-39	136	72%	13	6	9	67	34%	23	18	24	16	40%	22	22	18	17
40-59	163	79%	12	3	6	76	37%	19	21	23	15	42%	27	13	17	29
60+	101	78%	8	4	10	73	42%	16	20	22	22	46%	19	20	15	26
PARTY REGISTRATION																
Democrat	225	81%	8	3	8	77	48%	20	13	20	35	47%	22	15	16	31
Independent/Other	82	72%	11	3	13	69	26%	21	18	35	8	32%	28	12	28	20
Republican	92	70%	19	7	5	63	21%	20	39	20	-18	41%	22	30	7	11
PARTY IDENTIFICATION																
Democrat	216	81%	9	3	7	78	48%	19	12	20	36	47%	22	15	16	32
Independent/Other	97	72%	9	4	15	69	25%	23	17	35	8	34%	28	12	26	23
Republican	88	69%	20	7	4	62	23%	18	42	17	-20	40%	22	32	6	7
IDEOLOGY																
Liberal	152	72%	12	6	11	66	49%	18	12	21	38	40%	24	16	20	24
Moderate/Other	134	82%	9	1	7	81	38%	21	14	27	24	49%	20	12	20	37
Conservative	113	75%	13	6	6	70	20%	22	38	20	-18	39%	26	28	7	10
EDUCATION																
High school or less	110	74%	14	5	8	69	38%	21	19	22	19	43%	27	17	13	26
Some college	92	72%	18	4	9	68	25%	36	21	19	4	45%	21	20	14	25
College graduate	198	80%	8	4	9	76	42%	12	20	25	22	41%	22	18	19	23
TIME IN MONTGOMERY COUNTY																
Whole life	73	77%	14	4	5	74	37%	20	22	21	16	43%	27	19	11	24
More than 10, not whole life	221	78%	11	5	8	73	42%	20	21	18	21	46%	24	17	13	30
Ten or fewer years	106	72%	11	3	15	69	28%	21	17	35	11	34%	19	20	28	14
MARRIED																
Married	265	79%	11	4	7	75	33%	23	21	23	13	45%	23	18	14	28
Not married	135	71%	12	5	11	66	45%	14	19	23	26	36%	24	19	20	18
CHILDREN																
Children <18 at home	144	79%	10	6	5	73	33%	26	18	25	16	45%	22	17	15	28
No children <18	256	75%	12	3	10	72	40%	17	22	22	18	41%	24	18	17	22
ADDRESS BUDGET SHORTFALL																
Cut spending	189	78%	12	4	7	74	32%	18	30	20	1	45%	22	21	11	24
Increase revenues	103	83%	10	4	4	79	39%	22	17	23	22	44%	24	17	15	27
AMBULANCE FEES																
Favor fees initially	129	69%	15	6	10	64	35%	22	23	20	12	42%	24	20	14	23
Oppose fees initially	249	80%	10	3	7	77	39%	19	19	23	20	45%	23	17	15	29
Favor fees finally	138	68%	15	5	12	63	34%	21	23	21	11	40%	22	21	17	18
Oppose fees finally	245	81%	10	3	6	78	40%	20	19	22	21	46%	23	17	14	29
RATE																
Rate MoCo Fire/EMS favorably	306	100%	0	0	0	100	38%	21	20	21	18	50%	20	18	14	33
Not rate MoCo Fire/EMS favorably	62	0%	73	27	0	-27	38%	23	28	15	11	19%	47	29	5	-11
Rate Leggett favorably	149	78%	11	4	7	74	100%	0	0	0	100	55%	23	12	10	42
Not rate Leggett favorably	160	78%	14	6	3	72	0%	50	50	0	-50	35%	29	31	5	4
Rate MoCo Council favorably	170	89%	6	1	4	88	48%	22	11	19	37	100%	0	0	0	100
Not rate MoCo Council favorably	165	68%	20	9	3	59	32%	22	36	11	-4	0%	56	44	0	-44

Support for Ambulance Fees

	Q8. Initial			Q8. Post-statements (total)			Q8A. Post-statements in favor			Q8B. Post-statements opposed			Q10. Final										
	Total	Favor	Oppose	Total	Favor	Oppose	Total	Favor	Oppose	Total	Favor	Oppose	Total	Favor	Oppose								
TOTAL	400	32%	68	32%	61	7	-29	199	35%	59	8	-23	201	28%	64	7	-35	400	34%	61	4	-27	
REGIONS																							
Southeast	144	28%	65	31%	61	8	-30	71	30%	60	10	-30	72	33%	62	6	-29	144	34%	82	4	-28	
Southwest	129	32%	63	30%	63	7	-34	62	33%	61	6	-29	67	27%	65	6	-39	129	33%	63	4	-30	
North	127	36%	58	35%	60	4	-25	66	44%	55	1	-12	62	27%	66	8	-39	127	37%	59	4	-22	
RACE																							
White	283	36%	59	35%	59	5	-24	147	41%	55	4	-14	145	28%	64	7	-35	283	38%	59	3	-21	
Black	59	19%	74	19%	71	9	-52	30	6%	81	11	-73	29	31%	81	7	-30	59	19%	75	7	-56	
Other	48	26%	68	28%	62	9	-33	22	36%	55	9	-19	28	22%	67	10	-45	48	34%	59	7	-26	
SEX																							
Male	167	40%	55	38%	54	6	-18	85	44%	48	6	-5	102	33%	59	8	-26	167	42%	53	5	-10	
Female	213	25%	69	27%	66	5	-47	114	28%	67	4	-37	99	24%	70	6	-45	213	27%	69	4	-47	
RACE & SEX																							
White male	138	46%	50	43%	51	6	-9	63	49%	45	6	4	78	37%	56	7	-19	138	47%	49	4	-2	
White female	154	27%	67	28%	67	5	-38	64	35%	62	3	-27	70	21%	73	8	-52	154	30%	68	2	-38	
Non-white male	48	22%	70	25%	62	13	-37	22	28%	57	15	-29	26	22%	66	12	-45	48	28%	64	6	-35	
Non-white female	59	22%	73	23%	71	8	-49	30	14%	60	8	-66	29	32%	62	6	-30	59	22%	71	8	-49	
AGE																							
18-39	138	29%	81	31%	57	12	-26	70	33%	54	13	-21	66	30%	60	11	-30	138	33%	60	7	-27	
40-59	163	40%	56	37%	60	3	-23	82	39%	59	2	-20	81	35%	61	4	-26	163	39%	57	4	-17	
60+	101	23%	74	25%	70	5	-46	48	32%	65	2	-33	54	16%	75	7	-57	101	29%	70	1	-47	
PARTY REGISTRATION																							
Democrat	225	19%	73	18%	74	8	-56	114	18%	74	8	-57	111	18%	73	9	-54	225	21%	74	5	-53	
Independent/Other	62	38%	55	38%	54	7	-16	37	58%	43	6	7	46	29%	64	9	-34	62	41%	53	6	-12	
Republican	92	58%	42	61%	38	1	22	49	56%	34	0	32	44	55%	43	3	72	92	62%	38	0	23	
PARTY IDENTIFICATION																							
Democrat	218	19%	74	18%	73	6	-54	111	18%	74	6	-57	105	20%	71	6	-57	218	21%	74	6	-53	
Independent/Other	97	37%	55	34%	58	8	-24	45	44%	50	8	-6	52	25%	65	10	-39	97	41%	56	4	-15	
Republican	88	58%	42	82%	37	1	25	44	72%	28	0	44	44	52%	46	2	6	88	62%	37	1	25	
IDEOLOGY																							
Liberal	152	18%	74	22%	72	6	-50	88	21%	72	7	-52	64	22%	71	8	-49	152	22%	73	5	-57	
Moderate/Other	134	29%	64	28%	64	10	-38	58	32%	59	9	-27	78	22%	67	11	-45	134	32%	64	5	-32	
Conservative	113	55%	44	53%	45	3	6	55	62%	36	2	25	58	44%	52	3	-8	113	54%	43	3	12	
EDUCATION																							
High school or less	110	26%	68	29%	63	8	-34	58	33%	54	13	-22	52	25%	72	3	-47	110	29%	63	7	-34	
Some college	92	32%	66	30%	67	3	-36	46	35%	65	0	-31	44	25%	68	7	-43	92	33%	67	0	-34	
College graduates	188	36%	59	34%	58	7	-24	93	37%	58	5	-21	105	32%	59	9	-27	188	38%	58	4	-19	
TIME IN MONTGOMERY COUNTY																							
Whole life	73	20%	78	18%	78	5	-60	38	13%	85	2	-72	35	23%	70	7	-47	73	21%	78	1	-58	
More than 10, not whole life	221	34%	82	34%	63	4	-29	113	39%	59	2	-21	108	28%	66	5	-38	221	38%	60	2	-22	
Ten or fewer years	108	39%	53	38%	48	14	-9	49	45%	37	18	8	58	33%	56	10	-23	108	37%	52	11	-15	
MARRIED																							
Married	285	39%	58	35%	56	8	-23	129	39%	54	7	-18	138	31%	81	9	-30	285	37%	58	5	-21	
Not married	135	24%	71	27%	69	4	-42	71	28%	67	4	-38	64	25%	71	4	-47	135	28%	68	3	-39	
CHILDREN																							
Children <18 at home	144	31%	63	30%	61	9	-37	79	31%	58	11	-27	65	26%	64	7	-38	144	30%	64	8	-34	
No children <18	256	33%	62	33%	62	5	-29	121	38%	59	2	-21	136	29%	64	7	-35	256	37%	60	3	-23	
ADDRESS BUDGET SHORTFALL																							
Cut spending	169	45%	53	44%	52	4	-8	86	47%	49	4	-2	81	41%	54	5	-14	169	45%	52	3	-8	
Increase revenue	103	26%	71	26%	68	6	-42	46	26%	67	4	-39	55	24%	69	7	-45	103	32%	65	4	-33	
AMBULANCE FEES																							
Favor fees initially	129	100%	0	90%	6	3	82	64	89%	1	0	97	85	81%	14	5	67	129	93%	7	1	88	
Oppose fees initially	249	0%	100	4%	92	3	-88	128	5%	93	3	-88	123	4%	92	4	-88	249	6%	92	2	-86	
Favor fees finally	138	85%	11	75%	9	4	78	69	97%	3	0	94	69	76%	15	7	62	138	100%	0	0	100	
Oppose fees finally	245	3%	94	3%	94	3	-92	121	2%	95	3	-93	124	3%	94	3	-91	245	0%	100	0	-100	
RATE																							
Rate MoCo Fire/EMS favorably	306	29%	65	29%	65	7	-37	145	31%	63	6	-31	161	29%	67	7	-42	306	31%	65	4	-34	
Not rate MoCo Fire/EMS favorably	82	43%	52	45%	51	5	-6	37	44%	48	6	-4	25	45%	55	0	-9	82	45%	52	3	-7	
Rate Leggett favorably	149	30%	65	31%	65	3	-34	76	32%	64	4	-32	73	31%	67	2	-38	149	32%	65	3	-33	
Not rate Leggett favorably	160	36%	59	34%	60	6	-26	74	41%	54	5	-13	86	28%	65	7	-30	160	38%	59	3	-20	
Rate MoCo Council favorably	170	32%	67	33%	65	2	-32	88	32%	67	1	-35	81	34%	63	3	-29	170	32%	66	2	-34	
Not rate MoCo Council favorably	185	34%	59	31%	63	6	-32	78	39%	55	6	-16	97	24%	70	6	-46	185	37%	59	4	-23	

