



The Road to Recognition and Resuscitation

**The Role of Telecommunicators and
Telephone CPR Quality Improvement in
Cardiac Arrest Survival**

The Road to Recognition and Resuscitation

The Role of Telecommunicators and Telephone-CPR QI in Cardiac Arrest Survival



RESUSCITATION ACADEMY

Improving cardiac arrest survival rates, one community at a time

This guide provides a road map to establish and maintain a high performing Telephone-CPR (T-CPR) program in emergency communications centers. The guide supplements the AHA Telephone-CPR Program and Performance Standards.

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The Resuscitation Academy is dedicated to improving management of out of hospital cardiac arrest and aims to provide communities with the knowledge and tools to raise survival rates. Please visit the Resuscitation Academy at resuscitationacademy.org

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Unit 1 – Introduction & Overview

In 2016, there were over 350,000 out of hospital cardiac arrests (OHCA) in the United States¹. Virtually all involved a call to 911 for help. Without quick intervention in the form of cardiopulmonary resuscitation (CPR) and rapidly applied defibrillation (typically with an automated external defibrillator (AED), death from sudden cardiac arrest is certain.

Public Safety Telecommunicators are a vital component of every EMS system, and they are a critical link in the cardiac arrest chain of survival. High performing communication centers that are able to quickly identify cardiac arrest and initiate telephone CPR instructions, can dramatically improve cardiac arrest survival.

The purpose of this material is to provide you a roadmap to assist you in your efforts to establish and maintain a high performing T-CPR program in your center. We will not go in depth on the mechanics of cardiac arrest or CPR. Instead, we will focus on the role telecommunicators play in cardiac arrest survival and how performance and patient outcomes can be improved through a high performing T-CPR quality improvement (QI) process.

In this material we will cover:

1. **Established program and performance recommendations**
2. **Telecommunicator performance - Cardiac Arrest Assessment/Recognition**
3. **Telecommunicator performance - T-CPR instructions**
4. **Program design and development**
5. **Employee recognition**

~ FACT ~

High performing telecommunicators who can rapidly identify a patient in arrest and quickly delivery telephone CPR instructions will increase the victim's chance of surviving a cardiac arrest event.

¹ http://cpr.heart.org/AHA/ECC/CPRAndECC/General/UCM_477263_Cardiac-Arrest-Statistics.jsp

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1.1: American Heart Association T-CPR Program and Performance Recommendations

In 2017 the American Heart Association published 6 program and 4 performance recommendations for timely and high-quality delivery of T-CPR instructions by emergency telecommunicators. Adopting the American Heart Association T-CPR recommendations will not only provide your agency a roadmap to improving your T-CPR program but it also demonstrates your agency's commitment to improving cardiac arrest survival in your community.

<p>Program Recommendation #1 Commitment to Telephone-CPR</p>	<ul style="list-style-type: none"> • The emergency communications center will commit to providing effective T-CPR. • The dispatch center director must provide leadership and hold the staff accountable for implementation.
<p>Program Recommendation #2 Train and Provide Continuing Education in T-CPR for all Telecommunicators</p>	<ul style="list-style-type: none"> • Require initial training for 100% of call takers and dispatchers. Initial training will require an estimated 3-4 hours. • Require ongoing continuing education. This will require 2-3 hours annually.
<p>Program Recommendation #3 Conduct Ongoing Quality Improvement (QI) for all Calls in Which a Cardiac Arrest is Confirmed by EMS Personnel and in Which Resuscitation is Attempted</p>	<ul style="list-style-type: none"> • 100% of calls in which resuscitation is attempted must have the dispatch call audited for QI purposes. • The QI must collect key time intervals and reasons for non-recognition of cardiac arrest and reasons for delays. • Individual QI review of every cardiac arrest call provided by the supervisor (or designated QI person) including helpful feedback. • QI reports must be summarized annually and secular trends reported. • QI reports should be used to identify training needs.
<p>Program Recommendation #4 Connection to EMS Agency</p>	<ul style="list-style-type: none"> • Close engagement with the EMS agency is required to link data from dispatch audio with EMS run report data. • Linkage with EMS is required to identify the denominator of total cardiac arrest cases and

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Program Recommendation #4 <i>Continued</i>	the percentage of all cardiac arrests which are recognized as cardiac arrest by the telecommunicator/dispatcher.
Program Recommendation #5 Designated Medical Director	<ul style="list-style-type: none"> • There must be a designated communications center medical director who shall issue the dispatch protocols for T-CPR and be able to work closely with the EMS agency. Ideally, there should be a combined medical director for the dispatch center and EMS agency.
Program Recommendation #6 Recognition for Outstanding Performance	<ul style="list-style-type: none"> • Telecommunicator recognition program for outstanding performance in the recognition of cardiac arrest and delivery of T-CPR instructions.
Performance Recommendation #1 Percentage of total OHCA Cases Correctly Identified by PSAP	<ul style="list-style-type: none"> • Definition: Telecommunicator recognized / total OHCA (confirmed by EMS impression). • Numerator: Number of QI reviewed EMS confirmed OHCA with recognition noted. • Denominator: EMS confirmed OHCA. • Performance Goal: 75%
Performance Recommendation #2 Percentage of OHCA Cases Correctly Identified by PSAP That Were Recognizable	<ul style="list-style-type: none"> • Definition: Telecommunicator recognition / number of cases deemed identifiable. • Numerator: Number of QI reviewed EMS confirmed OHCA with recognition noted. • Denominator: Number of QI reviewed EMS confirmed OHCA deemed identifiable by supervisor. • Exclusions from denominator: <ul style="list-style-type: none"> ○ 3rd Party calls ○ Hang Up ○ Hysterical/Extreme Emotion ○ CPR in progress ○ Language barrier ○ Other circumstances supervisor deems “unidentifiable” • Performance Goal: 95%
Performance Recommendation #3 Percentage of Call Taker Recognized OHCA Receiving T-CPR	<ul style="list-style-type: none"> • Definition: Number of telecommunicator recognized OHCA cases receiving call-taker directed T-CPR / number of QI reviewed EMS confirmed OHCA with recognition

