Dane County EMS
High-Performance CPR Summary
June 2020 - December 2025

What is High-Performance CPR?

High-Performance CPR (HPCPR) is a practice of resuscitation focused on maximizing time spent performing chest compressions on patients in sudden cardiac arrest (SCA). The practice follows evidence-based and measurable performance metrics shown to improve neurologically intact survival from SCA. For more information on HPCPR, take a look at a blog explaining the history of high-performance CPR written by our partners at the Resuscitation Academy in King County, Washington.

Project Background

It has long been the goal of Dane County EMS (DCEMS) to be a national leader in cardiac arrest resuscitation and survival. In 2020, our system implemented the cardiac arrest summary initiative to provide detailed feedback to crews for cardiac arrest incidents based on four quality metrics identified for maximizing neurologic outcomes. **1,824** cardiac arrest summaries have been sent to date, which will serve as the sample for this report.

Surviving an out-of-hospital cardiac arrest isn't an accident. It's the result of an impossible number of challenges overcome by the remarkable efforts of everyday people. Thank you to all our public safety and healthcare partners for your commitment to excellence.

The Four Key Metrics

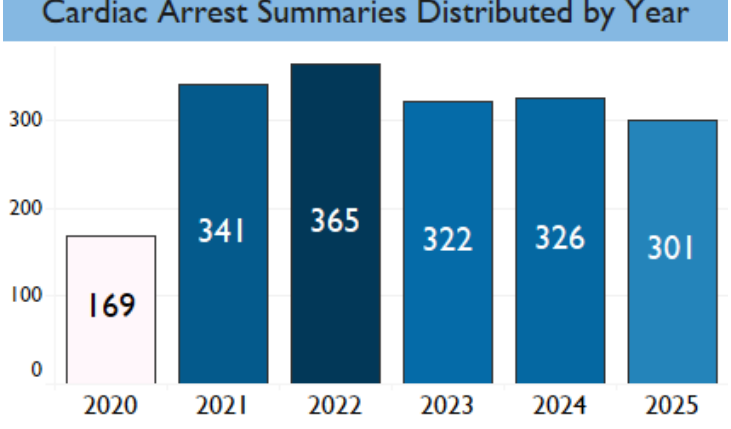
While no single metric is necessarily more important than another, it is the cumulative benefit of hitting all of these metrics that give each patient the best chance at survival with good neurological outcomes. The metrics currently tracked by DCEMS are:

- Zero pauses in compressions longer than 10 seconds
- Chest Compression Fraction ≥ 90%
- A manual chest compression rate between 100-120
- Post-ROSC 12 Lead EKG Capture

Two universal methods to improve chances of hitting all four metrics are to: 1) Designate a "code commander" responsible for the resuscitation as a whole, and 2) Assign roles prior to arriving on scene.