Tab 3

**Annals of Emergency
Medicine Study**

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Ann Emerg Med. 2000 Jun;35(6):573-8.

Association between prepayment systems and emergency medical services use among patients with acute chest discomfort syndrome. For the Rapid Early Action for Coronary Treatment (REACT) Study.

Siepmann DB, Mann NC, Hedges JR, Daya MR.

Department of Emergency Medicine, Oregon Health Sciences University, Portland, OR, USA.

Abstract

STUDY OBJECTIVE: Cost concerns may inhibit emergency medical services (EMS) use. Novel tax-based and subscription prepayment programs indemnify patients against the cost of EMS treatment and transport. We determine whether the presence of (or enrollment in) prepayment plans increase EMS use among patients with acute chest discomfort, particularly those residing in low-income areas, those lacking private insurance, or both. **METHODS:** This study uses a subset of baseline data from the REACT trial, a multicenter, randomized controlled community trial designed, in part, to increase EMS use. The sample includes 860 consecutive noninstitutionalized patients (>30 years old) presenting with nontraumatic chest discomfort to hospital emergency departments in 4 Oregon/Washington communities. The association between prepayment systems and EMS use was analyzed using multivariable logistic regression. **RESULTS:** Overall EMS use was 52% (n=445). Among EMS users, 338 (75%) were subsequently admitted to the hospital and 110 (25%) were released from the ED. Prepayment was not associated with increased EMS use in the overall patient sample. However, patients residing in low-income census block groups (median annual income <\$30,000) were 2.6 times (95% confidence interval [CI] 1.4 to 4.8) more likely to use EMS when a prepayment system was available than when no system was present. No association was noted among higher-income block group residents. Among low-income block group residents lacking private insurance, prepayment systems were associated with 3.8 times (95% CI 1.2 to 13.4) greater EMS usage. **CONCLUSION:** Economic considerations may affect EMS system utilization among underinsured and low-income patients experiencing a cardiac event. Prepayment systems may increase EMS utilization among these groups.

PMID: 10828770 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Grant Support

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Tab 4

Circulation Study



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Circulation: Journal of the American Heart Association:Volume 102(2) 11 July 2000pp 173-178

Demographic, Belief, and Situational Factors Influencing the Decision to Utilize Emergency Medical Services Among Chest Pain Patients
[Clinical Investigation and Reports]

Brown, Adam L. BS; Mann, N. Clay PhD, MS; Daya, Mohamud MD, MS; Goldberg, Robert PhD; Meischke, Hendrika PhD; Taylor, Judy EDD; Smith, Kevin MA; Osganian, Stavroula MD; Cooper, Lawton MD; for the Rapid Early Action for Coronary Treatment (REACT) Study
 From the Department of Emergency Medicine, Oregon Health Sciences University, Portland (A.L.B., N.C.M., M.D.); the Intermountain Injury Control Research Center, University of Utah School of Medicine, Salt Lake City (N.C.M.); the Department of Cardiology, University of Massachusetts School of Medicine, Worcester (R.G.); the Department of Health Services, University of Washington, Seattle (H.M.); the Division of Health and Kinesiology, Mississippi University for Women, Columbus (J.T.); New England Research Institutes, Watertown, Mass (K.S., S.O.); and the National Heart, Lung, and Blood Institute, Bethesda, Md (L.C.).

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Article Outline

- Abstract
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 - Sample Characteristics
 - Measurements
 - Data Analysis
- Results
 - Survey Response Rates
 - Sample Characteristics
 - Intention to Use EMS and Actual EMS Use
 - Factors Associated With Actual EMS Use
 - Demographic Variables
 - Situational Factors
 - Belief Factors
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Abstract TOP

Background: Empirical evidence suggests that people value emergency medical services (EMS) but that they may not use the service when experiencing chest pain. This study evaluates this phenomenon and the factors associated with the failure to use EMS during a potential cardiac event.

Methods and Results: Baseline data were gathered from a randomized, controlled community trial (REACT) that was conducted in 20 US communities. A random-digit-dial survey documented bystander intentions to use EMS for cardiac symptoms in each community. An emergency department surveillance system documented the mode of transport among chest pain patients in each community and collected ancillary data, including situational factors surrounding the chest pain event. Logistic regression identified factors associated with failure to use EMS. A total of 962 community members responded to the phone survey, and data were collected on 875 chest pain emergency department arrivals. The mean proportion of community members intending to use EMS during a witnessed cardiac event was 89%; the mean proportion of patients observed using the service was 23%, with significant geographic differences (range, 10% to 48% use). After controlling for covariates, non-EMS users were more likely to try antacids/aspirin and call a doctor and were less likely to subscribe to (or participate in) an EMS prepayment plan.

Conclusions: The results of this study indicate that indecision, self-treatment, physician contact, and financial concerns may undermine a chest pain patient's intention to use EMS.

Every year, ≈1 250 000 persons in the United States experience an acute myocardial infarction (AMI). 1 Of these, >50% die before reaching a medical facility. A majority of these deaths occur within 1 hour of the onset of acute symptoms. 1,2 Thrombolytic therapy and other coronary reperfusion strategies are critical in altering the course of an AMI; they can reduce mortality by 25% if initiated within 1 hour of the onset of acute symptoms. 3 Unfortunately, only a fraction of patients who are eligible for thrombolytic therapy receive treatment; this is due, in large part, to the time delay between the onset of acute symptoms and arrival at the hospital. 4-10 Little is known about a patient's decision to use the emergency medical service (EMS) system during a chest pain event. EMS system use can be crucial to receiving prompt therapy for a possible AMI. Benefits include early diagnosis and treatment, emergency department (ED) forwarding of patient arrival, and the ability to address life-threatening complications, such as dysrhythmias, during transport. 11,12 However, studies indicate that only 50% to 60% of patients with chest pain use the EMS system. 13,14

Factors associated with EMS use among chest pain patients presenting to EDs were previously investigated in 2 concurrent studies in King County, Washington. 9,15 The first study focused on the association between EMS use and demographic, situational, and clinical factors; the authors of this study reported that greater education and being physically active at the time of symptom onset were related to decreased EMS system use. 9 The second study evaluated knowledge and belief issues surrounding EMS use and

found that chest pain patients fail to use EMS because they do not perceive their symptoms as being life-threatening, they did not think of calling 911, or they thought self-transport would be faster.¹⁵ An important limitation in the current literature is that all published studies evaluating EMS use among chest pain patients originate from one state with a tax-based, prepaid EMS system.^{9,13,16-18} Thus, geographic differences and the impact of cost concerns on EMS use remain uninvestigated. The objective of the current study was to determine if community members recognize the benefit of the EMS system in a cardiac emergency and to compare these findings to actual EMS usage. This study documented geographic variations in bystander intention to use EMS services among 20 diverse communities in the United States and compared these findings to actual EMS utilization rates among chest pain patients in each community. In addition, survey data provided by chest pain patients presenting to participating EDs were used to determine how demographic factors, situational attributes, and patient perceptions influence the decision to access the EMS system.

Methods [TOP](#)

Study Design [TOP](#)

The data for this study were drawn from a subgroup of all patients included in the REACT trial.¹⁹ REACT was a multicenter, randomized, controlled community trial designed to evaluate the effects of a community intervention on the time interval between onset of AMI symptoms to contact with hospital-based emergency medical care.^{19,20} In brief, 20 communities were pair-matched by demographic characteristics in 5 regions throughout the United States. One community of each pair was randomly assigned as the intervention site and the other served as a control site. Four months of baseline data were collected in all communities; this was followed by an 18-month, multifaceted education program in the intervention communities. Data used in this study were collected from all 20 communities during the baseline period (December 1995 through March 1996) before the intervention was initiated. In the REACT trial, patient consent requirements were reviewed and approved by all participating hospitals.

Sample Characteristics [TOP](#)

For this study, data were provided by 2 sample sources: a random-digit-dial (RDD) community telephone survey and a telephone follow-up survey of chest pain patients presenting to participating EDs and either released or admitted to the hospital with a possible or confirmed coronary event. A review of the medical records for patients participating in the telephone follow-up survey was also conducted.

