

# Coordinating and Improving Care for Acute Coronary Syndromes in Montana and Northern Wyoming 2009 and 2012

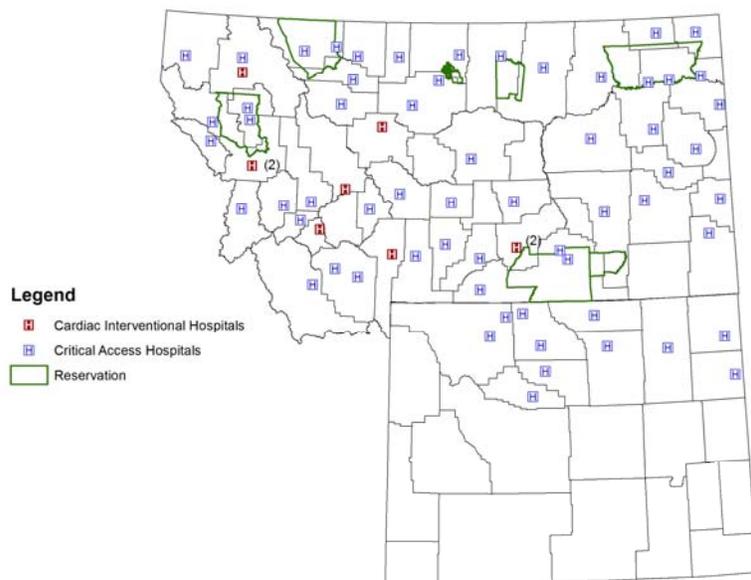


Figure 1. Location of Cardiac Interventional Hospitals and Non-Interventional Hospitals in Montana and northern Wyoming, 2013.

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## Introduction

Timely revascularization for acute coronary disease can be lifesaving but presents a challenge in the Rocky Mountain West where long distances separate rural areas from cardiac interventional hospitals. In order to help rural hospitals update their protocols for Acute Coronary Syndrome (ACS), the Montana Department of Public Health and Human Services Cardiovascular Health (CVH) Program organized a statewide Cardiac Workgroup. The Workgroup developed web-based resources, which included model order-sets and a “Hot Topics” educational section. Order-sets and educational materials were also made available in the form of a “tool kit” to all small hospitals including Critical Access Hospitals (CAHs). All non-interventional hospitals in Montana and northern Wyoming were surveyed in 2009 and again in 2012. This report compares the findings from both surveys documenting regional progress and continuing opportunity for improvement.

## Methods

In 2012, the Montana CVH Program mailed a survey to 50 Montana hospitals and 11 hospitals in northern Wyoming, which often refer to cardiac interventional facilities in south-central Montana.

When compared to the sample used for the 2009, the overall number of hospitals in Montana in 2012 did not change. However, the 2012 sample included a new CAH and omitted another that had been included in the 2009 assessment. Both the 2009 and 2012 assessments included 42 questions which covered the continuum of cardiac care - from the pre-hospital setting to the Emergency

Department (ED) and the referral to cardiac interventional facilities. Fax reminders were also sent to the ED/Nursing Directors who did not return a completed assessment within two weeks following the initial mailing.

## Results

There are a total of nine interventional and 61 non-interventional hospitals located in Montana

Table 1. Hospital Characteristics of non-interventional hospitals in Montana and northern Wyoming, 2009 and 2012.

	2009 N = 41	2012 N = 48
	% (n)	% (n)
CAH	95 (39)	94 (45)
	Mean (SD)	Mean (SD)
Number of inpatient beds	19.9 (8.9)	20.8 (13.2)
	Mean (Min.-Max.)	Mean (Min.-Max.)
Number of patients seen in the ED	3603 (100-18,000)	4258 (40-28,000)
	% (n)	% (n)
Laboratory Services available 24/7	100 (41)	100 (48)
Perform cardiac enzyme testing	100 (41)	98 (47)
Troponin	100 (41)	98 (46)
Total creatine kinase (CK)	90 (37)	96 (45)
Total CK-myoglobin (MB)	88 (36)	87 (41)
Cardiac enzyme tests available 24/7	100 (41)	100 (47)

Table 2. Pre-hospital care for patients with chest pain to rule-out acute-myocardial infarction (AMI), Montana and northern Wyoming, 2009 and 2012 .

	2009	2012
Percentage of patients with chest pain or rule-out myocardial infarction (MI) arriving by:	Mean (SD)	Mean (SD)
Ambulance or Emergency Medical Services (EMS)	51.0 (27.5)	47.0 (26.5)
Private vehicle	45.1 (26.7)	46.5 (25.5)
Other	10.2 (8.5)	7.5 (5.8)
	% (n)	% (n)
EMS staff always notifies ED in route	88 (36)	76 (36)
Pre-hospital thrombolysis used in community	7 (3)	6 (3)
Destination protocols bypass facility for AMI patients	0	10 (5)

and northern Wyoming (Figure 1). The response rate in 2012 (79%) was slightly larger than the response rate in 2009 (67%). Over 90% of the respondents classified their facility as a CAH with an average of 20 inpatient beds for both the 2009 and 2012 assessments (Table 1). Laboratory services were widely available at all responding hospitals 24/7 including some form of testing for cardiac enzymes.