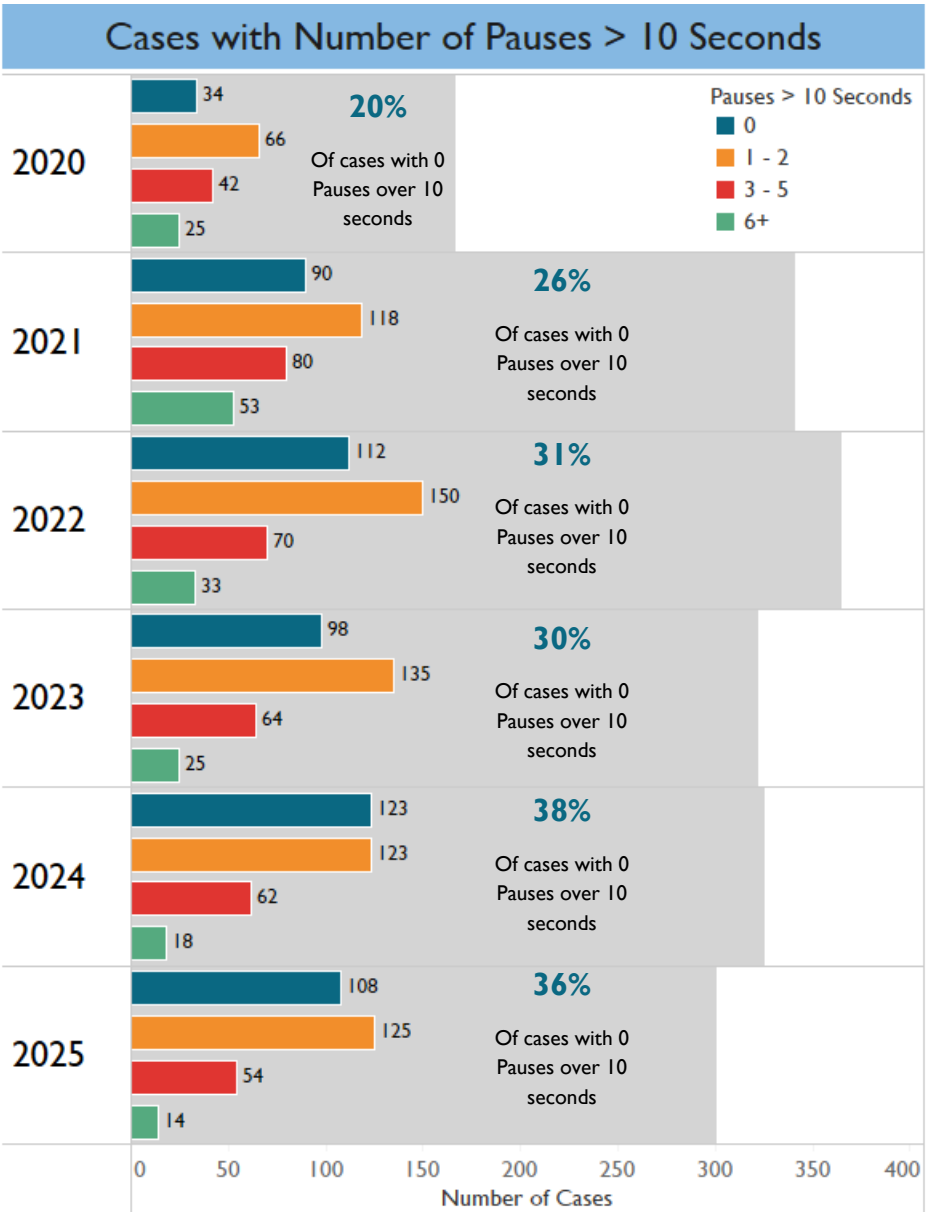
Data Capture

For 2025, 17 of the 18 EMS agencies in Dane County submitted data with the ability to review, edit, and disseminate detailed feedback on cardiac arrest resuscitation performance. Our capture rate for reviewable cardiac arrest cases was 81% for 2025. Given an initial barrier to review cases from LifePak 35s in early 2025, this capture rate should increase, as evidenced by the 96% capture rate so far in 2026.



Metric 1: Prolonged Pauses (>10 Seconds)

Coronary artery perfusion is directly associated with continuous CPR, and it takes roughly one minute of compressions to build up effective pressure. Any pause results in longer times of inadequate perfusion. This metric seeks to minimize the impact of pauses for ventilation during 30:2 resuscitation and rhythm/pulse checks. There are situations where a prolonged interruption may be difficult to avoid (i.e. patient movement, safety concerns, etc.), and its important to remember your documentation can give context to these pauses. Moving forward, the reason for each prolonged pause is being categorized and tracked for long-term analysis of opportunities to reduce these interruptions. One of our greatest opportunities to reduce prolonged pauses is the efficient and rapid evaluation of PEA rhythm checks. As a county, we have maintained improvement in this metric. **Our goal for 2026 is to see 40% of cases with zero prolonged interruptions.**



How do we achieve our goal?

1. Palpate a femoral pulse during compressions 15-20 seconds before stopping for a rhythm check. If a pulse can be associated with compressions, hold that spot during your rhythm check to help quickly determine if a cardiac rhythm is producing a pulse. If a pulse cannot be rapidly associated with the cardiac rhythm, resume compressions.
2. Paramedic providers should charge the monitor before every rhythm check. This helps reduce pre-shock pauses should the patient present in a shockable rhythm.
3. Non-paramedic providers should familiarize themselves with their cardiac monitor's AED mode and act on the monitor's prompts quickly.
4. Practice mechanical CPR application.

Metric 2: Chest Compression Fraction (CCF)

CCF is the percent of time chest compressions are happening during a resuscitation. An increased CCF is independently associated with improved survival. Our goal is for EMS providers to perform chest compressions for at least 90% of the time spent on resuscitation. There are situations where a CCF of 90% becomes difficult to achieve. For example, a patient with a return of spontaneous circulation (ROSC) after a single defibrillation and brief time on the chest will likely not meet the goal. These situations are infrequent, but are important to identify to let crews know while a metric may not have been met, the outcome for the patient is the driving factor behind this process and should therefore be recognized.