The RDD community survey was administered among $n=60$ adults who were ≥ 18 years of age in each of the 20 communities. Telephone exchanges and a count of households with listed phone numbers were obtained for specific zip code areas designating the geographic boundaries of each community. Counts of listed households were supplemented with estimates of unlisted households. Disproportionate stratified sampling was used to increase the overall household rate. To adjust for the complex sample design, survey responses were weighted by the reciprocal of the probability of selection. For purposes of this study, only community respondents ≥ 30 years of age were included in the analysis to facilitate comparison with the follow-up survey.

The telephone follow-up survey included both an ED telephone survey and a hospital inpatient telephone survey. The ED follow-up telephone survey was conducted 7 to 13 weeks after the ED visit for patients presenting to EDs with chest pain but who were subsequently released without a hospital admission. The inpatient follow-up telephone survey, which was conducted 7 to 13 weeks after hospital discharge, was administered to admitted patients with a confirmed *International Classification of Diseases*²¹ discharge code of AMI (410) or acute cardiac ischemia (411). Disproportionate stratified random sampling was applied with sampling fractions adjusted for community size and patient response for both the ED survey and inpatient survey. Because patient sampling and survey response rates differed by community, responses were weighted by the number of eligible persons (released from the ED or admitted to the hospital) divided by the number of completed interviews.

The 2 follow-up telephone surveys were appended and merged with hospital medical chart data. This combined database, referred to as the patient follow-up survey, was limited to patients who were ≥ 30 years of age who presented to the hospital with non-traumatic chest pain.¹⁹ Patients were excluded if they were institutionalized or transferred from another hospital.

Additionally, each EMS and fire service agency in each REACT community was queried regarding the availability of a prepayment system. EMS prepayment systems indemnify citizens against the cost of EMS treatment and transport.¹³ Systems may be tax-based (publicly funded EMS) programs, which do not bill patients for services, or hybrid EMS programs that offer an optional prepayment service that, on the basis of an annual membership fee, indemnifies the patient against any charges not covered by health insurance.

Measurements [TOP](#)

Data contained in the RDD community telephone survey were used to identify community perceptions regarding the value of EMS services during a cardiac event. Specifically, the following question addressed bystander intentions during a coronary emergency: "if you thought someone was having a heart attack, what would you do?" Two optional responses, among many, were the following: (1) call 911 or an ambulance and (2) drive the person to the hospital. By comparing the community telephone survey findings with the EMS utilization data contained in the patient follow-up survey, we could compare community perceptions regarding intended bystander EMS usage with actions taken by community members experiencing a suspected coronary event.

The patient follow-up survey also contained questions assessing demographic, situational, and belief factors associated with the chest pain event that led patients to seek medical attention. Thus, we could also associate EMS use with patient demographics, patient appraisals of their medical condition, actions taken before seeking medical attention, and various beliefs and perceptions that facilitated or hindered quick action when seeking medical care.

Data Analysis [TOP](#)

Descriptive statistics were used to assess the similarity among the independent samples used in this study. In addition, an exploratory analysis was conducted with patient follow-up survey data to identify demographic, belief, and situational factors associated with the decision to activate (or not activate) the EMS system. Demographic factors and other variables associated with EMS activation in the exploratory analysis were included in a mixed-effects logistic regression model predicting the primary mode of transport (EMS versus other). Design effects associated with the REACT trial were incorporated into the model, in which "study pair" was nested within "geographic region," and "community" was nested within "pair" and "region" using the `glimmix` macro for the SAS system.²² Contributions to the model are reported as adjusted odds ratios. All analyses were conducted using SAS, version 6.12.

Results [TOP](#)

Survey Response Rates [TOP](#)

In the RDD community telephone survey, 36.9% of the randomly generated telephone numbers were for zip code-eligible households ($n=2067$). In addition, 55 calls to households resulted in no contact after 15 attempts. Among those contacted, 520 resulted in refusals, 62 were ineligible due to a language barrier (non-Spanish or English) or illness, and 136 provided incomplete interviews. The overall interview rate (completed interviews divided by potentially eligible households) was 62.5%. The total sample (≥ 30 years of age) included 962 respondents.

Response rates for the ED telephone survey and hospital inpatient telephone survey that were appended into the patient follow-up survey are reported separately. For the ED telephone survey, 426 people provided complete interviews out of the 1338 we attempted to contact. Because of a slow study start-up, 16.1% ($n=243$) of cases were excluded because the 13-week interview window had expired before consent could be obtained. An additional 300 people could not be contacted (eg, non-working phone number). Among those contacted ($n=795$), 46.4% of people refused the interview or were found to be ineligible during the interview process (ie, too ill, died, deaf, or currently in a nursing home). The overall response rate (number interviewed/number selected-number ineligible) was 34.4%.

For the inpatient survey, 449 of 1767 patients provided complete interviews. Among contacted patients ($n=1521$), 23.3% refused the interview and 47.1% of respondents were found to be ineligible during the interview. The overall response rate was 42.0%. The final sample sizes for the surveys were 962 and 675 for the RDD community survey and the patient follow-up survey, respectively.

Sample Characteristics [TOP](#)

Table 1 lists demographic variables for each of the survey samples. The inpatient survey respondents were older and more frequently reported their ethnicity as non-Hispanic white. A greater proportion of ED survey respondents were male. Participants in

the RDD community survey reported higher levels of education.

Table 1

Table 1. Summary of Sample Characteristics for the 3 Telephone Surveys. Values are mean±SD or n (%). Calculated values were based on weighted survey responses.

Intention to Use EMS and Actual EMS Use

Table 2 uses data from the RDD community telephone survey and the patient follow-up survey to compare bystander intent to use EMS with self-reported EMS use in each study community. On average, 69.4% of respondents in each study community indicated that they would call 911 if they witnessed a cardiac event. Very few (9.1%) would consider driving someone with a coronary emergency to the hospital.

Table 2

Table 2. Comparison of Bystander Intention to Use EMS and Self-Reported EMS Utilization Rates. Values are n (%), and percentages were based on weighted survey responses. *Variables associated with "driving to the hospital."

The patient follow-up survey provided EMS use information for chest pain patients presenting to participating EDs in each study community. Contrary to the bystander intentions expressed in the community survey, few actual chest pain victims used EMS (23.2%). Most victims were driven to the ED by someone else (60.4%) or drove themselves to the hospital (15.6%).

Factors Associated With Actual EMS Use

Demographic Variables

Using the patient follow-up survey data, demographic, situational, and belief factors were compared among EMS and non-EMS users. Several demographic variables were significantly associated with EMS use, including increasing age, white ethnicity, living alone, and presence of an ambulance service prepayment plan (Table 3).

Table 3

Table 3. Demographic, Situational, and Belief Factors Associated With Use of EMS Services. Values are mean±SD or n (%); calculated values were based on weighted survey responses. *Responses to questions in yes/no format.

Situational Factors

When considering actions taken by patients before calling 911 or going to the hospital, patients taking an antacid or aspirin were less likely to use EMS services. However, patients taking nitroglycerin were twice as likely to choose EMS transport. Regarding communications with others, requesting advice from family or friends before seeking medical attention was not associated with EMS use. However, patients communicating with a physician were less likely to use EMS transport to the hospital.

Belief Factors

The following question was significantly associated with EMS use (Table 3): "Did any factors or things cause you to go quickly (or wait to go) to the hospital?" Post hoc analyses of answer subcategories indicated that certainly that a patient's symptoms were caused by a "heart attack" was associated with an increased likelihood of choosing EMS transport, whereas patients who thought their symptoms would go away were significantly less likely to use EMS. Pain severity was not associated with EMS use.

Multivariate Analysis

Using a multivariable logistic regression model, we examined the associations of the following factors with EMS use: sex, ethnicity (white versus non-white), living alone, taking nitroglycerin, communicating with a physician, and being prompted to "go quickly" or "waiting" to go to the hospital. The variable identifying the presence of an EMS prepayment system was trichotomized to independently assess the effect of subscription services versus tax-based programs. The variables "took antacid" and "took aspirin" were combined to address the issue of a patient's self-medicating during a potential cardiac event. Age was excluded from the model because of its strong association with 2 other variables, "living alone" and "taking nitroglycerin." Separate models were analyzed using weighted and unweighted survey responses. Regression coefficients between the models were similar; thus, we report only the unweighted results.

The overall fit of the logistic model was good; it correctly classified 76% of all cases (Table 4). The variables "living alone," "taking nitroglycerin," and being prompted to "go quickly" to the hospital were strong predictors of EMS use. The presence of a tax-based, prepaid EMS system doubled the likelihood of using EMS compared with communities with no such system. Because the presence of an EMS prepayment plan was measured on the community level rather than on an individual level, including random effects associated with community appropriately inflated the confidence band associated with this variable. Thus, the 95% confidence interval associated with the prepayment variable included unity, so that statistical significance could not be attributed to a prepayment effect. This variable should be interpreted with some care. Being prompted to "wait before going," taking an antacid/aspirin, or consulting with a physician significantly decreased the likelihood that respondents would use EMS services.

Table 4

Table 4. Multivariable Logistic Analysis of Demographic, Situational, and Belief Factors That Affect EMS Use. Model was based on unweighted survey responses.

Discussion

Findings indicate that, in general, community members recognize the benefit of EMS transport when acting as a bystander to a "public" cardiac event but individuals personally experiencing symptoms of an AMI often choose not to use EMS services. One should note, however, that bystander intentions may favor an EMS response simply because respondents assumed they were unacquainted with the victim and his/her extenuating circumstances. Bystander decisions can be decisive if personal circumstances do not complicate bystander decision-making. Alternatively, actual patients may not have considered their symptoms to be indicative of a heart attack and were, therefore, less inclined to use EMS. It is unclear if similar findings would be present if intentions and actual events were documented for the same subject. Nevertheless, the magnitude of difference between bystander intentions and actions for self and the uniformity of this finding across geographic regions suggest that further investigation may prove useful in determining why the public would choose alternative transportation when faced with a cardiac emergency.