Pre-hospital care profiles were similar in both years with about 50% of chest pain patients arriving by EMS and most services always notifying the ED in route (Table 2). In 2012, five hospitals reported that they had destination

protocols for patients with AMI, which allowed them to bypass the local facility and transport the cardiac patients immediately to an interventional hospital.

Challenges and barriers to obtaining, transmitting and interpreting electrocardiogram (ECG) in the pre-hospital setting remained in 2012, although more facilities reported that EMS could perform, transmit, and interpret an ECG in the pre-hospital setting compared to 2009 (Table 3).

Availability and use of chest pain protocols remained unchanged in both years, although the availability and use of protocols specific for

Table 3. Capabilities of EMS to perform and transmit pre-hospital ECG, Montana and northern Wyoming, 2009 and 2012.

	2009	2012
	% (n)	% (n)
Capacity to perform 12-lead ECG	19 (8)	38 (18)
ECG transmission ability (multiple answers)		
EMS personnel reads ECG and interpretation called (via phone or radio)	12 (5)	25 (12)
ECG read by computer algorithm and called by phone	0	6 (3)
ECG transmitted to hospital (includes Blue Tooth)	5 (2)	10 (5)
Unable to transmit ECG	68 (28)	63 (30)
Reasons unable to transmit ECG		
Geographic "dead spots"	25 (7)	33 (10)
Lack technological resources	32 (9)	57 (17)
Other reasons	25 (7)	33 (10)

AMI increased between 2009 and 2012 (Figure 2). The percentage of non-interventional facilities with AMI protocols that included procedures for ST-elevation myocardial infarction (STEMI) increased from 50% to 70% over the four-year period (Table 4). The average number of times thrombolytics were used to treat STEMI patients in the previous 12 months doubled from 3.6 times in 2009 to 7.6 times in 2012.

Over this four-year time period, responding non-interventional hospitals reported a one-minute decrease in the average time it took to speak with a cardiologist from 11.2 to 10.0 minutes. Approximately two-thirds of non-interventional facilities rated their emergency department, cardiac consultation by phone process, and their cardiac referral hospital transfer process as excellent in 2012 (Figure 3). Finally, interest in developing and updating AMI protocols was widespread in 2012 including training to recognize STEMI.

## Conclusions

The findings suggest that the systems of care for AMI, including STEMI, are improving across the region. Communication and referral systems for acute coronary syndrome have improved. The emergence of EMS bypass protocols and the increased use of thrombolytics and AMI protocols also indicate improvements in acute cardiac care. On March 31, 2014, the American Heart Association (AHA) announced that Montana will receive a Mission: Lifeline grant, which will help sustain efforts initiated by the Cardiac

Workgroup. Mission: Lifeline is an initiative sponsored by the AHA that focuses on improving the acute treatment of STEMI. The 3-year grant, funded by the Leona M. and Harry B. Helmsley Charitable Trust, will provide resources for facilities to update equipment and provide training to meet the challenges with obtaining, interpreting, and transmitting ECGs in the pre-hospital setting. During the summer of 2014, EMS and hospitals around the state will receive more information about opportunities to apply for grants under the Mission:Lifeline program.

Figure 2. Availability and use of chest pain and acute myocardial infarction (AMI) protocols, Montana and northern Wyoming, 2009 and 2012.