Cases Meeting CCF Goal

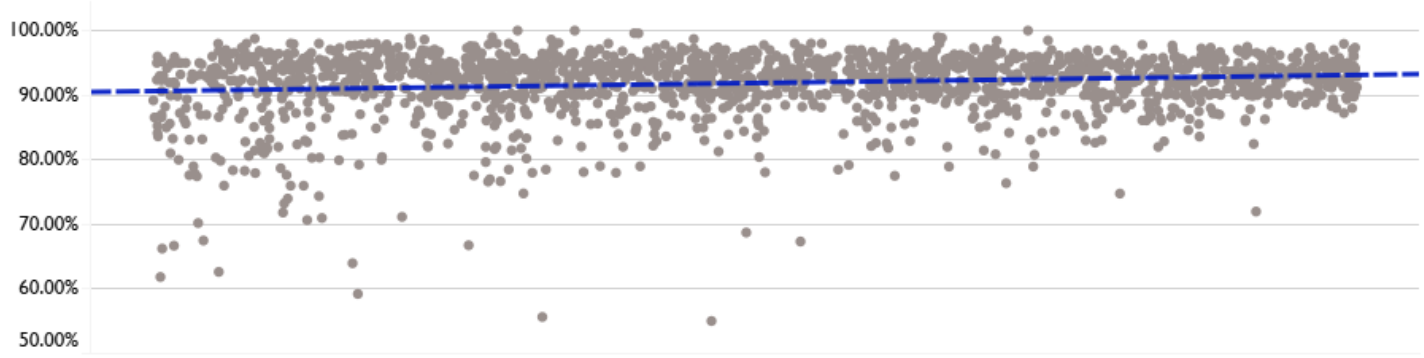
The associated graph shows the percent of cases each year where the CCF met the goal of 90% or higher. There has been a sustained and marked improvement of cases meeting this metric. **Continuing into 2026, our goal is to maintain 80% of cardiac arrest cases with a CCF of 90% or higher.**

Percent of Cases in Goal CCF
The goal chest compression fraction is 90%.

	2020	2021	2022	2023	2024	2025
Above 90%	59.8%	77.1%	76.7%	83.2%	82.8%	81.7%
Below 90%	40.2%	22.9%	23.3%	16.8%	17.2%	18.3%

Chest Compression Fraction Over Time

The trend in chest compression fraction continues to increase.

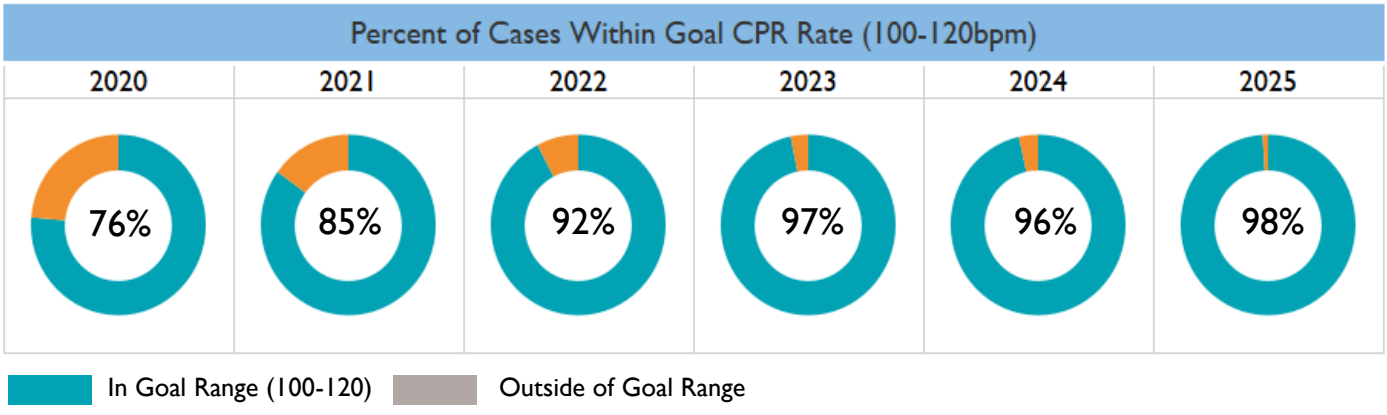


How do we achieve our goal?

The three most common opportunities to increase CCF are to: 1) Shorten pauses for ventilation during 30:2. Deliver your ventilations quickly with a good seal. After three seconds, resume compressions. 2) Reduce time taken to evaluate PEA rhythms. And 3) ensure paramedic providers charge the monitor before every rhythm check to help reduce pre-shock pauses should the patient present in a shockable rhythm.