Situational factors that decreased EMS use during a cardiac event included taking an antacid/aspirin or communicating with a doctor before going to the hospital. However, patients taking nitroglycerin and patients believing their condition was heart-related were more likely to use EMS. These findings suggest that patients with familiar symptoms or experience with a heart condition are more likely to rely on EMS care as a valued form of medical care and transport. Additional published work has associated symptom familiarity with increased EMS use.

The fact that communication with a doctor decreased EMS use is problematic. It is unclear if doctors were acting as managed care "gatekeepers" to EMS care or if they reduced patient anxiety in a way that made EMS transport seem optional. There may be a variety of valid reasons why physicians who are familiar with individual patient histories may not dictate EMS use during phone contact with a concerned patient. However, our data indicate that 83% of patients who spoke with a physician and did not use EMS transport were subsequently admitted to the hospital.

Regarding belief factors, no correlation existed between seeking advice from peers or pain severity and EMS transport, which is contrary to other studies demonstrating a positive correlation between these factors and EMS use. [6,9,15](#) The perception among patients that their symptoms would go away decreased EMS use; this result is similar to findings reported elsewhere. [15](#) Several demographic variables were associated with EMS use. Living alone and increasing age (although unadjusted) enhanced EMS use. These results may reflect the fact that the elderly and those in single-person households have fewer transportation options. Other demographic variables, including ethnicity, sex, and education, were not related to EMS use, which contrasts with the results of previous studies. [6,8,9](#) However, one should note that previous research addressing this question originated in one state with a relatively high EMS use rate. [9,13,15-18](#) Thus, contradictions between previous findings and current results may represent geographic differences in patient population, EMS structure, etc.

Of interest is the fact that the presence of an EMS prepayment system increased EMS use. One other study documented a similar increase among residents of lower income census blocks. [13](#)

There are several important limitations to this study. A potential source of bias relates to the fact that ED and inpatient survey data were obtained retrospectively, 7 to 13 weeks after the cardiac event. The event or the extended period of time between the event and our interviews may have affected patient responses. At least one other study, however, has shown that acute health conditions requiring medical attention often represent "sentinel events" and may be accurately recalled for up to 8 months. [23](#) A second limitation involved the low response rate to the ED and inpatient surveys (<42%). Missing interviews may systematically favor an income group, degree of chronic illness, or some other unmeasured variable that limits the generalizability of our findings. The fact that our study sample included communities with diverse mean incomes and ethnic distributions may temper some potential bias due to sample selection. [19](#)

In summary, people seem to understand the prudent actions to take when faced with a public cardiac event, but they may be unwilling to take the appropriate steps when facing a personal cardiac emergency, perhaps due to symptom uncertainty or other behavioral factors. Variables representing demographic, situational, and self-efficacy (or belief) factors can inhibit or promote EMS use during a cardiac event. Subscription services and taxed-based systems that offset the cost of EMS services need to be analyzed further to determine if these programs represent a major factor among patients evaluating options for emergency transportation.

Acknowledgment [TOP](#)

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Keywords:
coronary disease; epidemiology; public policy

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Tab 5

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Health Care Insurance, Financial Concerns in Accessing Care, and Delays to Hospital Presentation in Acute Myocardial Infarction

Kim G. Smolderen; John A. Spertus; Brahmajee K. Nallamothu; et al.

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Health Care Insurance, Financial Concerns in Accessing Care, and Delays to Hospital Presentation in Acute Myocardial Infarction

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MORE THAN 45 MILLION INDIVIDUALS in the United States are without health care insurance¹ and another 25 million avoid care because of financial concerns.² Although insurance status has been shown to affect use of preventive screening and chronic care,^{3,4} little is known about how health care insurance status affects decisions to seek care during an emergency medical condition, such as an acute myocardial infarction (AMI). While current public policy measures, such as the US Emergency Medical Treatment and Active Labor Act, ensure the provision of care during emergency medical conditions irrespective of insurance coverage, there is no guarantee that patients with health care insurance can afford such treatment.⁵ As a result, patients may still delay seeking care for acute, life-threatening conditions because of the potential financial costs of care.

Acute myocardial infarction is a clinical condition for which delays in seeking care can have significant, adverse consequences on patients' outcomes.⁶⁻⁹ Acute myocardial infarction is common, affecting almost 1 million indi-

Context Little is known about how health insurance status affects decisions to seek care during emergency medical conditions such as acute myocardial infarction (AMI).

Objective To examine the association between lack of health insurance and financial concerns about accessing care among those with health insurance, and the time from symptom onset to hospital presentation (prehospital delays) during AMI.

Design, Setting, and Patients Multicenter, prospective study using a registry of 3721 AMI patients enrolled between April 11, 2005, and December 31, 2008, at 24 US hospitals. Health insurance status was categorized as insured without financial concerns, insured but have financial concerns about accessing care, and uninsured. Insurance information was determined from medical records while financial concerns among those with health insurance were determined from structured interviews.

Main Outcome Measure Prehospital delay times (≤ 2 hours, >2 -6 hours, or >6 hours), adjusted for demographic, clinical, and social and psychological factors using hierarchical ordinal regression models.

Results Of 3721 patients, 2294 were insured without financial concerns (61.7%), 689 were insured but had financial concerns about accessing care (18.5%), and 738 were uninsured (19.8%). Uninsured and insured patients with financial concerns were more likely to delay seeking care during AMI and had prehospital delays of greater than 6 hours among 48.6% of uninsured patients and 44.6% of insured patients with financial concerns compared with only 39.3% of insured patients without financial concerns. Prehospital delays of less than 2 hours during AMI occurred among 36.6% of those insured without financial concerns compared with 33.5% of insured patients with financial concerns and 27.5% of uninsured patients ($P < .001$). After adjusting for potential confounders, prehospital delays were associated with insured patients with financial concerns (adjusted odds ratio, 1.21 [95% confidence interval, 1.05-1.41]; $P = .01$) and with uninsured patients (adjusted odds ratio, 1.38 [95% confidence interval, 1.17-1.63]; $P < .001$).

Conclusion Lack of health insurance and financial concerns about accessing care among those with health insurance were each associated with delays in seeking emergency care for AMI.

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viduals in the United States each year,¹⁰ and the benefits of early treatment are clear and substantial.^{11,12} Prior studies of prehospital delays for AMI to date have focused primarily on nonmodifiable patient factors such as age, race, and sex, and education-based community interventions, which have not been shown to reduce prehospital delays.^{13,14} However, studies have not examined whether financial concerns from the patient's per-

spective about accessing medical care in those with health care insurance is associated with prehospital delays. Prior studies have defined patients with difficulty affording health care services or treatment despite having some form of health insurance as being underin-

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sured.¹⁵⁻¹⁷ Because prehospital delays are associated with higher AMI morbidity and mortality,⁶⁻⁹ demonstrating that patients with no insurance or those with insurance but reporting financial concerns about accessing care are at higher risk for prehospital delays is important because it would suggest that reducing financial barriers to care—perhaps through expansion of benefits or health insurance coverage—could reduce delays and improve outcomes.

To address this current gap in knowledge, we examined the association between lack of health insurance and financial concerns about accessing care among those with health insurance, and the time from symptom onset to hospital presentation (prehospital delays) during AMI in the Translational Research Investigating Underlying Disparities in Acute Myocardial Infarction Patients' Health Status (TRIUMPH) study. Given the growing number of uninsured and insured individuals in the United States with financial concerns about accessing care, an understanding of the effect of health care insurance, from a patient's perspective, on decisions to seek prompt medical attention for AMI may have important implications in the current debate on US health care reform.

METHODS

Participants and Study Design

Participants were consecutively enrolled between April 11, 2005, and December 31, 2008, from 24 US urban hospitals as part of the TRIUMPH study, which maintained a multisite, prospective AMI registry focused on specific gaps in knowledge about racial differences in AMI care. Participating hospitals within TRIUMPH were geographically diverse and included both academic and non-academic institutions (see eAppendix 1 at <http://www.jama.com> for a list of the participating study sites). Patients were eligible for inclusion if they were aged 18 years or older, had elevated cardiac enzymes (troponin I or creatinine kinase MB) within 24 hours of hospital admission and supporting evidence suggestive of AMI, including either prolonged ischemic symptoms or electrocardio-

graphic ST elevation changes. Exclusion criteria were patients who were incarcerated, refused participation, were unable to provide consent, did not speak English or Spanish, were transferred to the participating hospital from another facility more than 24 hours after initial admission, died, or were discharged prior to being contacted by the investigators.

Of the 6163 patients who met eligibility criteria, 1823 patients refused to participate in the study. Compared with patients who consented, patients who refused participation were more likely to be white (74% vs 67%; $P < .001$), older (mean [SD], 62 [14] vs 59 [12] years; $P < .001$), and have health insurance (85% vs 80%; $P < .001$). No difference in participation by sex was noted (refused participation: 34% female; agreed to participate: 33% female). Among the 4340 patients who provided consent and were enrolled in TRIUMPH, patients were excluded if they had missing information on insurance status ($n = 63$ [2%]), if prehospital delay time was not documented ($n = 534$ [12%]), or if delay time could not be determined because they did not experience ischemic symptoms prior to hospital arrival ($n = 22$ [0.5%]). The final study cohort consisted of 3721 patients.

Demographic, social, clinical, health status, and psychological data for patients were collected from chart abstraction and baseline interviews by trained staff within 24 to 72 hours of the index AMI admission. All participants provided written informed consent and the study protocol was approved by the institutional review board at each participating center.