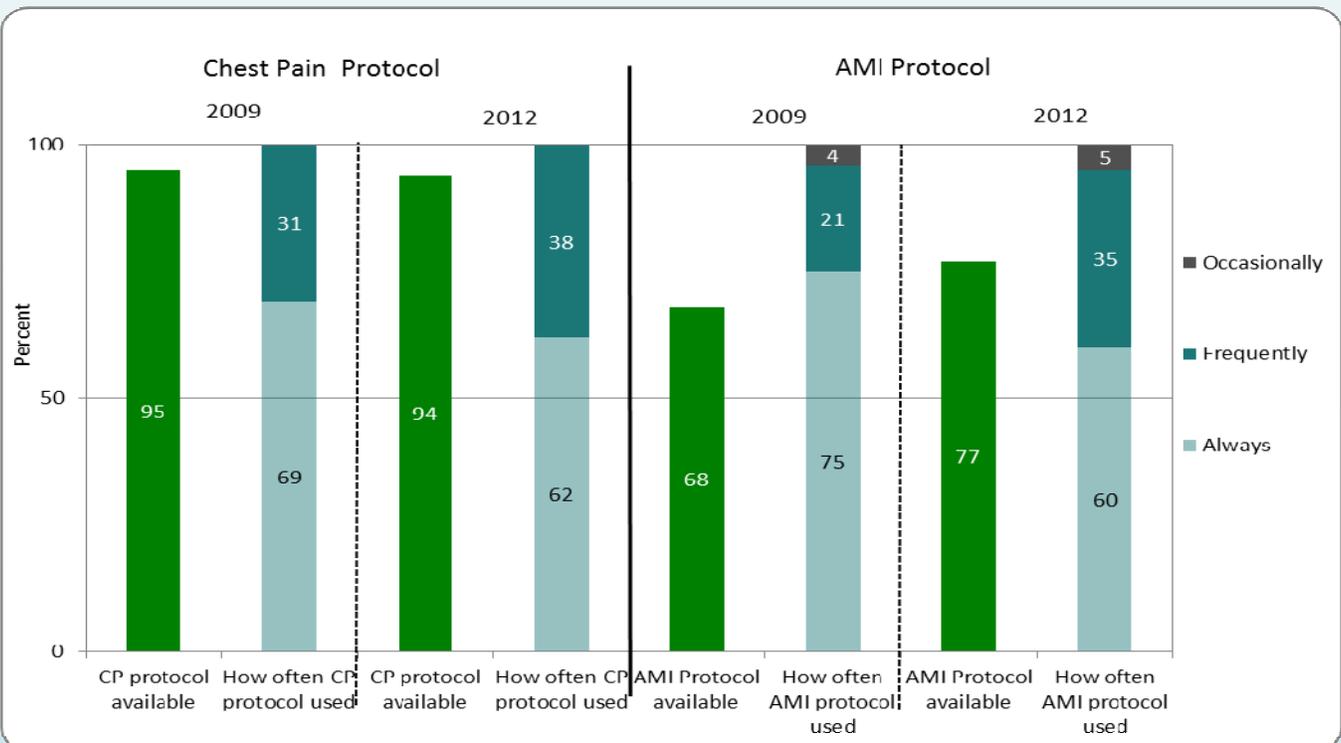
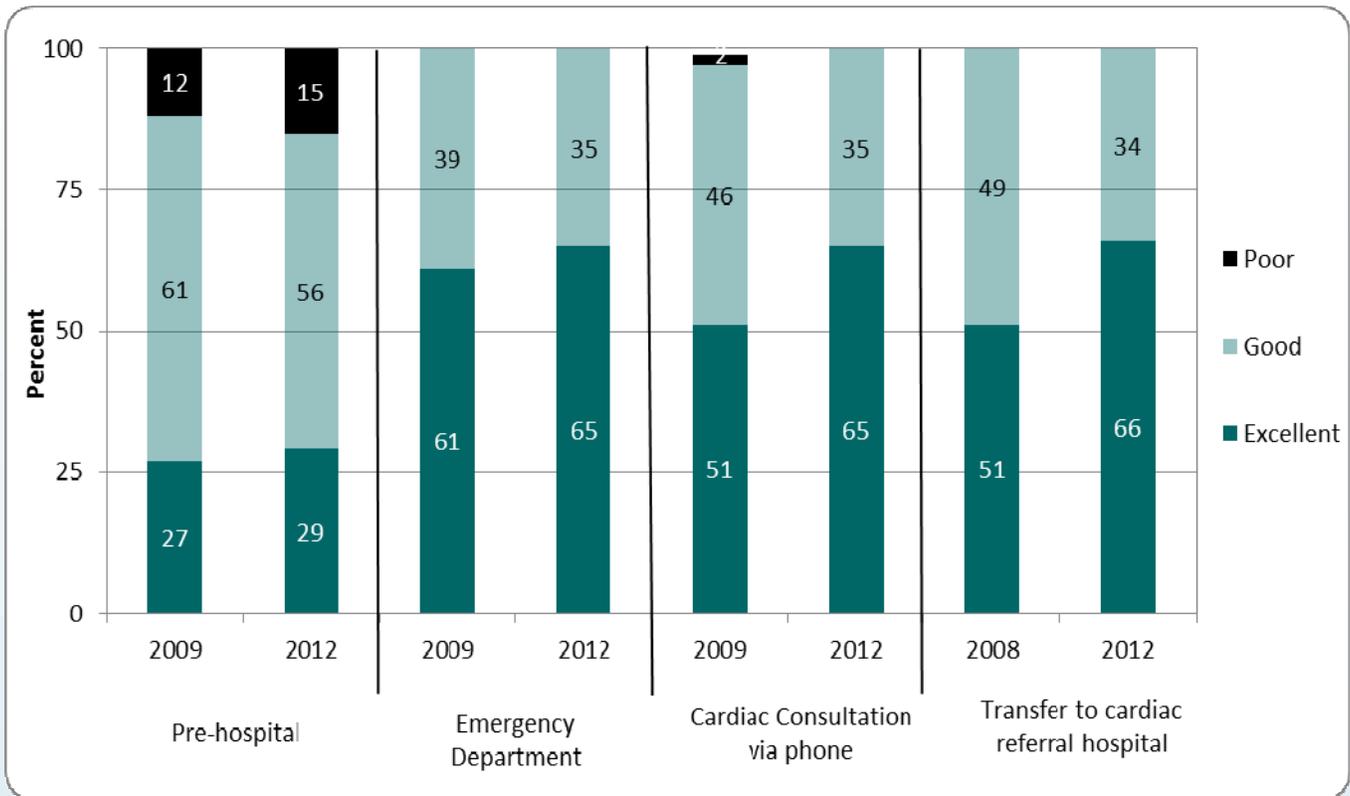


