PROGRESS AND OPPORTUNTIES TO IMPROVE CARDIAC CARE

KEY MESSAGES

- Cardiovascular disease (including heart disease and stroke) is still the #1 killer in Montana and the U.S.
- Decades-long survival gains have slipped.
- To impact heart disease mortality, Montana health systems and emergency medical services (EMS) need to continue coordinated efforts to improve pre-hospital care, acute care, primary and secondary prevention of CVD.

BACKGROUND

Mortality from cardiovascular (CVD) saw rapid improvements in previous decades. However, over the past few years, the decline in heart disease mortality has slowed considerably and has even increased in recent years (Figure 1), keeping CVD the leading cause of death in the US.[1] The COVID-19 pandemic contributed to increased cardiac mortality by the virus' direct impact on the cardiovascular system and interference with both primary and secondary healthcare access related to CVD.[2-3]

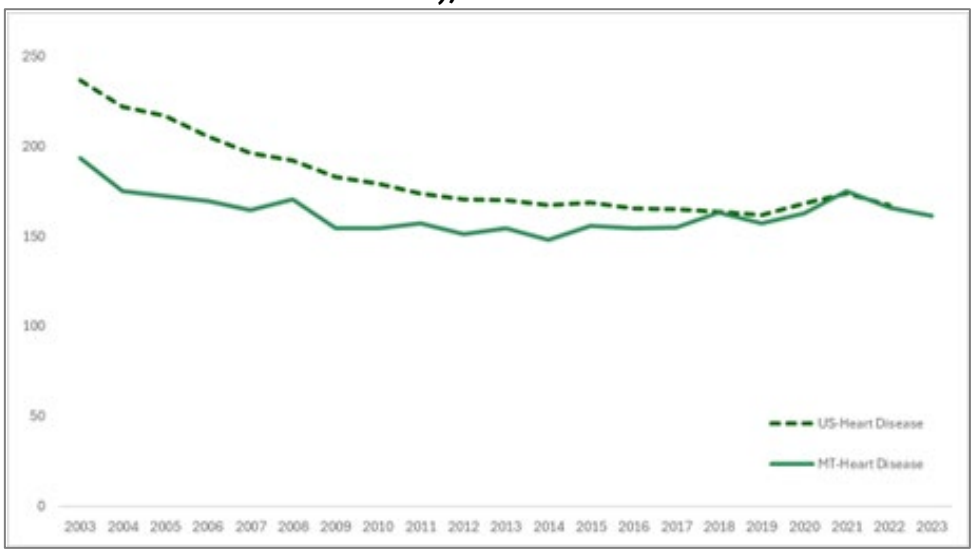
This report highlights the efforts taken by the Montana Department of Public Health and Human Services (DPHHS) and partners to address cardiac mortality in Montana.

PRE-HOSPITAL

The Emergency Medical Services and Trauma System (EMSTS) Section has implemented several interventions to improve first response care for individuals experiencing cardiovascular emergencies in Montana.

Law Enforcement Automated External Defibrillator (AED) Initiative: A grant from the Leona M. and Harry B. Helmsley Charitable Trust allowed EMSTS to purchase and distribute AEDs to virtually every law enforcement agency in the state. In total, 2397 devices were distributed to state, county, local, tribal, campus and federal partner law enforcement agencies as well as other first responders. An outcomes report prepared by the University of South Dakota showed patients who had a response from law enforcement had a 15 percent overall survival rate (26 percent survived if shocked with an AED) compared to the state's overall survival rate of 11 percent and national survival rate of nine percent.

Figure 1. **Age-adjusted Heart Disease Mortality (deaths/100,000 adults), 2003-2023.**



Cardiac Arrest Registry for Enhanced Survival (CARES): The EMSTS participates in the CDC-supported CARES data collection and quality monitoring initiative. CARES is a registry/quality improvement initiative that collects data from EMS services and hospitals to track and trend the survival rate from out-of-hospital cardiac arrest (OHCA). A benefit of the CARES Program is that EMSTS can provide EMS services with information on patient survival in their community. In 2021, one community noticed survival rates from OHCA were lower than they wanted, possibly due to low bystander cardiopulmonary resuscitation (CPR). After two years of intensive CPR training within the community, the community's OHCA survival rate almost doubled! Grant funding to allow continued participation in CARES has been secured for several more years.