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<p>Performance Recommendation #3 <i>Continued</i></p>	<p>noted where call taker directed T-CPR is performed.</p> <ul style="list-style-type: none"> • Numerator: Number of QI reviewed EMS confirmed OHCA with recognition noted where call taker directed T-CPR is performed. • Denominator: Number of QI reviewed EMS confirmed OHCA with recognition noted. • Exclusions from denominator: <ul style="list-style-type: none"> ○ Caller is unable to physically perform CPR (i.e., caller not with patient). ○ Caller is unable to get patient into appropriate position for CPR due to physical limitations ○ Caller refuses ○ Unsafe for CPR to be performed (trauma, disaster scenario) ○ Caller disconnected ○ Other circumstances supervisor deems T-CPR could not be performed • Performance Goal: 75%
<p>Performance Recommendation #4 Median Time Between 911 Call and OHCA Recognition</p>	<ul style="list-style-type: none"> • Definition: Median amount of time in second between 911 call connected and OHCA recognition. • Benchmark: < 120 seconds (less than 60 second from address acquisition to telecommunicator recognition of OHCA.)
<p>Performance Recommendation #5 Median Time Between 911 Call and First T-CPR Directed Compression</p>	<ul style="list-style-type: none"> • Definition: Median amount of time in seconds between 911 call connected and first CPR compression directed by telecommunicator. • Benchmark: < 180 seconds (less than 120 seconds from address acquisition to first CPR compression directed by the telecommunicator)



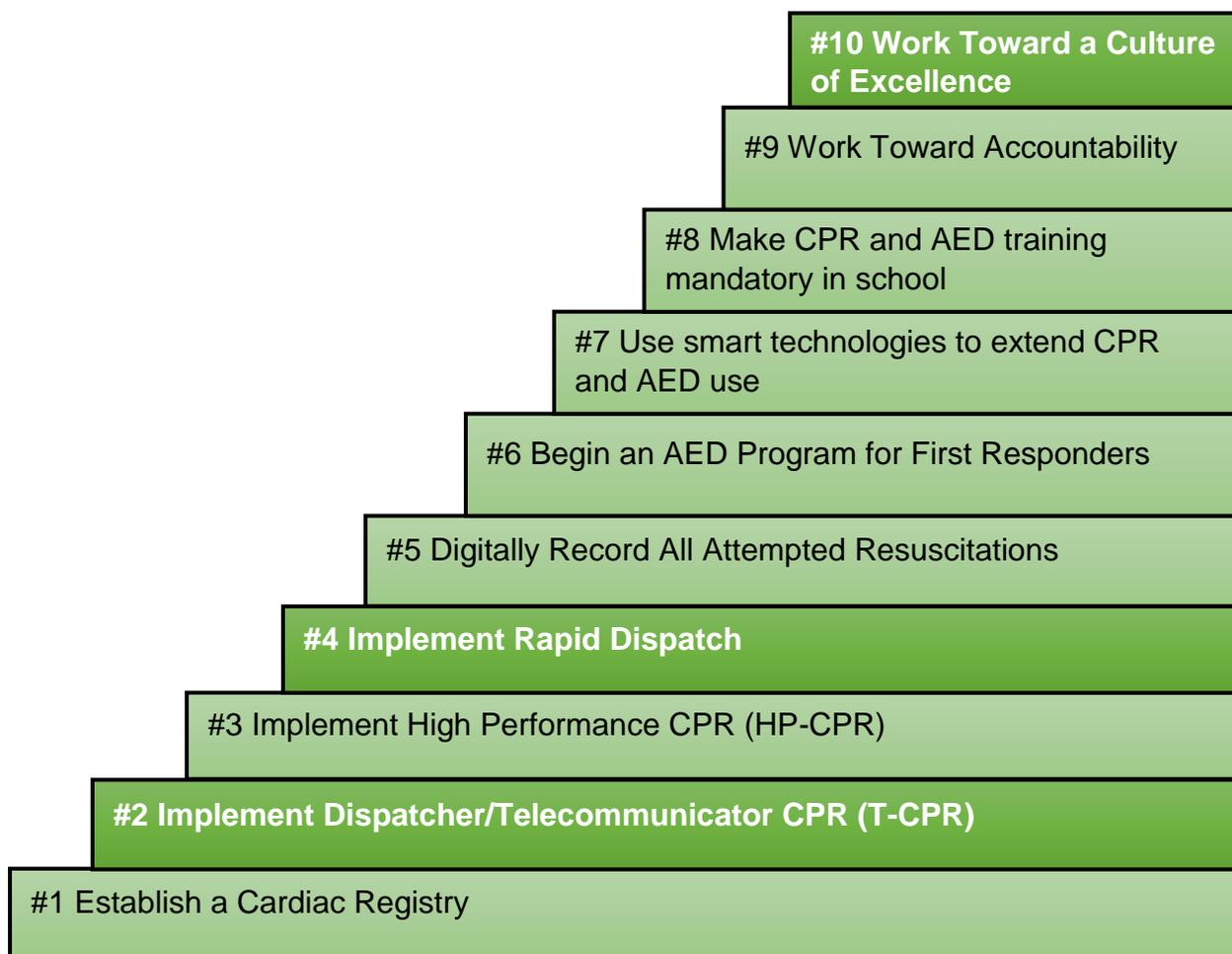
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1.2: 10 Steps for Improving Survival From Sudden Cardiac Arrest

In 2013, the Resuscitation Academy published **10 Steps for Improving Survival from Sudden Cardiac Arrest**, a free eBook available for download in the iTunes store.² The purpose of this eBook was to provide 10 practical steps systems could follow to improve survival from cardiac arrest. In addition to the American Heart Association T-CPR program and performance recommendations, this material we will focus on the steps directly related to your communication center and telecommunicators.



² <https://itunes.apple.com/us/book/ten-steps-for-improving-survival/id603675538?mt=11&ls=1>

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1.3: Why Invest in a Quality Improvement (QI) Program

If you never measure, you will never improve.

A robust QI program is the greatest tool your communication center has to ensure the highest level of care and service to your community. It is through the QI process that you will be able to recognize superior performance and remediate performance deficiencies.