Insurance Status

For this study, 3 categories of health insurance coverage were compared: no insurance, insurance with financial concerns about accessing care, and insurance without financial concerns. Health insurance information was determined from the medical records. In instances in which patients had more than 1 form of health insurance, the following hierarchy was used: (1) fee-for-service (preferred provider organization), (2) health maintenance organization, (3) Medicare, (4) Medicaid, (5) Veterans Administration, (6) other,

or (7) none. Using structured interviews, patients with health care insurance were further classified as having or not having financial concerns in accessing medical care. Using patient-centered questions that have been used to describe economic barriers to seeking care in patients with coronary artery disease,^{18,19} patients with health insurance were defined to have financial concerns in accessing care if, because of concerns about costs, they either (1) avoided care in the past year, (2) were non-adherent to medications in the past year, or (3) were currently having difficulty obtaining health care services.

Study Outcomes

The primary outcome was time to hospital presentation (prehospital delays), which was determined as the time from symptom onset to hospital presentation, and was obtained from the available medical records (including all emergency department and physician records). Time to hospital presentation was collected in discrete categories (≤ 1 hour, > 1 -2 hours, > 2 -4 hours, > 4 -6 hours, > 6 -12 hours, > 12 -24 hours, and > 24 hours). To enhance interpretability, the number of categories was reduced by merging them into commonly used and clinically relevant classification categories (≤ 2 hours, > 2 -6 hours, or > 6 hours).^{8,9,20} As a sensitivity analysis, time to hospital presentation also was examined using the original 7 time categories.

Demographic, Social, and Patient-Centered Variables

Demographic variables included age, sex, race, and residential area. Information on race was self-identified and collected during patient interviews. Residential area was determined from the 2000 US Census²¹ by examining the proportion of rural residents for each zip code and then patients were categorized as living in an urban ($< 10\%$ rural), mixed (10%-33% rural), or rural ($> 33\%$ rural) environment.

Additionally, during the index AMI hospitalization, detailed information on patients' social background, health status, and psychological factors—variables that have not been systematically examined in prior studies of prehospital

delays—also was obtained because these may confound the association between insurance status and prehospital delays. Social variables included marital status (single, widowed, or married), educational level (did not complete high school, high school graduate, college graduate, or graduate school degree), and perceived social support as measured by the 7-item Enhancing Recovery in Coronary Heart Disease Patients (ENRICH) Social Support Inventory. Based on prior work,²² low social support was defined as a score of 3 or greater on 2 or more items (excluding items on instrumental social support and marital status) and having a sum score of 18 or greater on the remaining 5 items.

Patients' baseline disease-specific health status (including angina frequency and angina stability over the 4 weeks preceding the index AMI) was assessed using the Seattle Angina Questionnaire (SAQ), a validated disease-specific quality-of-life instrument for coronary artery disease.²³ Scores for each SAQ domain range from 0 to 100, with higher scores indicating better functional status (ie, less frequent angina and more stable angina). Angina frequency was categorized into 3 clinically meaningful categories: daily to weekly angina (scores of 0-60), monthly angina (scores of 61-99), or no angina (score of 100).²⁴

The TRIUMPH registry also collected information on psychological variables, including depression and perceived stress. Depression was assessed with the 9-item Patient Health Questionnaire (PHQ).²⁵ Patients were classified as having no depression (PHQ scores of 0-4), mild depression (PHQ scores of 5-9), and moderate to severe depression (PHQ scores of 10-27).²⁶ Levels of perceived stress were measured with the 4-item Perceived Stress Scale,²⁷ with scores of 4 or greater categorized as representing high perceived stress.²⁸

Statistical Analysis

Unadjusted analyses evaluated baseline differences between the 3 insurance coverage groups (no insurance, insured with financial concerns, and insured without financial concerns) using analyses of vari-

ance for continuous variables and χ^2 tests for categorical variables. Normality was confirmed for continuous variables.

Because the primary outcome was ordinal, multivariable hierarchical cumulative-logit models were constructed to evaluate the independent relationship between health insurance and prehospital delay. This method adjusts for clustering at the site level and between-hospital effects and provides a single odds ratio (OR) of cumulative probabilities for the relationship between a predictor variable and each combination of higher risk vs lower risk outcome categories (eg, >6 hours vs ≤ 6 hours and >2 hours vs ≤ 2 hours).

Besides insurance status, all models included established predictors of prehospital delay (age, race, sex, diabetes mellitus, residential area [rural, mixed, or urban]),⁶ social factors (marital status, education level, and perceived social support), patients' health status (SAQ angina frequency and angina stability), psychological factors (depression and perceived stress), and other clinical variables (see eAppendix 2 at <http://www.jama.com> for definitions of clinical variables). Clinical variables included medical comorbidities (hypercholesterolemia, hypertension, peripheral arterial disease, prior AMI, prior percutaneous coronary intervention [PCI] or coronary artery bypass graft surgery, prior stroke, chronic kidney disease, chronic obstructive pulmonary disease, chronic heart failure), recent smoking, obesity (body mass index [calculated as weight in kilograms divided by height in meters squared] ≥ 30), family history of coronary artery disease, AMI characteristics and severity (ST elevation vs non-ST elevation AMI, left ventricular ejection fraction <40%, and Killip class [class I-II vs III-IV]), absence of chest pain in the prehospital setting, and time of day during hospital presentation (weekday, weeknight, or weekend admission).

At least 1 study covariate was missing in 12.3% of patients and the average number of missing data fields per patient was 0.23. Missing covariate data were assumed to be missing at random and imputed using IVEware software version 2.0 (University of Michigan Survey Research Cen-

ter, Institute for Social Research, Ann Arbor).²⁹ Rates of missing delay time were not significantly different across insurance status categories ($P = .65$) and potential bias attributable to those without prehospital delay times was addressed by creating a nonparsimonious model for the propensity of missing data on delay time.³⁰ The reciprocal of this probability was used to weight the associations among responders in the hierarchical cumulative-logit model. Results with and without weighting were comparable so only the weighted results are presented.

As a sensitivity analysis, while time to hospital presentation was evaluated as 3 clinically meaningful categories, the relationship between insurance status and the original 7 time categories described above also was examined. Additionally, each of the 3 questions used to define insured patients with financial concerns were systematically eliminated and the robustness of the relationship between insurance status and prehospital delays was examined. In all models, the validity of the ordinal relationship between insurance status and the dependent variable (ie, the assumption of common slopes for all cumulative logits) was verified.

As secondary analyses, whether prehospital delays among patients presenting with ST-elevation AMI were associated with lower rates of treatment with thrombolytic therapy or PCI also were examined using multivariable modified Poisson regression models. All statistical analyses were conducted using SAS software version 9.1.3 (SAS Institute Inc, Cary, North Carolina), IVEware, and R software version 2.6.0 (Free Software Foundation, Boston, Massachusetts). All tests for statistical significance were 2-tailed and were evaluated at a significance level of .05.

RESULTS

Of 3721 patients in the cohort, 2294 were insured without financial concerns (61.7%), 689 were insured but had financial concerns about accessing care (18.5%), and 738 were uninsured (19.8%). Among those with insurance reporting financial concerns, 82.8% avoided medical care, 55.6% avoided taking medications, and 12.8% had

Table 1. Baseline Characteristics by Health Care Insurance Status^a

	Health Care Insurance Status			P Value
	Insured Without Financial Concerns (n = 2294)	Insured With Financial Concerns (n = 689)	No Insurance (n = 738)	
Insurance payer				
PPO	1208 (52.7)	296 (43.0)	0	<.001
HMO	345 (15.0)	86 (12.5)	0	
Medicare	505 (22.0)	160 (23.2)	0	
Medicaid	127 (5.5)	78 (11.3)	0	
Veterans Administration	29 (1.3)	17 (2.5)	0	
Other	80 (3.5)	52 (7.5)	0	
Age, mean (SD), y	61.6 (12.5)	56.5 (11.3)	51.7 (8.6)	<.001
Female sex	739 (32.2)	265 (38.5)	215 (29.1)	<.001
Race ^b				
White	1706/2289 (74.5)	473/688 (68.8)	337/733 (46.0)	<.001
Black	473/2289 (20.7)	177/688 (25.7)	290/733 (39.6)	
Other	110/2289 (4.8)	38/688 (5.5)	106/733 (14.5)	
Residential area ^{b,c}				
Urban	1294/2294 (56.4)	386/688 (56.1)	521/736 (70.8)	<.001
Mixed	326/2294 (14.2)	106/688 (15.4)	76/736 (10.6)	
Rural	673/2294 (29.3)	196/688 (28.5)	136/736 (18.5)	
Marital status ^b				
Married	1367/2289 (59.7)	319/689 (46.3)	272/736 (37.0)	<.001
Single	634/2289 (27.7)	294/689 (42.7)	430/736 (58.4)	
Widowed	288/2289 (12.6)	76/689 (11.0)	34/736 (4.6)	
Education ^b				
<High school	365/2276 (16.0)	172/686 (25.1)	204/736 (27.7)	<.001
High school	1338/2276 (58.8)	411/686 (59.9)	439/736 (59.6)	
College	350/2276 (15.4)	73/686 (10.6)	73/736 (9.9)	
Graduate school	223/2276 (9.8)	30/686 (4.4)	20/736 (2.7)	
Depression assessed by PHQ ^b				
Not clinically depressed	1347/2162 (62.3)	264/637 (41.4)	389/693 (56.1)	<.001
Mild	509/2162 (23.5)	186/637 (29.2)	157/693 (22.7)	
Moderate	185/2162 (8.6)	106/637 (16.6)	84/693 (12.1)	
Moderately severe	87/2162 (4.0)	55/637 (8.6)	49/693 (7.1)	
Severe	34/2162 (1.6)	26/637 (4.1)	14/693 (2.0)	
Perceived stress level ^b				
Low	1185/2220 (53.4)	193/671 (28.8)	270/721 (37.4)	<.001
High	1035/2220 (46.6)	478/671 (71.2)	451/721 (62.6)	
Low social support ^b	259/2205 (11.7)	188/665 (28.3)	168/724 (23.2)	<.001
SAQ angina frequency ^b				
Daily or weekly	340/2287 (14.9)	131/688 (19.0)	142/735 (19.3)	<.001
Monthly	640/2287 (28.0)	220/688 (32.0)	221/735 (30.1)	
None	1307/2287 (57.1)	337/688 (49.0)	372/735 (50.6)	
SAQ angina stability, mean (SD)	45.7 (20.9)	42.7 (23.2)	42.9 (22.8)	<.001
Medical history				
Hypercholesterolemia	1230 (53.6)	344 (49.9)	262 (35.5)	<.001
Hypertension	1546 (67.4)	473 (68.7)	444 (60.2)	<.001
Peripheral arterial disease	129 (5.6)	28 (4.1)	11 (1.5)	<.001
Diabetes mellitus	656 (28.6)	246 (35.7)	205 (27.8)	<.001
Prior MI	479 (20.9)	173 (25.1)	116 (15.7)	<.001
Prior PCI or CABG surgery	625 (27.2)	220 (31.9)	122 (16.5)	<.001
Prior stroke	135 (5.9)	35 (5.1)	17 (2.3)	<.001
Chronic kidney disease	173 (7.5)	48 (7.0)	24 (3.3)	<.001
COPD	167 (7.3)	54 (7.8)	27 (3.7)	<.001
Chronic heart failure	161 (7.0)	76 (11.0)	49 (6.6)	.001
Smoked within last 30 d	1256 (54.8)	452 (65.6)	520 (70.5)	<.001
Obese (BMI ≥30) ^{b,d}	891/2220 (40.1)	311/671 (46.3)	271/657 (41.2)	.02
Family history of CAD ^b	1716/2271 (75.6)	522/679 (76.9)	505/732 (69.0)	<.001