Time Sensitive Illness and Injury Recognition (TSII) Program: In 2022, the EMSTS Section implemented a quality improvement initiative on the recognition, treatment, and transport of patients suffering from OHCA, stroke, and heart attack. EMS agencies are recognized on the DPHHS website if they: (1) implement evidence-based training of their staff for cardiovascular emergencies; (2) submit data related to TSII response and care to EMSTS; and (3) conduct chart reviews for patients suffering TSII.

To assist agencies in improving care, EMSTS publishes a TSII dashboard showing aggregate state and national data. EMSTS also creates and distributes quarterly reports for each service that describes their results alongside blinded and aggregate data for similar services, all services, and the nation's services. Agencies can compare their results to similar services in the state, all services in the state, and EMS services across the country.

Since 2022, EMSTS staff provide regional TSII trainings free of charge to EMS providers around the state. These trainings include the most recent advancements in care as well as opportunities to practice skills as a team. Training scenarios include heart attack (ST elevation myocardial infarction or STEMI), stroke, and cardiac arrest. After each training session, participants are shown how to appropriately document their care using the statewide EMS registry, the data source for the TSII dashboard mentioned earlier.

Priority Medical Dispatch Training: Because every Montana county has been declared an "ambulance desert" (meaning that most residents live more than 25 minutes from an ambulance station[4]), and because response times for volunteer EMS services are longer than paid EMS services, the 9-1-1 dispatcher plays a vital role in patient survival. By being able to recognize the signs and symptoms of CVD and provide step-by-step instructions to the caller, the 9-1-1 dispatcher improves outcomes. EMSTS continues to provide priority medical dispatch training free of charge for 9-1-1 centers around the state.

ACUTE CARE -- CARDIAC RECOGNITION PROGRAM

In 2011, the Cardiovascular Health (CVH) Program and partners launched the Cardiac Recognition Award (Figure 2). The Award was developed to recognize Critical Access Hospitals (CAHs) who have gone the extra mile in treating heart attack patients. In addition, the Award served as a guide

on how CAHs can develop and maintain a high-quality cardiovascular program. The Award requires that CAHs use evidence-based cardiac order-sets and policies, commit to yearly cardiac-related education, submit cardiac surveillance data to the CVH Program, and engage in QI activities with the overall goal of improving patient care. From the 2016-2017 to 2023 time-periods, the number of participating CAHs increased from 12 to 21 (with 10 CAHs participating in both time-periods) and the number of patients seen almost tripled (Figure 3a & 3b). The percentage of patients receiving an electrocardiogram within 10 minutes decreased slightly, while patients receiving aspirin on arrival increased, and those receiving thrombolytic therapy decreased slightly (Figure 3b) from 2016-2017 to 2023.