Proactively identifying and addressing performance issues not only ensures consistency in the application of your EMD program and protocols, it also serves to reduce your agency's liability exposure. Additionally, you will identify gaps between training and performance, as well as track trends in performance for an individual employee, work groups, and for your entire agency.



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Unit 2 – Cardiac Arrest Recognition

**Every EMS call received should
be treated as a cardiac arrest
until proven otherwise.**

2.1: The Role of Telecommunicators in Cardiac Arrest Survival

From the first ring of a call to 9-1-1, until the first EMS unit arrives on scene, your communication center and your telecommunicators own a cardiac arrest incident. The action taken by the telecommunicator during the course of a cardiac arrest call can significantly improve the likelihood of survival.

It is the telecommunicator who has the first opportunity to identify a patient is in cardiac arrest, and it is the telecommunicator who will provide the initial level of patient care by delivering telephone CPR instructions to the caller. It is through these actions that the telecommunicator will make the difference between life and death.

It Takes A System To Save A Victim

2.2: American Heart Association Chain of Survival

Survival from cardiac arrest depends upon a series of critical and early interventions. In the early 1990's the American Heart Association introduced the cardiac arrest *Chain of Survival*³, representing critical elements required for cardiac arrest survival.

The 5 links in the chain of survival are:

- **Early access to 911/early recognition**
- **Early CPR**
- **Early defibrillation**
- **Early advanced life support**
- **Post arrest care**

³ American Heart Association

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If any one of these actions is omitted or delayed, the chance of survival for the patient is unlikely.

Telecommunicators play a critical role in the cardiac arrest *Chain of Survival*. Of the 5 links in the chain, telecommunicators have a direct influence over the application of the first 4 links.

1. It is the telecommunicator who receives the initial 911 call for help.
2. Using EMD protocols, the telecommunicator will triage the patient, conduct a rapid assessment of the patient's status of consciousness and breathing, and identify a patient in cardiac arrest.
3. Once cardiac arrest is recognized, it is the telecommunicator that will provide telephone CPR instructions to the caller.
4. It is the telecommunicator who will rapidly dispatch BLS, ALS, and even law enforcement units equipped with AEDs, to provide lifesaving care to the patient.

A high performing telecommunicator will be able to, on average, identify a patient in cardiac arrest in approximately 75 seconds^{4 5} While this is happening, a call for service is created and vital units are dispatched including the deployment of AED equipped EMTs, ALS units, and where available, law enforcement units equipped with AEDs.

2.3: EMD Protocols

There are several commercial EMD programs available on the market, such as the APCO EMD program, Medical Priority Dispatch System (MPDS), and PowerPhone 911, which communication centers may employ as a tool for triaging medical emergencies and for

⁴ Dispatcher-Assisted Cardiopulmonary Resuscitation: Time to Identify Cardiac Arrest and Deliver Chest Compression Instructions *Lewis, Stubbs, Eisenberg* <http://circ.ahajournals.org/content/128/14/1522>

⁵ <http://circ.ahajournals.org/content/128/14/1490.full?sid=57f45f68-6c5f-4ff6-8104-1a5b121386b1>

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providing emergency pre-arrival instructions, including telephone CPR instructions. In addition to these commercially available programs, some agencies choose to develop their own “home grown” program under the guidance and authority of their jurisdiction’s Medical Director.

Regardless of the EMD program you use, it is important that your protocols allow for telecommunicators to quickly identify a patient in cardiac arrest, and to quickly move into telephone CPR instructions without delay. This process need not be complex or lengthy, and can be accomplished by asking two key questions:

1. **Is the patient conscious?**
2. **Is the patient breathing normally?**

2.4: Consciousness Assessment

Once the incident location is obtained, the telecommunicator should immediately begin the triage process, starting with determining if the patient is conscious.

It must be recognized that “conscious” is a term that not all callers may be familiar with, especially those with limited English proficiency. While your EMD protocols may serve as a script for your call takers, they also must have the ability to adapt to the circumstances of the call and be allowed to use alternative terminology, as an example, “is the patient awake”, “does the patient respond to you when you talk to them or touch them?” in order to obtain this information when appropriate.

If it is reported that the patient is conscious, cardiac arrest has been ruled out and the call taker can now move on to the chief complaint. However, if it is reported that the patient is unconscious (**NO**), then the next step is to assess for normal breathing.

~ NOTE ~

Telecommunicators should not assume that just because a patient’s eyes are open that they are conscious. In the movies, when people die, they do so with their eyes closed. But this is not reality. In fact, it is common for callers to report that a patient’s eyes are open. This can sometimes cause confusion both for the caller and the telecommunicator.

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2.5: Breathing Assessment

If the patient is reported as unconscious, call takers should next ask if the patient is *breathing normally*. Assessing breathing over the phone can be challenging, but it does not need to be complicated.

We all understand what “normal breathing” sounds like, and it’s how most us sound right now as we breathe in and out. Normal breathing is typically rhythmic and quiet.

2.5.1: Agonal Respirations

Agonal breathing is not normal breathing. In fact, it’s not really breathing at all. It is caused by brainstem reflexes and is the body’s last ditch effort to deliver oxygen to the vital organs. Agonal respirations, which are irregular and abnormal, occur immediately after cardiac arrest and can last for several minutes.

Agonal breathing is often described as:

- Gasping
- Snoring
- Gurgling
- Breathing every “once in a while”
- Groaning
- Grunting
- Moaning
- Snorting

Because agonal respirations can often be mistaken by lay persons as breathing it is vitally important that the focus of breathing assessment be on **“normal breathing.”**

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2.6: NO – NO – GO

**If the patient is report as unconscious and not breathing normally,
T-CPR instructions should be initiated without delay.**



CONSCIOUS

BREATHING NORMALLY

CPR INSTRUCTIONS

2.7: Finding Clarity

In a perfect world, callers would provide clear, concise, yes and no answers to our questions. Unfortunately, we do not live in a perfect world, and often callers will provide an unclear response which can lead to hesitation on the part of the call taker.