(continued)

Table 1. Baseline Characteristics by Health Care Insurance Status^a (continued)

	Health Care Insurance Status			P Value
	Insured Without Financial Concerns (n = 2294)	Insured With Financial Concerns (n = 689)	No Insurance (n = 738)	
Clinical characteristics at MI admission				
ST-segment elevation MI	1040 (45.3)	307 (44.6)	329 (44.6)	.90
Ejection fraction <40% ^b	371/1978 (18.8)	115/586 (19.6)	153/615 (24.9)	.004
Killip class ^b				
I or II	2240/2271 (98.6)	672/682 (98.5)	715/733 (97.5)	.12
III or IV	31/2271 (1.4)	10/682 (1.5)	18/733 (2.5)	
No chest pain	233 (10.2)	50 (7.3)	37 (5.0)	<.001
Time of hospital arrival ^b				
Weekday	850/2292 (37.1)	253/688 (36.8)	284/738 (38.5)	.30
Weeknight	694/2292 (30.3)	226/688 (32.8)	241/738 (32.7)	
Weekend	748/2292 (32.6)	209/688 (30.4)	213/738 (28.9)	

Abbreviations: BMI, body mass index; CABG, coronary artery bypass grafting; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; HMO, health maintenance organization; MI, myocardial infarction; PCI, percutaneous coronary interventions; PHQ, Patient Health Questionnaire; PPO, preferred provider organization; SAG, Seattle Angina Questionnaire.

^aValues are expressed as number (percentage) unless otherwise indicated. Percentages may not equal 100 due to rounding.

^bValues are expressed as number/total (percentage).

^cResidential area was determined by the proportion of rural residents for each zip code from the 2000 US Census²¹ and categorized as urban (<10% rural), mixed (10%-33% rural), or rural (>33% rural).

^dCalculated as weight in kilograms divided by height in meters squared.

Table 2. Hospital Presentation Times by Health Care Insurance Status

	Health Care Insurance Status, No. (%)			P Value
	Insured Without Financial Concerns (n = 2294)	Insured With Financial Concerns (n = 689)	No Insurance (n = 738)	
Time to hospital presentation, h				
≤2	839 (36.6)	231 (33.5)	203 (27.5)	<.001
>2-6	554 (24.1)	151 (21.9)	176 (23.8)	
>6	901 (39.3)	307 (44.6)	359 (48.6)	

difficulty obtaining health care services due to costs; 44.1% met at least 2 of these criteria. Compared with insured patients without financial concerns, a greater proportion of insured patients with financial concerns received their insurance coverage from Medicaid (11.3% vs 5.5%) and a smaller proportion had fee-for-service plans (43.0% vs 52.7%) ($P < .001$ for difference across plans; TABLE 1).

There were substantial differences in baseline characteristics between the 3 insurance groups (Table 1). Compared with insured patients without financial concerns, uninsured patients and insured patients with financial concerns were more frequently younger, nonwhite, single, and current smokers, and less likely to have completed high school. These patients also had higher levels of perceived stress, more severe depressive symptoms, and more

frequent angina in the weeks preceding their index AMI. Furthermore, compared with patients with any insurance, uninsured patients were less likely to have had a prior AMI, PCI, or coronary artery bypass graft surgery; less likely to have coexisting hypercholesterolemia, hypertension, peripheral arterial disease, stroke, chronic kidney disease, and chronic obstructive pulmonary disease; and more likely to live in urban areas and present with a left ventricular ejection fraction of less than 40% during the index AMI.

Delays to Hospital Presentation

While 1273 patients presented promptly within 2 hours of symptom onset (34.2%), 1567 patients had delay times exceeding 6 hours (42.1%). There were important differences in time from symptom onset to hospital presentation during AMI by insurance status ($P < .001$;

TABLE 2). A greater proportion (36.6%) of insured patients without financial concerns arrived within 2 hours of symptom onset compared with 33.5% of insured patients with financial concerns and 27.5% of uninsured patients. Conversely, a smaller proportion (39.3%) of insured patients without financial concerns arrived more than 6 hours from symptom onset compared with 44.6% of insured patients with financial concerns and 48.6% of uninsured patients.

In analyses adjusted for study site only, compared with insured patients without financial concerns, insured patients with financial concerns (OR, 1.22; 95% confidence interval [CI], 1.06-1.40) and uninsured patients (OR, 1.30; 95% CI, 1.12-1.51) were more likely to delay seeking care during AMI. After adjustment for demographics, clinical comorbidities, AMI characteristics, baseline health status, social factors, and psychosocial variables, insured patients with financial concerns (adjusted OR, 1.21 [95% CI, 1.05-1.41]; $P = .01$) and uninsured patients (adjusted OR, 1.38 [95% CI, 1.17-1.63]; $P < .001$) continued to have longer delays to hospital presentation (TABLE 3). In sensitivity analyses, these estimates were similar when prehospital delay was examined as 7 distinct time categories (results not shown). Moreover, because patients with

managed care or public insurance plans also were more likely to have prehospital delays (see eAppendix 3 at <http://www.jama.com>), payor type was additionally adjusted for in the subgroup of patients with any insurance. The relationship with longer delay times remained similar for insured patients with financial concerns (adjusted OR, 1.23 [95% CI, 1.06-1.43]; $P = .008$) (see eAppendix 4 at <http://www.jama.com>). The relationship between insurance status and prehospital delays remained robust when each of the criterion questions used to define financial concerns was systematically eliminated among those with health insurance (see eAppendix 5 and eAppendix 6 at <http://www.jama.com>).

The final model results for prehospital delays are presented in the FIGURE. Consistent with prior studies,^{6,7,9} coexisting diabetes mellitus and weekday working hours were associated with an increased risk of prehospital delays, while a low Killip class, a prior history of AMI, or prior coronary revascularization were each associated with shorter delay times. However, previously described associations between age, female sex, and black race with prehospital delays^{6,7,9} were attenuated after adjustment for insurance status, social and psychological factors, and clinical characteristics. Notably, lower educational level, higher angina frequency in the weeks preceding the AMI, and depressive symptoms were associated with prehospital delays, whereas patients with higher perceived stress scores were more likely to present to the hospital within 2 hours of symptom onset (Figure).

Among patients presenting with ST-elevation AMI, those with prehospital delays exceeding 6 hours were less likely to receive primary reperfusion therapy with either thrombolytics or PCI (≤ 2 hours [reference group], 93.5%; $> 2-6$ hours, 92.5% [adjusted relative risk, 1.00; 95% CI, 0.97-1.04; $P = .88$]; > 6 hours, 83.9% [adjusted relative risk, 0.91; 95% CI, 0.85-0.96; $P = .002$]; TABLE 4).

COMMENT

In this prospective, multisite AMI registry study, we found that nearly 2 in ev-

Table 3. Association Between Insurance Status and Prehospital Delays^a

	Adjusted OR (95% CI)	P Value
Adjusted for study site		
Insured without financial concerns	1 [Reference]	
Insured with financial concerns	1.22 (1.06-1.40)	.005
No insurance	1.30 (1.12-1.51)	<.001
Adjusted for study site, age, sex, race, and residential area		
Insured without financial concerns	1 [Reference]	
Insured with financial concerns	1.27 (1.10-1.47)	<.001
No insurance	1.44 (1.23-1.68)	<.001
Adjusted for variables above plus comorbidities and clinical characteristics		
Insured without financial concerns	1 [Reference]	
Insured with financial concerns	1.25 (1.08-1.45)	.003
No insurance	1.41 (1.20-1.66)	<.001
Adjusted for variables above plus baseline CAD health status and social and psychological factors		
Insured without financial concerns	1 [Reference]	
Insured with financial concerns	1.21 (1.05-1.41)	.01
No insurance	1.38 (1.17-1.63)	<.001

Abbreviations: CAD, coronary artery disease; CI, confidence interval; OR, odds ratio.