Metric 3: Chest Compression Rate

Excess rate in chest compressions has been shown to decrease depth and consistency, which is essential in high-quality CPR. 98% of cardiac arrest summaries had an average chest compression rate between 100-120 in 2025. **Our goal for 2026 is to maintain 98% of cases with manual compressions with an average rate of 100-120 compressions per minute.**

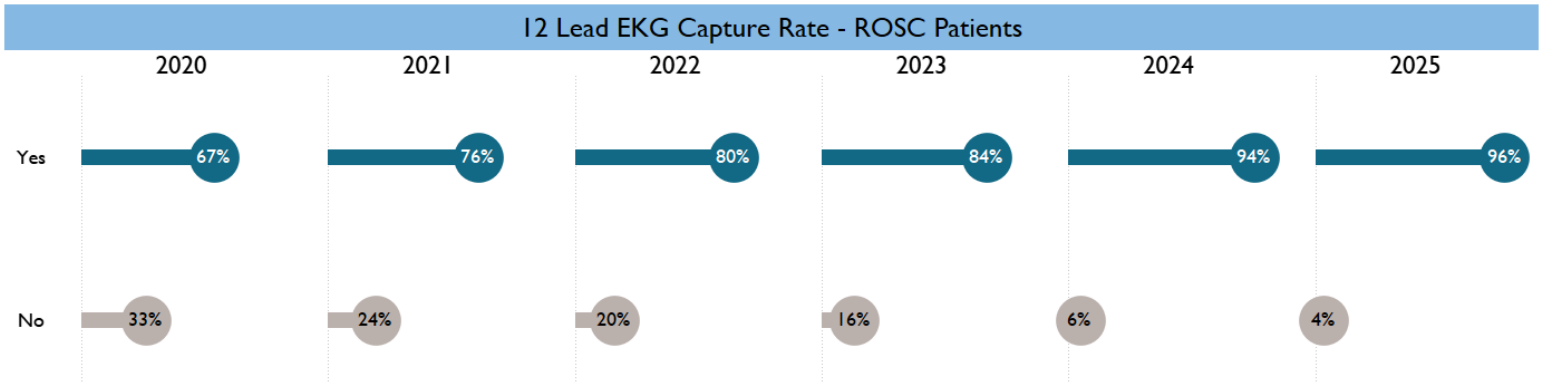


How do we achieve our goal?

Cardiac arrest events are often high-stress incidents. When not compressing at an appropriate rate, providers tend to skew faster than needed, which may not allow full recoil of the patient's chest between compressions. The easiest and most consistent way to bring stability and accuracy to your manual compressions is to use a metronome. There are a number of apps available for use on a smartphone, and some cardiac monitors have an internal metronome built in.

Metric 4: Post-ROSC 12 Lead EKG

One of the most common cardiac arrest etiologies is myocardial infarction. Post-ROSC 12 leads provide valuable information both in the field and hospital to guide the patient's treatment path. As a county, **we captured 12 lead EKGs 96% of our ROSC patients in 2025**. This is outstanding improvement across our system. Our goal to reach in this metric is 100% for patients where ROSC lasts at least 5 minutes without documented conflicting priorities (i.e. optimizing hemodynamics & oxygenation). More detail on how we plan to track post-ROSC care will be covered later in this report.

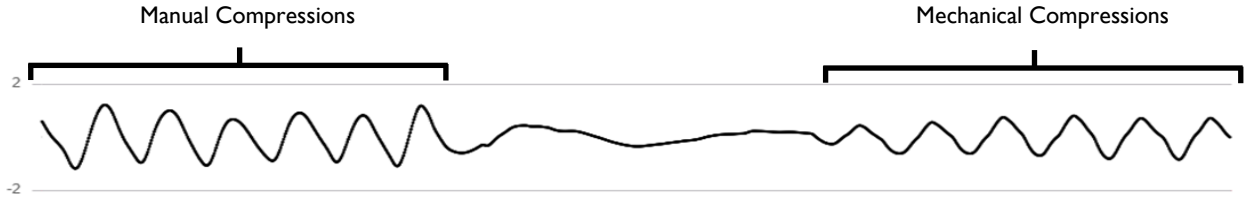


How do we achieve our goal?