In a cardiac arrest event, time is of the essence. Therefore, it is important that we navigate the gray waters caller uncertainty as quickly as possible. If the caller responds to your consciousness and/or breathing assessment question with an answer such as “I don’t know”, “I can’t tell”, “sort of”, or anything other than a definitive yes or no, it is appropriate to ask a clarifying question. If the caller’s response is still unclear, assume a negative (NO) response and move on without further delay.

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Remember:

- If the caller reports that the patient is unconscious, move directly to breathing assessment.
- If the caller is unable to determine if the patient is conscious, ask a clarifying question, such as “what happens when you touch or talk to the patient?” If the caller is still not able to provide a clear response, move on to the breathing assessment without further delay.
- If the patient is reported as not breathing normally, move directly into telephone CPR instructions.
- If the caller is unable to determine if the patient is breathing normally, ask a clarifying question, such as “describe the patient’s breathing.” If the caller is still not able to provide a clear response, move immediately into telephone CPR instructions.

EMD protocols for cardiac arrest identification do need not be complex or lengthy. The simpler the process, the faster recognition will occur and telephone CPR instructions can begin.

As we move on to review performance standards for recognition, you will notice what may seem like challenging time benchmarks. You may ask yourself, “what difference does it matter if it takes me 2 minutes, 3 minutes, or even 4 minutes to achieve recognition?” The difference is potentially the difference between life and death.

2.8: Why Time Matters

In trauma, the “golden hour” refers to a window of time in which a victim is thought to have the greatest chance of survival if given definitive medical care.

For someone in cardiac arrest, we do not have the luxury of a golden hour. For a victim of sudden cardiac arrest (SCA), what happens in the immediate minutes following the onset of arrest will determine who may live, and who may die.

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Sudden cardiac arrest (SCA) is a rapid and unexpected cessation of heart contractions.⁶ From the first second of arrest, oxygenated blood stops being pumped through the body to the brain and vital organs. Clinical death has begun. If interventions in the form of CPR and AED application are not quickly initiated, clinical death will turn into biological death.

2.8.1: The Breakdown of the Body During VF Induced Cardiac Arrest

1 Second – Clinical death has begun. Blood is no longer pumping through the body.

10 Seconds – Oxygen stored in the brain starts to deplete.

If nothing is done:

4-5 Minutes – Clinical death begins to turn to biological death.

5 Minutes – Glucose in the brain is depleted, accelerating the destruction of brain cells.

10-15 Minutes – Fatal levels of acids, caused by the breakdown of DNA within the cells, are found in blood.

15-20 Minutes - Biological death is complete

⁶ Mickey S. Eisenberg, M.D., “Resuscitate – How Your Community Can Improve Survival from Sudden Cardiac Arrest”

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~ TIME IS OF THE ESSENCE ~

For every minute without CPR and defibrillation, the victim's chance of survival decreases by 7 – 10%⁷

“A few seconds here, a few seconds there, and pretty soon you’re talking about real time.”

Tom Rea, MD, MPH
Program Medical Director
King County EMS

⁷ Larsen M P, Eisenberg M S, Cummins R O. *et al* Predicting survival from out-of-hospital cardiac arrest: a graphic model. Ann Emerg Med 1993. 22:1652–1658.1658.

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2.9: Controlling the Controllable

For every cardiac arrest call the delay to care is relentless:

Time of collapse until time 9-1-1 is called	1 – 2 Minutes
Transfer from Primary PSAP to Secondary (EMS) PSAP	30 Seconds – 1 Minute
Address verification	30 Seconds – 1 Minute (Time may be significantly increased if caller is hysterical or does not know where they are)
Time of address verification to recognition	Goal is 1 Minute
Time of recognition to time of first chest compression	Goal is 1 Minute (Time may be significantly increased if caller has difficulty positioning the patient)
Total time delay between time of collapse to time of first chest compression	4 or more Minutes

The call taker has no control over the amount of time it takes a reporting party to call 9-1-1, not the amount of time a primary PSAP takes to transfer the call.

It can be argued that the call taker has limited control over the caller's ability to provide an address or follow instructions due to a hysterical state or the caller's ability to position the patient for CPR. These delays may be outside of our control. Additional delays may be encountered if there is a language barrier with the caller, or if they are not with the patient.

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The call taker does, however, have control over certain potential delays in recognition. By ensuring proper workflow and eliminating extraneous questions we can minimize the time it takes to recognize a patient in arrest, and time it takes to initiate T-CPR instructions.

In addition to deviation from appropriate EMD workflow, common performance issues associated with delays in recognition and delivery of T-CPR instructions include:

- Over-verification of information
- Asking unnecessary questions, such as:
 - Patient's age
 - Duration of down time
 - Medical history

Frequently, these delays may occur with a telecommunicator who lacks the confidence to recognize a patient that is in arrest, or fears that they may hurt the patient if CPR is started but not needed (the potential for harm is very minimal and concern for harm should never delay T-CPR).

Through the employment of a robust T-CPR QI program, we can provide training and feedback to our telecommunicators. It is through these efforts that we will foster an environment where our telecommunicators are not only competent, but also confident in their ability to recognize a patient in arrest and to deliver, without delay, T-CPR instructions.



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2.10: RECOGNITION PERFORMANCE STANDARDS AND BENCHMARKS

Percentage of total OHCA cases correctly identified by PSAP ⁸	75%
Percentage of OHCA cases correctly identified by PSAP that were recognizable ⁹	95%
Percentage of call taker recognized OHCA Receiving T-CPR ¹⁰	75%
Median time between 911 call and OHCA recognition ¹¹	Less than 120 seconds (less than 60 seconds from address acquisition to telecommunicator recognition of OHCA)

⁸ AHA T-CPR Performance Recommendation #1

⁹ AHA T-CPR Performance Recommendation #2

¹⁰ AHA T-CPR Performance Recommendation #3

¹¹ AHA T-CPR Performance Recommendation #4

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2.11: Cardiac Arrest Recognition - Sample Evaluation Elements

1. Time of address verification: _____:_____

(min) (sec)

2. Was the need for T-CPR identified?

Yes No

2a. Time of Recognition: _____:_____

(min) (sec)

2b. Reason for delay, if any:

- | | |
|---|---|
| <input type="checkbox"/> Lost call/Line disconnected | <input type="checkbox"/> Caller's emotional state |
| <input type="checkbox"/> RP left the phone | <input type="checkbox"/> Language barrier |
| <input type="checkbox"/> RP not with patient/3 rd hand party | <input type="checkbox"/> CPR already in progress |
| <input type="checkbox"/> Inappropriate workflow | <input type="checkbox"/> Other _____ |

2.11.1: The Case for Including Exclusions

As shown above, there are 8 exclusions, or exceptions, checkboxes associated with delays in recognition. Determining exclusions is important - when analyzing data, we want to make sure we can understand when possible why a performance benchmark is not being met.