^aThe OR reflects the cumulative probabilities of a hospital presentation time of greater than 6 hours vs 6 hours or less and greater than 2 hours vs 2 hours or less.

ery 5 patients were uninsured or were insured but reported financial concerns in accessing care. These patients, in turn, were more likely to delay seeking emergency care for an AMI, even after extensive adjustment for clinical, social, and psychological factors. These findings underscore important consequences from inadequate health care insurance coverage for the substantial number of individuals in the United States experiencing AMIs. The data also suggest that efforts to reduce prehospital delay times may have limited impact without first ensuring that access to health insurance is improved and financial concerns are addressed in patients who seek emergency care.

To our knowledge, this study is the first to demonstrate an association between the lack of health care insurance and prehospital delays during AMI. While this observation may seem intuitive, uninsured patients have not been found to have higher rates of prehospital delays in other studies.^{31,32} Our findings on insurance status may have differed from earlier studies because of a higher proportion of uninsured patients in this contemporary registry. Moreover, our study's use of patient interviews (rather than administrative data) allowed us to adjust for patients' health status and important social and psycho-

logical confounders to better clarify the independent association of insurance status with prehospital delays in AMI.

Perhaps most importantly, our study was also able to evaluate the impact of financial concerns in accessing medical care among those with insurance who had delays in seeking care. Through detailed, structured interviews, we identified individuals who reported financial burdens related to the use of health care services despite the presence of insurance. This process used a patient's perspective as a data source and is a significant advance from the use of coarse administrative data sources. Remarkably, more than half of all insured patients with financial concerns in our study had fee-for-service (preferred provider organization) or health maintenance organization insurance plans. Thus, having private health care insurance did not guarantee use of health care services that were essential for these patients, perhaps because they perceived them as unaffordable in the face of competing financial demands.

Several studies have described patients who forego routine medical treatment because of high cost burden as the underinsured.^{15-17,19,33} Such avoidance of care due to costs was associated with more angina, poorer health status, and higher rates of rehospitalization.^{19,33}

While underinsurance has not been well studied to date, this group represents a growing US patient population susceptible to disparities in care for emergent

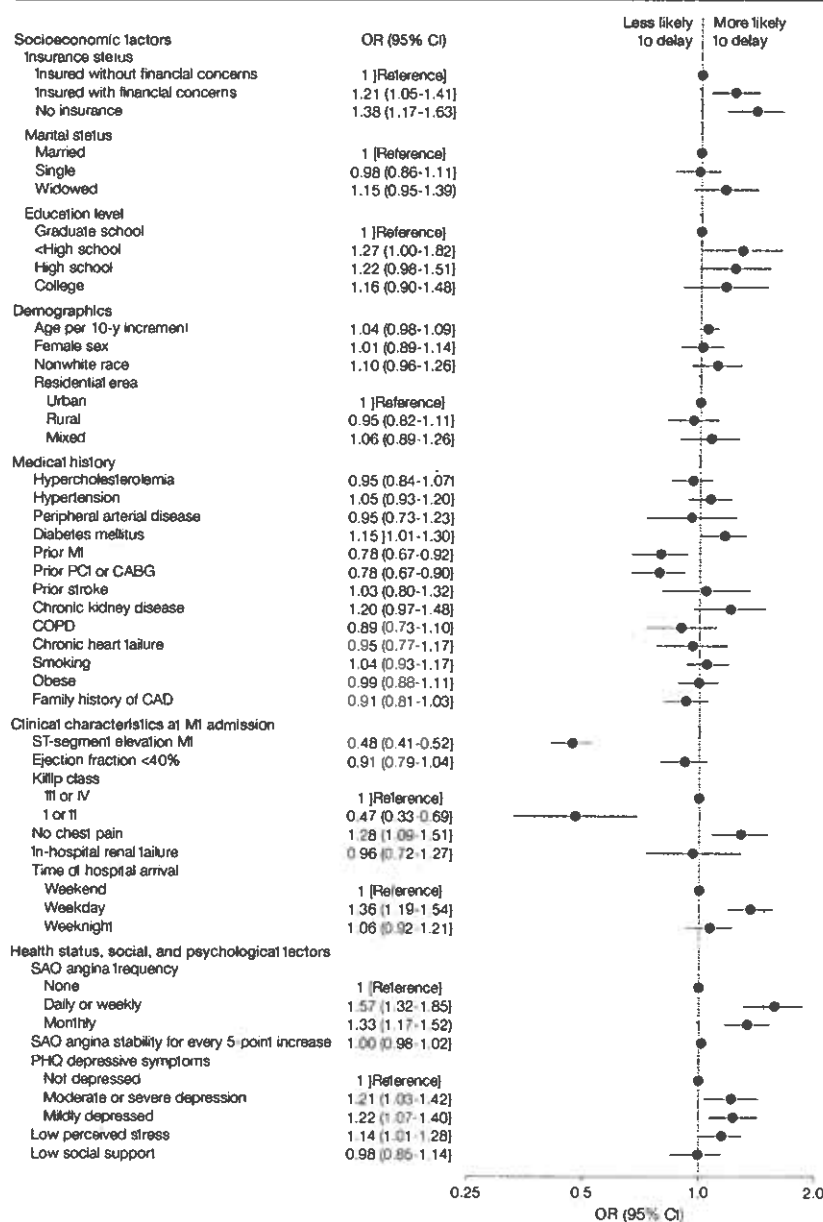
conditions like AMI. In this study, we were able to show an association between financial concerns in accessing care among insured patients and delays

to hospital presentation. However, we did not have sufficiently detailed information on patients' health insurance plans or preferences in decision making to determine whether perceived financial concerns were due to underinsurance or personal choices to forego broader insurance plans for lower premiums. To further inform health-policy decision making, additional studies are required to determine whether and which aspects of underinsurance—high out-of-pocket health care costs (copayments, coinsurance, deductibles), low lifetime health benefit ceilings, or lack of catastrophic or stop-loss provisions—may be responsible for perceived cost burden.

The finding that uninsured and insured patients with financial concerns about accessing medical treatment delay seeking care for potentially fatal but treatable medical conditions raises particular concerns because the majority of these families in the United States are classified as the working poor (often with 2 full-time workers in the household).^{1,4,34} The inability to address patients' concerns about costs of emergency care may, in part, explain the failure of prior intervention studies to reduce prehospital delay times during AMI.^{14,35} Moreover, because black and female patients are more likely to have financial concerns about accessing medical care despite having insurance coverage or be uninsured,¹⁹ addressing insurance coverage has the potential to reduce disparities in care for these vulnerable populations. In fact, we found that previously described associations between race, age, and sex—which are largely nonmodifiable demographic characteristics—with prehospital delays^{7,9} were substantially attenuated after adjustment for insurance status and other social, psychological, and clinical variables in this study.

It is likely that uninsured patients and insured patients with financial concerns about accessing care not only delayed seeking care for AMI, but also delayed care for other common medical conditions, such as stroke, pneumonia, and appendicitis.³⁶ As a result, interventions that broaden and ensure the

Figure. Adjusted Cumulative Probabilities for Covariates in Final Multivariable Model for Prehospital Delays



CABG indicates coronary artery bypass grafting; CAD, coronary artery disease; CI, confidence interval; COPD, chronic obstructive pulmonary disease; MI, myocardial infarction; OR, odds ratio; PCI, percutaneous coronary interventions; PHQ, Patient Health Questionnaire; SAQ, Seattle Angina Questionnaire. Error bars indicate 95% CIs. The ORs in the model represent cumulative probabilities between a predictor variable and each combination of higher risk vs lower risk outcome categories (eg, >6 hours vs ≤6 hours and >2 hours vs ≤2 hours).

Table 4. Effect of Time to Hospital Presentation on Subsequent Treatment in Patients With Acute ST-Elevation Myocardial Infarction^a

	PCI			Thrombolysis			PCI or Thrombolysis		
	No. (%)	RR (95% CI)	P Value	No. (%)	RR (95% CI)	P Value	No. (%)	RR (95% CI)	P Value
Prehospital delay, h									
≤2 (n = 749)	680 (90.8)	1 [Reference]		116 (15.5)	1 [Reference]		700 (93.5)	1 [Reference]	
>2-6 (n = 400)	356 (89.0)	1.00 (0.95-1.04)	.83	59 (14.8)	0.93 (0.63-1.36)	.69	370 (92.5)	1.00 (0.97-1.04)	.88
>6 (n = 527)	430 (81.6)	0.90 (0.84-0.95)	<.001	39 (7.4)	0.61 (0.48-0.77)	<.001	442 (83.9)	0.91 (0.85-0.96)	.002

Abbreviations: CI, confidence interval; PCI, percutaneous coronary interventions; RR, relative risk.

^aAdjusted for study site, age, sex, race, residential area, comorbidities, clinical characteristics, baseline coronary artery disease health status, and psychosocial factors.

affordability of health insurance coverage in the United States may reduce times to presentation for all emergent medical conditions. Such policy interventions are particularly important in light of a recent analysis that found that as many as 45 000 deaths annually in the United States are attributable to lack of health insurance alone.³⁷ These interventions would also address critics of US Emergency Medical Treatment and Active Labor Act, who argue that the legislation's unfunded mandate over the past 2 decades has imposed undue economic burdens on hospitals and paradoxically decreased the availability of emergency care services that the law was intended to promote.^{38,39}

Finally, our study also provides insights into other novel, and potentially modifiable, patient characteristics associated with prehospital delays during AMI that are distinct from previously described but often nonmodifiable predictors, such as age, sex, race, diabetes mellitus, and absence of chest pain. Specifically, we found an association between prehospital delays and lower educational level, more frequent recent angina, and depressive symptoms. In contrast, high levels of perceived stress were associated with shorter times to hospital presentation. Because large community-based education programs for AMI in the United States have not been previously successful in reducing times from symptom onset to hospital presentation,^{14,35,40} future educational public health efforts may need to address these specific predictors (in addition to insurance status) in developing new interventions.