Figure 2. **Location of Cardiac Recognized Critical Access Hospitals, 2024**

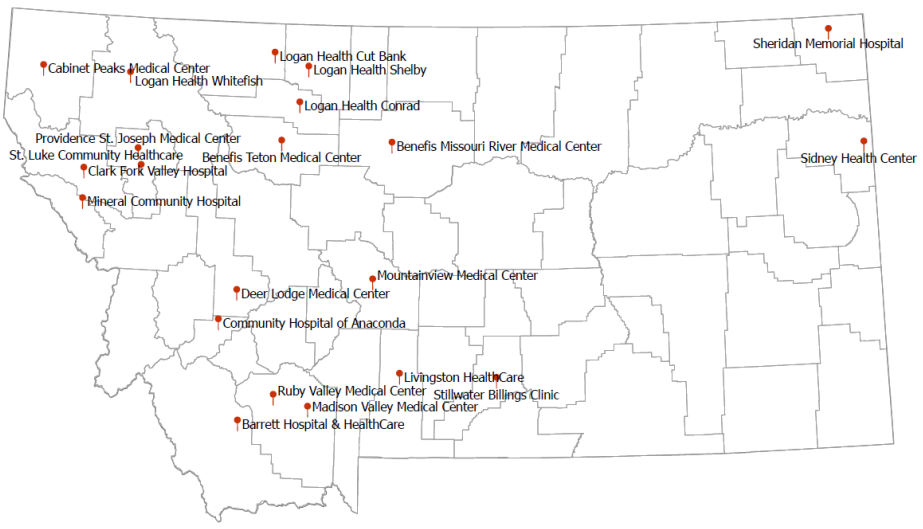


Figure 3a. **Number of participating CAHs, 2016-2017 and 2023.**

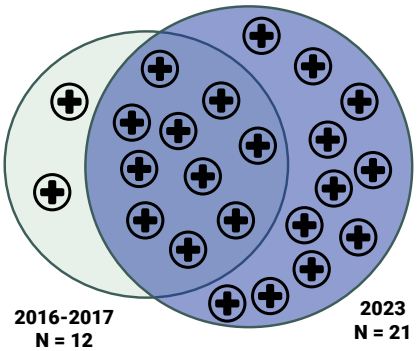
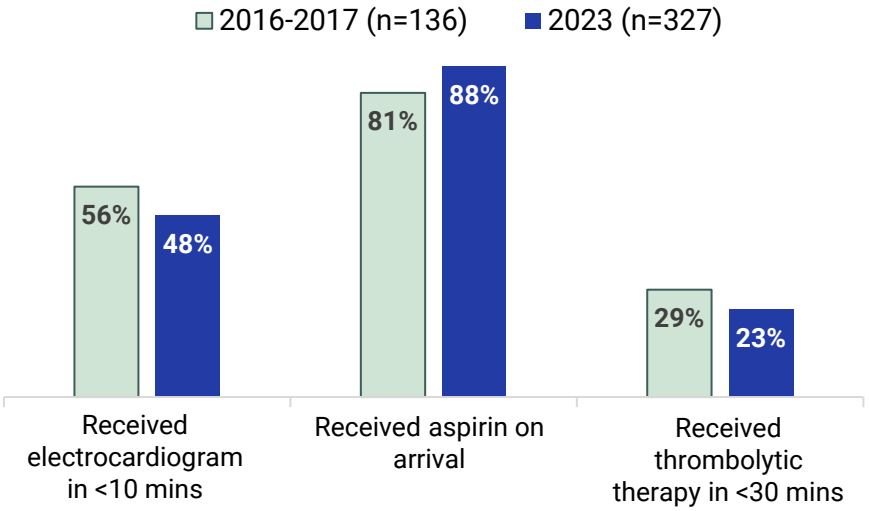


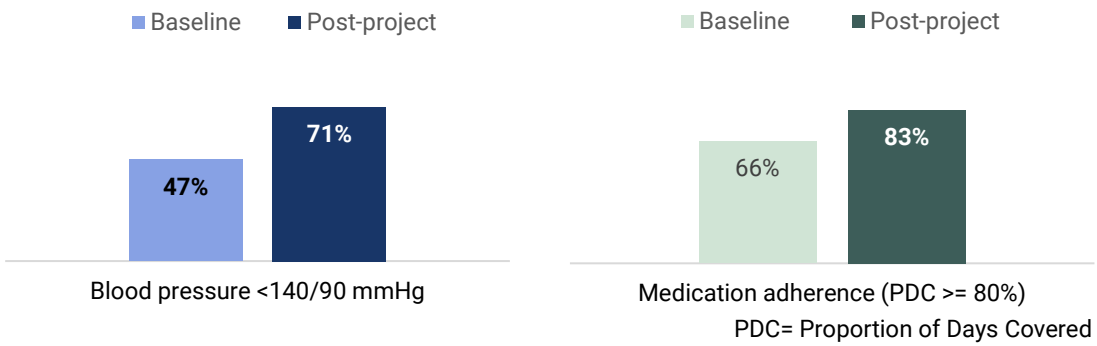
Figure 3b. **Percentage of patients seen at Cardiac Recognized Critical Access Hospitals receiving select treatments, 2019 and 2023.**