Knowing that a center is only meeting the performance benchmark of achieving recognition in 60 seconds 62% of the time is good information, but that information alone does not reveal why. However, being specific as to why this is happening, allows one to address the issue and a resolution that improves overall performance.

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As an example, if we discover that the 60 second benchmark is met 62% of the time, we may learn the following:

43% of the time this is caused by inappropriate workflow

30% of the time this is caused by the caller's emotional state

13% of the time the caller is not with the patient or is a 3rd hand caller

7% of the time this is caused by a language barrier

5% CPR already in progress

2% of the time this is caused by the call being dropped or disconnected

A trainer, supervisor, or manager can identify that there are performance issues, such as workflow or call control, that can be addressed through training to improve performance. Or a significant number of calls are being dropped or disconnected, this may prompt an inquiry with the Primary PSAP transferring the call about potential telephony issues.

Additionally, when categorizing your data, you may choose to make a distinction in your data between those factors that are within and outside of your control. As an example, if out of 100 T-CPR calls 30 (30%) of those calls were lost or dropped on transfer, a manager may include these calls in the overall performance reports, but exclude this group of calls from the compliance report since this issue is outside the call taker's or PSAPs purview.

The final reason for including exclusion or exception reasons in your evaluation is that it imparts to the telecommunications a sense of fairness in the evaluation process. If a call taker fails to meet the 60 second benchmark, but it is noted in the documentation that there was, for example, a language barrier or that the line disconnected, requiring the employee to call the reporting party back, it will be apparent that the reason for the missed benchmark was outside of anyone's control.

The importance of documentation will be explored in more detail in a later unit.

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Unit 3 – T-CPR Instructions

Once it is determined that the patient the patient is:

1. Unconscious
2. Not breathing normally

The call taker should move immediately into CPR instructions without delay.

3.1: CPR Instructions – 3 Key Components

There are 3 key components to T-CPR instructions:

1. **Positioning**
2. **Compressions**
3. **Ventilations** (if appropriate)

3.1.1: Positioning

The optimal position for the patient is on a hard-flat surface, such as the floor. Or, in the case of an infant, the surface of a hard table.

Positioning may be the most challenging and time consuming element of T-CPR instructions. It is not uncommon that patients are found on a bed, wedged behind a door or a piece of furniture, or found face down. In these situations, we are relying upon the caller's physical ability to position the patient so that chest compressions can begin.



So, while the call taker may have quickly recognized the patient was in arrest, and quickly moved into T-CPR instructions, there may be an uncontrollable delay in the delivery of the first compression for reasons outside of the call takers control.

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3.1.2: Compressions

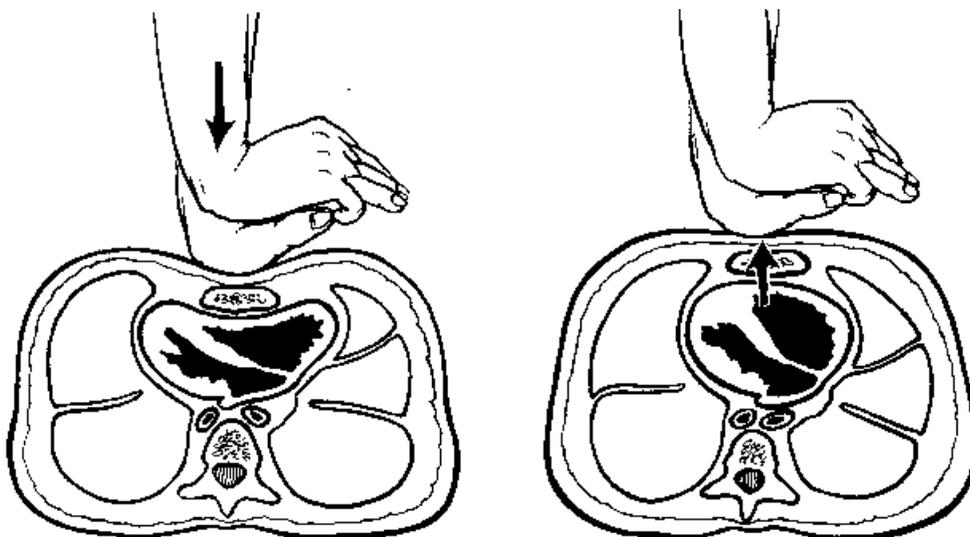
PUSH HARD, PUSH FAST, DON'T STOP

In this phase of T-CPR, there are 2 key components:

1. Compression
2. Decompression (Recoil)

During the compression phase, oxygenated blood is being moved out of the heart and lungs and artificially circulated to the vital organs of the body, including the brain. However, it is only in the decompression phase that the heart is perfused.

When the chest recoils, decreased intrathoracic (chest cavity) pressure creates a vacuum, causing the heart and lungs to refill with blood that will once again be moved through the body with the next compression.



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3.1.2.1: Compression Rate

Clinical research and studies show that a rate of 100 – 120 compressions per minute (cpm) is optimal¹².

A compression rate of 100 – 120 will be challenging for a caller to achieve without coaching by the call taker. To set the caller on the right compression rate path, when possible, the call taker should start the compression count to set the rate. However, this requires that the call taker themselves provide the correct rate, which can sometimes be challenging, especially over the duration of an extended event. This is where utilizing a metronome can be beneficial and effective.