When ROSC is achieved, and resources are available to address hemodynamic & oxygenation stability, a 12 lead should be captured on every ROSC patient, regardless of the suspected arrest etiology. If a situation arises where a 12 lead cannot be captured (rapid re-arrest, equipment malfunction, etc.), context should be provided in the ePCR. Remember, the Wisconsin scope of practice allows all EMS license levels from EMR through Paramedic to acquire a 12 lead!

Bonus Metric: Mechanical CPR Application

Overall, mechanical CPR (mCPR) devices were applied in 54% of all cardiac arrest events in 2025. We can determine the time at which mCPR was applied by a change in compression rate stability and waveform shape (see below).



As a county, we continue to improve at deploying mechanical CPR without prolonged interruptions with 62% of mechanical CPR deployments in 2025 done in under 10 seconds. For 2026, **our goal is for 65% of mCPR deployments to be completed in 10 seconds or under.** This is a metric we have seen sustained and consistent improvement on year-over-year.

How do we achieve our goal?

1. Understand the indications for mCPR.
2. Train regularly on the device your agency uses.
3. If using the LUCAS, deploy in two stages with manual CPR resuming immediately after the back plate is placed.
4. If mCPR application is approaching 10 seconds off the chest, stop the attempt and resume manual compressions. Evaluate the issue and re-attempt application once ready.

Percent mCPR Applied in Under 10 Seconds
Only includes cases where mCPR was used

	2020	2021	2022	2023	2024	2025
10 Seconds & Under	22.7%	25.4%	42.2%	49.1%	52.9%	62.3%
Over 10 Seconds	77.3%	74.6%	57.8%	50.9%	47.1%	37.7%

What's Next for Resuscitation in Dane County?

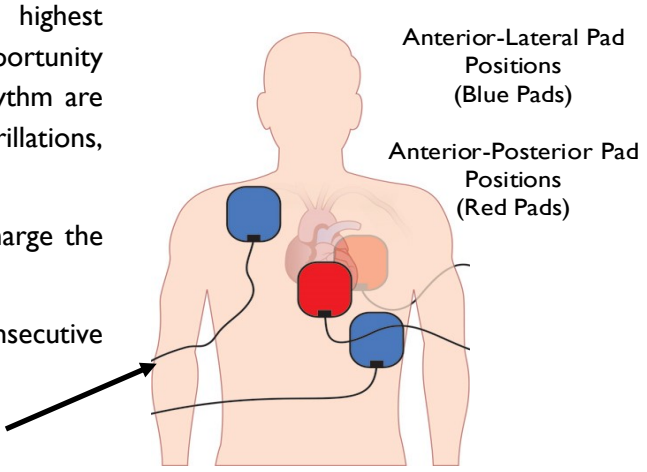
Keep Momentum on Existing Metrics

EMS crews in Dane County have become experts in resuscitation, and continue to apply the feedback they receive on each summary report. Crews also continue to provide better documentation to support the data from their cardiac monitors, allowing more actionable and pertinent feedback to be given. Our local healthcare systems are also taking notice of the importance of data accessibility. In the past year alone, DCEMS has assisted in providing UW cardiology with over 20 public access AED files to help inform long-term planning for patients who were defibrillated with public access AEDs. This project has also reinvigorated the community's commitment to public access defibrillation, with our public-access AED registry growing by over **200%** since 2020. At the time of this report's authoring, **1,318** public-access AEDs are discoverable by 911 call takers to connect patients with these vital resources when they are needed most.

Double Down on Refractory Shockable Rhythms

Patients with an initially shockable cardiac rhythm historically have the highest likelihood of a good neurologic outcome. For EMS providers, we have an opportunity to change our approach when our initial efforts to correct a shockable rhythm are ineffective. For patients with shockable rhythms refractory to multiple defibrillations, consider these priorities:

- Minimize pre-shock pause length. Paramedic providers should always charge the monitor before rhythm checks.
- Identify the patient is in a refractory shockable rhythm (i.e. three consecutive defibrillations without ROSC or rhythm change).
- Considering a vector change with defibrillation pads after the third shock.
- Considering dual sequential defibrillation for refractory v-fib/v-tach.
- Identifying potential ECMO candidacy.



Aggressive Post-ROSC Care

The most impactful interventions are often the most simple. Early chest compressions and defibrillation saves lives. The toughest work often starts when pulses are restored. This should be met with aggressive post-ROSC care focused on optimizing hemodynamics, ventilation, and oxygenation. One prominent practice we are seeing is the proactive administration of low-dose vasopressors regardless of initial post-ROSC blood pressure readings. The drip can be titrated up or down based on repeat vital signs, but early administration can help keep you ahead of the curve should the patient's blood pressure drop quickly.