Table 4. Type and elements of emergency department cardiac protocols for non-cardiac interventional hospitals, Montana and northern Wyoming, 2009 and 2012.

	2009 N = 41	2012 N = 48
	% (n)	% (n)
Emergency Department Chest Pain protocol elements	95 (39)	94 (45)
Chest pain protocol elements include:		
History of symptom onset	92 (36)	89 (40)
ECG within 10 minutes of ED arrival	95 (37)	98 (44)
Morphine, oxygen, nitroglycerin, aspirin (MONA)	95 (37)	84 (38)
STEMI checklist & thrombolysis eligibility	77 (30)	73 (33)
Adjunctive therapeutic interventions	69 (27)	76 (34)
Troponin and other cardiac enzymes	97 (38)	98 (44)
Cardiac Risk Score	13 (5)	13 (6)
Emergency Department AMI protocol elements	68 (28)	77 (37)
AMI protocol elements include:		
Protocol includes procedures for STEMI	50 (14)	70 (26)
Elements specific for STEMI include:		
Assessment for thrombolytics	100 (14)	92 (24)
Contraindications for ECG within 10 minutes of ED arrival	43 (6)	35 (9)
Thrombolytic agent – Alteplase	29 (4)	42 (11)
Thrombolytic agent – Reteplase	29 (4)	8 (2)
Thrombolytic agent – Tenecteplase	43 (6)	42 (11)
Other thrombolytic agents	21 (3)	15 (4)
Observation and transfer to interventional facility	57 (8)	54 (14)

Figure 3. Rating of systems-of-care processes for acute cardiac care, Montana and northern Wyoming, 2009 and 2012.



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Montana Cardiac Workgroup for their work on this project.

### Reference

1. Mission: Lifeline® URL: [http://www.heart.org/HEARTORG/HealthcareResearch/MissionLifelineHomePage/Mission-Lifeline-Home-Page\\_UCM\\_305495\\_SubHomePage.jsp](http://www.heart.org/HEARTORG/HealthcareResearch/MissionLifelineHomePage/Mission-Lifeline-Home-Page_UCM_305495_SubHomePage.jsp).

## SAVE THE DATE

### Montana Association of Cardiovascular and Pulmonary Rehabilitation's Annual Conference

September 25 & 26, 2014

Summit in Kalispell

*For more information, please visit:*

[http://www.macvprmontana.com/  
annual-meeting](http://www.macvprmontana.com/annual-meeting).

### Kalispell Regional Medical Center 3rd Annual Updates in Cardio- pulmonary Disease

September 26 & 27, 2014

Lodge at Whitefish Lake

*For more information, please visit:*

[www.kalispellregional.org/events](http://www.kalispellregional.org/events)  
(website will be active after 6/1/2014).

### Cardiac and Pulmonary Rehabilitation News:

Medicare recently expanded cardiac rehabilitation benefits to patients with stable, chronic heart failure. Eligibility criteria include NYHA class II to IV, ejection fraction of  $\leq 35\%$  and being on optimal heart failure therapy for 6 weeks. Patients must also be 6 weeks post hospitalization. The policy went into effect in February 2014.

Medicaid has proposed changes in coverage for cardiac and pulmonary rehab services beginning July 1, 2014. The proposed changes will mirror Medicare's coverage for both services. Notable changes include extending cardiac rehab visits from 24 to 36. Notable changes for pulmonary rehab include removing the time constraints for patients completing 36 visits – previous coverage gave patients only 6 weeks to complete 36 visits.

The proposed changes are open for public comment and can be accessed at this link. [http://www.dphhs.mt.gov/  
legalresources/rules/index.shtml#Proposal](http://www.dphhs.mt.gov/legalresources/rules/index.shtml#Proposal).



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