Metronomes are often associated with musicians who use them to help keep the beat or tempo while playing. The same concept applies when utilized in a T-CPR incident. Rather than relying on the call taker to appropriately, and consistently, coach the caller to the appropriate rate or beat, the metronome takes over this function by providing an auditory cue to both the call taker and the caller.



Metronomes are inexpensive and can be found online or at retail stores. Additionally, there are several free metronome desktop and smart phone applications available as well.

3.1.2.2: Compression Depth

Evidence suggests that proper CPR compression depth is strongly associated with survival. A depth 2” is optimal, but how is a caller to be expected to assess or measure that depth? The truth is, they really can't. So, when providing instructions, callers should be encouraged to “push as hard as you can.” With the lay rescuer, there is little concern that they will push too deep. In fact, the issue typically encountered is that callers do not push deep enough.

¹² Christenson J, Andrusiek D, Everson-Stewart S, Kudenchuk P, Hostler D, Powell J, et al. Chest compression fraction determines survival in patients with out-of-hospital ventricular fibrillation. *Circulation* 2009;120:1241-7

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3.1.2.3: The High Cost of Interruptions

When proper CPR is delivered, it will take approximately 20 compressions before sufficient pressure is created to begin the process of artificially circulating blood through the body.

It's important to note that if compressions stop, or are interrupted, it takes only 3 seconds for that pressure to completely fall to zero. Because of this, it is very important that once chest compressions have begun that the call taker not cause distractions, such as asking unnecessary questions, which may cause the caller to pause compression efforts.

Two principal mechanisms are thought to be responsible for producing blood flow during external chest compression: direct cardiac compression and increased intrathoracic pressure. In either case, forward blood flow depends on venous blood filling the heart or lungs during diastole or the release phase of external chest compression. If this phase is too brief, blood available for forward flow during the compression phase will be limited.



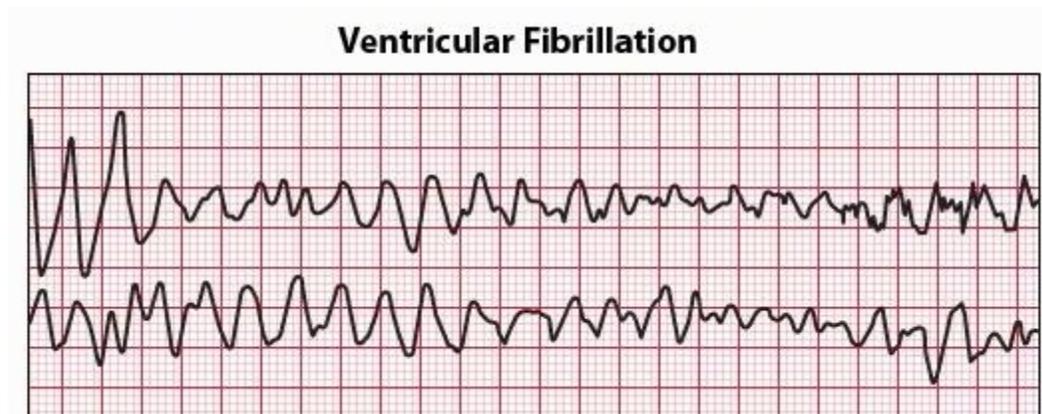
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3.1.2.4: The Relationship Between Continuous CPR & Shockable Rhythms

The heart has an electrical system that is responsible for signaling the muscle contraction in the heart that generates the heartbeat. Sometimes this electrical system is disrupted, leading to cardiac arrest.



In order to reset the electrical system to regain a heartbeat, electricity needs to be administered to the heart in the form of defibrillation. These cases of OHCA can be very survivable as there is still available energy in the heart, it is just unorganized energy.

If chest compressions are paused for long periods of time, not only does the pressure fall, but the available energy in the heart dissipates.

Defibrillation only works on a heart with ample energy to be reorganized.

Chest compressions help ensure that there is energy in the heart, leading to an increased likelihood that a defibrillatory shock will be successful in resetting the electrical system of the heart.

PUSH HARD • PUSH FAST • DON'T STOP

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3.1.3: Ventilations

10 years ago, CPR instructions included direction to give two breaths after 30 compressions (30:2). This is no longer the case and compression-only instructions are the standard of care for adults in cardiac arrest.



When a patient suddenly collapses with cardiac arrest, their lungs and blood contain sufficient oxygen to keep the vital organs healthy for several minutes, provided CPR is performed to artificially circulate the blood through the body.

The Exception

For adults, appropriate T-CPR instructions do not directions for breaths, or “mouth-to-mouth”.

The exception to this is instances where cardiac arrest is secondary to respiratory arrest, such as in situations involving:

- Choking
- Drowning
- Hanging
- Smoke inhalation
- Carbon monoxide poisoning
- Drug overdose

Compression only CPR instructions are provided only for the adult patient. A child or infant who is not conscious and not breathing normally is not, with the rare exception, a result of a cardiovascular issue. Instead, it is more likely to be caused by choking or a respiratory issue. For this reason, instructions for these patients will still include instructions for ventilations.

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3.1.3.1: Compression to Ventilation Rate

When appropriate, the following compression to ventilation rate should be applied (single rescuer scenario):

Neonate/Newborn	3:1
Infants, 1 day – 12 months old	30:2
Child, 1 – 12 years old	30:2
Adults	30:2

3.1.4: Additional Considerations

3.1.4.1: AEDs

Quickly initiating T-CPR instructions will help keep oxygenated blood circulating to the vital organs. However, CPR will not restart the heart. The only intervention that will do that is an Automated External Defibrillator, or AED.

Not that many years ago you rarely saw AEDs outside of a medical or EMS setting. Today public access defibrillators (PAD) have become widespread in many communities.

Public access defibrillators are now commonly found in:

- Schools
- Sports arenas
- Public buildings and facilities
- Shopping malls and big box stores



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3.1.4.2: T-CPR QI Evaluation Considerations

A high performing call taker will recognize the significance of an arrest that occurs in one of these locations, and will prompt the caller to instruct someone to go find the AED. This action should be noted as part of your QI review.

Historically, a cardiac arrest event was the sole jurisdiction of Fire/EMS. Increasingly these calls are become a dual response with AED equipped law enforcement agencies.