Our study should be interpreted in the context of the following limitations. Delay times were not documented in the

medical records in 12% of patients and we did not have a mechanism to validate delay times reported in the medical records. However, documenting delay times by patients' recall has been widely used in other studies; rates of missing delay times in this study did not differ from prior studies.^{7,9} Importantly, rates of missing delay times were similar across insurance groups and were accounted for in our propensity-weighted analyses.

Second, while our models adjusted for an extensive number of demographic, social, clinical, and psychological factors, we did not have information on other factors that may have influenced prehospital delay times, including the use of emergency medical services for hospital transport, geographical distance from site of ischemic symptom occurrence to presenting hospital, and traffic patterns in urban and rural areas. Moreover, we did not have information on each patient's annual hospital expenditures, deductibles, medical copayments, and covered medical benefits to directly assess underinsurance. We also did not have information on annual household income and expenses to determine the extent to which perceived financial concerns about accessing care were due to limited disposable income rather than patients' choices to forego broad insurance coverage in exchange for lower premiums. Nevertheless, because the goal of insurance is to ensure access to care and treatment without having to bear the undue financial burden of obtaining care, our definition is consistent with the concept of underinsurance.

Third, while we found that uninsured patients and insured patients with financial concerns were associated with delays, nearly 2 in 5 insured patients without financial concerns also had de-

lays to hospital presentation exceeding 6 hours. This suggests that other patient factors accounted for prehospital delays; improving health insurance coverage, while important, is but one component in a comprehensive strategy to reduce times to hospital presentation during AMI. Fourth, our cohort was drawn from a sample of 24 urban hospitals throughout the United States and may not be generalizable to other sites or regions. Lastly, our study cohort does not include patients who never sought care or who died before hospitalization. Because we found that uninsured and insured patients with financial concerns had greater delays in seeking treatment, our estimates may represent conservative estimates of the association between insurance status and prehospital delay for AMI.

In conclusion, in this large multicenter registry, we found that uninsured patients and insured patients with financial concerns about accessing medical treatment were each more likely to delay seeking emergency care for AMI, a commonly occurring condition. Efforts to reduce prehospital delays for AMI and other emergency conditions may have limited benefit unless US health care insurance coverage is extended and improved.

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 Author Contributions: Dr Chan had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Online-Only Material: eAppendices 1-6 appear at <http://www.jama.com>.

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Tab 6

**Articles on New Brunswick
Ambulance Fees**

25 of 227 DOCUMENTS

The Daily Gleaner (New Brunswick)

February 6, 2010 Saturday

Fewer 9-1-1 calls made since fees introduced

BYLINE: ADAM BOWIE bowie.adam@dailygleaner.com

SECTION: NEWS;NEWS; Pg. A1

LENGTH: 471 words

The number of 9-1-1 calls for emergency assistance dropped by almost 7,000 since provincial ambulance fees were reinstated July 1.

Between July 1, 2008, and Dec. 31, 2008, Ambulance NB received 53,402 emergency calls. During the same period in 2009, the service received 46,509 calls - a decrease of 6,893.

Alan Stephen, CEO of Ambulance NB, said since it's only been seven months since the fees were introduced, he's hesitant to link them to the decrease. But he said he knows it's a likely factor.

"We could not categorically say it's not as a result of (the fees)," he said.

"But at the same time we're not seeing the corresponding increase at the emergency rooms, or we're not hearing about that from the (regional health authorities), that there's a corresponding increase of people arriving at the emergency room from a car, a truck, a bus, that should have come by ambulance."

He said he'd like to look at the numbers after a year of statistics are available.

"It's still too early (to tell)," he said.

"We're now trying to figure out from the data how we can determine that cause. Is it just a reduction based on this period of time? I don't know."

Tory Health critic Margaret-Ann Blaney said she's confident the costs associated with calling an ambulance have convinced many elderly residents to make their own way to the emergency room.

She said the government should be worried about these statistics.

"How many of those calls that were never made would have been very legitimate calls that people didn't make because they thought they couldn't afford it?" she said.

"They cannot answer that. It's a concern because had they implemented a (specialized) system - and certainly the technology is there - you could identify those people you suspect may be abusing the system. Instead, (the government) penalized everybody."

The numbers also showed that since ambulance fees returned, Ambulance NB has issued 24,414 bills for service.

Of that number, 500 fees were disputed - about two per cent of the call volume.

Stephen said many of the disputed fees involved paperwork problems.

"All but 50 got sorted out because of administrative errors, clarifications, that sort of thing," he said. "Fifty were sorted out through an evaluation process."

Fewer 9-1-1 calls made since fees introduced The Daily Gleaner (New Brunswick) February 6, 2010
Saturday

He said those who would like more information about their bill, or don't believe they should have to pay, should contact Ambulance NB through a number listed on the bill.

"Every call is researched. Every one is handled individually," he said.

"If there's a concern about the bill, call us. We have a whole organization in place to assist people."

Stephen said Ambulance NB is also working with the Department of Health on ways to improve the process and reduce the number of disputed fees.

"We're waiting for government to make the changes that will help us sort out these last (problems)," he said.

LOAD-DATE: February 6, 2010

LANGUAGE: ENGLISH

PUBLICATION-TYPE: Newspaper

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The Times & Transcript (New Brunswick)

February 6, 2010 Saturday

Scrap N.B. ambulance fees: health critic; Year-end figures show 6,893 fewer ambulance calls in first six months of fees

BYLINE: ALAN COCHRANE TIMES & TRANSCRIPT STAFF

SECTION: NEWS;NEWS; Pg. A1

LENGTH: 901 words

The number of ambulance calls in New Brunswick dropped dramatically in the six months after the provincial government reinstated the \$130 fee, and Tory Health Critic Margaret-Ann Blaney says that's because many people are afraid to call an ambulance because they can't afford it.

"The whole point of this was to reduce the abuse, but they didn't even know where the abuse was coming from in the first place," Blaney said yesterday. She believes there are many people who still need to go to the hospital but find other ways to get there because they simply can't afford to make the call. The Conservatives have said they would get rid of ambulance fees if they are elected to power on Sept. 27 and find ways to identify abusers of the system, so other people would not be penalized by an unfair tax grab.

Figures provided to the Times & Transcript by Ambulance New Brunswick yesterday showed the number of ambulance calls in New Brunswick dropped by almost 7,000 between July and January.

Ambulance New Brunswick president and CEO Alan Stephen said the total number of ambulance calls for July through December of 2008 was 53,402. The provincial government started charging ambulance fees of \$130 on July 1, 2009. For the period from July to the end of December in 2009, the total number of calls dropped to 46,509. That's 6,893 fewer calls in the first six months after the fees were introduced. Stephen could not say how many of the total number of calls were 911 calls and how many were transfers of patients between hospitals.

Stephen said the fees likely played a role in the lower number of calls but with only six months of data it's hard to tell exactly why.

"I think it's part of it, I don't think it's the whole part of it," Stephen said.

"The good news is there doesn't appear to be any corresponding increase of people arriving at emergency rooms in cars, trucks or buses that should have arrived by ambulance. That's good news and that was my commitment to continue to monitor that. We're not getting any of that. So my gut feel is that people are using the ambulance and no one is not using the ambulance service for fear of billing, so they are not taking their cars and that's the message we want to get out: never ever risk a loved one or yourself over billing. The dispute system is there, it's alive, it works. In the old days people used the ambulance (in a non-emergency situation) because it was free. Today you know you are going to get a bill so you get a taxi or a friend to drive you, but you should call if you really need it."

During second half of 2009, a total of 24,414 bills for ambulance service were sent out to people who used the service, which would account for revenues of roughly \$3 million in a six-month period. The 2010 provincial budget estimates that ambulance fees will generate revenues of about \$4 million a year.

Ambulance services were free under the previous Conservative government of Bernard Lord, but Shawn Graham's Liberals reinstated the fees, saying they were trying to stop abuse of the system and

the practice of using the ambulance as a taxi service to the hospital. Under the fee structure, residents of New Brunswick are billed \$130.60 when they call for an ambulance. Patients who are transferred between hospitals are not billed. Non-residents of New Brunswick are charged \$650 for ambulance service. People who are on social assistance are exempted from the billing. The fees are similar to those charged by other provinces.

Ambulance fees have been among the most controversial decisions made by Graham's Liberal government, with seniors' groups and the opposition claiming they are merely a tax grab.

Stephen said the majority of the 46,509 calls are real medical emergencies where the ambulance was dispatched as the result of a call to 911. And of the 24,414 bills that were sent out to people who were transported in the ambulance, about 500 went through the dispute process to appeal the bill. In most of those cases, Stephen said, there were clerical errors or missing information and the person should not have been billed in the first place. For example, a person who is on social assistance is exempt from paying but must show proper proof or they will be billed. In other cases, people who were transferred between hospitals were billed when they shouldn't have been.

"The reality is that most people don't think they are going to get sick and the last thing we want is a delay, so we move first and get the paperwork afterwards. People should know the drugs they are on, or a piece of paper on the fridge they can grab in case they need to go to the hospital. But we never jeopardize a person's transport. We will move and sort the billing out afterward."

People who use their cell phone to call 911 and report an emergency they have seen and are not involved in should know they are not on the hook for the ambulance bill.

However, people who are involved in an accident, and transported to hospital by ambulance, will be billed. If you are in an accident and someone else calls 911 and you refuse transport to the hospital, you will not be billed.

Stephen says the 911 system welcomes Good Samaritans with cell phones who report emergencies, but hopes they will check their information before making the call. He said there have been cases where callers weren't sure what road they were on and ambulances were dispatched to the wrong location.

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