PRIMARY PREVENTION – BLOOD PRESSURE CONTROL

In 2023, almost 43 percent of Montana adults 55-64 years and 53 percent of adults 65 and older have been told they have high blood pressure (BP) or hypertension (HTN).[5] High BP is a powerful risk factor for CVD, which includes heart attack. The CVH Program works closely with pharmacies across the state to focus on improving BP control rates in their patient population. These projects include improving BP and cholesterol medication adherence, addressing social needs of pharmacy patients, and using BP cuffs to monitor levels at home. Clinics and pharmacies worked jointly on one-year medication therapy management projects that showed improvements in BP control (less than 140/90 mmHg) and BP medication adherence (proportion of days covered greater than or equal to 80 percent) from baseline to post project (Figure 4). Since 2013, the CVH Program has worked with 57 pharmacies in community and clinical settings.

Figure 4. **Changes in Clinical Measures, Baseline to Post-project among Medication Therapy Management Project Participants.**



SECONDARY PREVENTION – CARDIAC REHABILITATION

Cardiac rehabilitation is a hospital-based exercise and education program for patients who have had a cardiac event or have undergone a cardiac procedure. These programs have been shown to reduce mortality by 20 percent and hospital readmissions by 28 percent.[6] However, cardiac rehab is vastly underutilized with only about a fifth of eligible patients attending.[7] There are numerous reasons for low participation rates, which include issues such as work or family responsibilities, no local access to a cardiac rehab program, and transportation issues. To address these barriers, the CVH Program provided grant funding to five cardiac rehab programs to offer hybrid cardiac rehabilitation, a combination of the traditional center-based cardiac rehab and home-based cardiac rehab. With the hybrid model, patients complete most of their exercise independently and attend center-based cardiac rehab once a month. Education offerings are done in-person at the center-based visits and also via on-line content.

We compared outcomes data of the hybrid cardiac rehab patients to those in the center-based cardiac rehab program to evaluate its impact. Over the course of the five-year project, 215 completed the hybrid program. Both groups had excellent BP control rates (80 percent center-based vs 75 percent hybrid) and similar tobacco cessation referral rates (83 percent center-based vs 77 percent hybrid). Both groups increased six-minute walk distance by over 300 feet pre to post program.

NEXT STEPS

- Continue to sponsor an annual conference focused on Time Critical Emergencies to improve patient outcomes.
- Provide training and materials on the 2025 version of the Criteria Based Dispatch Guide for Emergency Medical Dispatching to participating Dispatch Agencies.
- Provide EMS Leadership Workshops to mentor and support QI development for strengthening EMS agencies and improving patient outcomes.
- Continue to promote the Cardiac Recognition Award and provide feedback reports to aid in quality improvement initiatives.
- Provide technical support to cardiac rehab programs interested in offering hybrid cardiac rehab.
- Continue to provide benchmarking feedback to cardiac rehab programs to improve patient care.

Center-based patients did hold a slight, non-significant advantage in improvements in depression screening scores pre to post (77 percent center-based vs. 69 percent hybrid). Hybrid cardiac rehab offered a good alternative for patients who are unable to attend center-based cardiac rehab, increasing the reach of this valuable service.

RESOURCES

1. The Heart Rescue Project.
2. The American Heart Association.
3. The Resuscitation Academy.
4. Montana Department of Public Health and Human Services. Montana DPHHS ArcGIS Cardiovascular Story Map.
5. Montana Association of Cardiovascular and Pulmonary Rehabilitation.

REFERENCES

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