Do law enforcement agencies in your jurisdiction carry AEDs? Do they respond with your EMS units on calls for cardiac arrest? If so, did your call taker remember to create an incident or notify the law enforcement PSAP of the call?



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3.1.4.3: Rapid (Accelerated) Dispatch

How much information must your call takers obtain to create a dispatch-able call for service? How long is it currently taking for the first units to be assigned to a call?

Once the call taker has verified the address where help is needed, and it is a known medical call, or it is reported to you that the patient is unconscious, you have sufficient information to initiate a call for service and dispatch medical aid.

Remember, in cardiac arrest, time is of the essence. While CPR will artificially circulate blood to the vital organs of the body, delaying death, it is the AED that is needed to restart the heart. The faster we can deploy AED equipped responders, the greater the chance of survival. **Our performance goal for time of call to time of first unit dispatched is 60 seconds.**

3.2: T-CPR INSTRUCTION PERFORMANCE STANDARDS AND BENCHMARKS

Percentage of call taker recognized OHCA receiving T-CPR ¹³	75%
Median time between 911 call and first T-CPR directed compression ¹⁴	<180 seconds (less than 120 seconds from address acquisition to first CPR compression directed by the Telecommunicator)

¹³ AHA T-CPR Program Recommendation #3

¹⁴ AHA T-CPR Performance Recommendation #5

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3.3: T-CPR Instructions – Sample Evaluation Elements

2. Were T-CPR instructions provided?

Yes No

2a. If yes, indicate all instructions provided:

Positioning (floor/hard flat surface) Compressions
 Ventilations, if applicable

2b. Time of first compression: _____:_____

(min) (sec)

2c. Reason for delay, if any:

- Call taker did not recognize cardiac arrest
- Unassisted CPR already in progress
- Caller not with patient
- Caller is physically unable to perform CPR
- Caller is physically unable to position patient
- CPR declined
- Presence of POLST/DNR orders
- Obvious DOA
- Unsafe for CPR to be performed (trauma, disaster scenario)
- Caller disconnected
- Aid arrived prior to delivery of compressions
- Patient did not present as cardiac arrest (false negative)
- Other _____

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3.3.1: Evaluation Exclusions

The delivery of chest compressions is often the most challenging part of delivering T-CPR instructions with the call taker having limited control over delays caused by the caller's physical or emotional ability to carry out instructions. This performance standard will be the most challenging to meet. Therefore, it's important that we have a clear understand of the circumstances surrounding those times where we exceed the less than 180 seconds (or, less than 120 seconds from the time of address verification) benchmark.

We have limited, if any, influence over many of the exclusions listed, such as a caller refusing to perform CPR, or a caller who is physically unable to perform compressions. However, there is one exclusion that, as evaluators, we should be very interested in - call taker did not recognize cardiac arrest. Through training such an event is correctable and a QI program can influence recognition in a positive way.

Understanding your data, and the reasons why a standard is not met, will help your agency establish training priorities. Remember, there is no perfect call. We should not view a missed performance benchmark as a failure, but instead, an opportunity for improvement.



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3.3.2: Additional Considerations

Missed Identifications

There are times when telecommunicators will miss identifying a patient in arrest, or they may not get to the point of delivering T-CPR instructions to a caller. Sometimes, the reasons for this are outside of the telecommunicators control. When collecting data, it is important that we distinguish between those calls not meeting the performance recommendations due to circumstances outside of the telecommunicators control. These calls should be excluded from the denominator under performance recommendation #3.

Comment Fields

In the sample evaluation elements, you may have noticed that they were all objective in nature. A task was either done or it wasn't, and if it was, we document the time into the call in which it occurred. This type of feedback leaves little room for debate, but what does it really tell our employees? As you work to design your QI program and evaluation forms, how will you provide encouragement to your call takers to encourage the continuation of desired performance?

While not included in the sample evaluation elements, the addition of a comment field will not only provide you a space to pass along a kudo or encouragement, but it can also help you articulate why a call was evaluated in the way it was.

We will explore feedback in greater detail in Unit 4.

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Unit 4 – T-CPR QI Program Design and Development

It's time to get down to work! Before you can build a house, you need to draw up our plans. While you may be anxious to get your program up and running, spending time on the front end and being thoughtful in what your program will look like, from A-Z, will ultimately create less work for you on the back end of the project.

As we begin, a few things for you to think about and to keep in mind:

Your Quality Improvement program will help your center:

- Ensure compliance with training and established performance goals.
- Identify ongoing and future training needs.
- Reduce liability exposure by proactively identifying and remediating performance deficiencies.
- Identify exemplary performance for purposes of recognition.

The primary focus of your T-CPR QI program should be calls in which:

1. Cardiac arrest is confirmed by EMS personnel
2. Resuscitation is attempted¹⁵

A high performing T-CPR QI program will include:

- Performance standards and benchmarks.
- Standard Evaluation Guidelines (SEGs) defining minimum performance expectations for each evaluation element.
- Reporting and feedback.
- Program monitoring and oversight.
- Records management program that retain documentation associated with QI, including audio and CAD records, completed reports, related ongoing and remedial training efforts
- Initial and ongoing training to address performance issues.

¹⁵ AHA T-CPR Program Recommendation #3

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- Policy defining program process, including review criteria, evaluation elements and performance criteria, documentation requirements and retention, and confidentiality rules surrounding QI process.

As you go through the process of developing your T-CPR QI program, there are a few key questions your team will need to answer:

- What will we evaluate?
- How will we define performance benchmarks and standards?
- How will we identify calls for review?
- Who will perform T-CPR QI evaluations?
- How frequently, and in what manner, will we communicate feedback and reports?
- How will we recognize exemplary performance?

4.1: Program Development – QI Priorities and Objectives

Assumption: If you are reading this material, you recognize the critical role telecommunicators play in cardiac arrest survival, and you are committed to ensuring the highest level of service and patient care to your community. You agree that to ensure optimal performance, your agency will need a robust QI program.

Priorities

The first step in your program development process is to establish your QI priorities and objectives. We know we are going to QI cardiac arrest calls, but does that mean every single call?

AHA T-CPR Program Recommendation #3 provides that 100% of calls in which cardiac arrest is confirmed by EMS personnel and resuscitation is attempted must have the call audited for QI purposes.

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What about calls that are false positives (patient presented as cardiac arrest, but was not in fact in arrest), or false negatives (cardiac arrest ruled out, but patient was in fact in arrest)?



Your resources will in large part determine your priorities and your capacity to perform QI reviews.

For many agencies, QI reviews are performed by supervisors who may have limited time to commit to reviews due to competing priorities (scheduling, processing inquiries from the field, handling employee issues, and so on). As part of your priority setting, you will need to determine what resources, both personnel and time, you can commit to this process. If your intent is to review 100 cardiac arrests incidents per month,

but you are only assigning 2 employees 2 hours a week to do this, that may not be realistic.

You may find it necessary to complete a job task analysis to determine what resources you are realistically able to dedicate to this process, and adjust your program priorities based upon those findings.

Objectives

Why are you performing T-CPR QI review?

Your ability to articulate the objective of your program to your employees, stakeholders, and community, will play a significant role in determining the success of your program. It is how you will achieve buy-in. As an example, if the message to your center is:

“Telecommunicators play a critical role in cardiac arrest survival. To ensure we are doing all we can to improve a patient’s odds of surviving an arrest, we will be implementing a new QI program”

I may find that I have limited buy-in to the changes I am trying to make. However, if I provide a few more details, such as:

“For a patient in cardiac arrest, every minute that CPR and AED is delayed, a victim’s chance of survival decreases by 7-10%. More than any other call, the actions you take in

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the initial minutes of a call can make the difference between life and death. We recognize the critical role you play in improving the cardiac arrest victim's chance at survival. To ensure we are providing the highest level of care to our community, and to ensure we are providing you with the resources you need to carry out this task, we will be implementing a T-CPR focused QI program. We will be looking for your feedback and participating as we work develop this program."

You cannot underestimate the importance of buy-in and the need to answer the age-old question of "what's in it for me?" Communicating to your employees what you are trying to accomplish, and why, will aid you in your efforts to bring about this meaningful change to your center.

Additionally, as you begin to design your evaluation process, specifically your evaluation elements, keep in mind why you are doing this. The goal of your T-CPR QI is to improve performance in recognition and the delivery of T-CPR instructions. For every evaluation element you add to your review process, ask yourself, is this question or element in line with the objectives of the program? If it's not, don't include it.

4.2: Program Development – Seek employee and stakeholder input

Do not create your program in a vacuum. To the extent possible, you should look to involve your communication center employees and stakeholders in the design of your program.

Aside from the obvious benefit an inclusive process brings when it comes to achieving buy-in, your center is, no doubt, filled with a group of intelligent and highly motivated people who care about the outcome of their patients. The perspective and insight they can bring to the process is incredibly valuable. Allow them be a part of a process that is meant to help them reach their full potential as call takers. Ask them what feedback they would find useful, and in what format, to help them to be the best they can be.

Another consideration is to reach outside the walls of your center, to your EMS Chiefs and responders, to seek their feedback and participation in the creation of your program. 9-1-1 and EMS are partners in patient care. AHA T-CPR Program Recommendation #3 states "Conduct ongoing quality improvement (QI) for all calls in which a cardiac arrest is confirmed by EMS personnel and in which resuscitation is attempted." How will you

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identify these calls? By involving your stakeholders, they can help you reach a solution to this question. Perhaps it is a status they can make in CAD or on their Medical Incident Report Forms (MIRF) that will allow you to identify all the cardiac arrest cases? Maybe there is an after-action notification they can make to your center? Working together, there is little doubt you will be able to find a solution.

Additionally, your efforts to improve cardiac arrest outcomes in your community may result in additional costs to your center that cannot be absorbed in your current budget. Perhaps there is a commercial QI database you feel would add value to your program. Or you may require additional personnel or overtime hours to accommodate the increased QI workload. These things cost money. By involving your stakeholders in a program they support and feel vested in, they will find value the changes you are attempting to make, and may be more supportive of efforts to obtain additional funding.

Remember, it takes a system to save a victim.



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4.3: Program Development – Develop Evaluation Elements

In Unit 2 you were provided with five primary evaluation elements that focused on cardiac arrest identification and the delivery of CPR:

1. Time of address verification
2. Was the need for T-CPR identified?
3. Time of cardiac arrest recognition
4. Were T-CPR instructions provided?
5. Time of first compression

But are five evaluation elements enough?

There is something to the saying “less is more”, especially when we are talking about quality improvement. By keeping your evaluation narrowly focused, you ensure that your feedback is not diluted, and your message muddled, in a document cluttered with extraneous evaluation elements that do not provide feedback related to cardiac arrest identification and CPR delivery.

As much as possible, keep your feedback concise and focused on those lifesaving skills you are trying to reinforce and correct through feedback.

4.3.1: Additional Evaluation Elements

If you have decided to expand the scope of your T-CPR QI review and feedback process, you will need to identify those additional areas of performance you wish to capture.

As you go through this process, ask yourself these questions:

1. What do I want to evaluate?
2. Why do I want to evaluate it? Does it tie back to a policy, standard, or training? *If you don't know why you want to capture the data, you probably don't need to capture it.*

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3. Am I able to observe and/or measure the performance associated with this evaluation element, either through a CAD record or voice recording?
4. Am I able to write an objective performance standard around this this evaluation element?

If you cannot answer questions 2, or if you answered no to questions 3 or 4, then that proposed evaluation element should be removed from your process.

4.4: Program Development – Create Standard Evaluation Guidelines (SEGs)

Standard evaluation guidelines (SEGs) define minimum performance expectations, providing your QI evaluation team a consistent framework in which to conduct their reviews. By detailing the desired performance for each evaluation element, you can increase the fairness of the performance review by reducing the instances of inconsistency between evaluators.

Additionally, if you are using a numerical rating system, or defining performance as meeting or exceeding a standard, the SEGs should provide a clear performance definition for each category.

It is through the use of SEGs, your program will achieve standardization in rating constancy.

4.5: Program Development – Create evaluation forms and reports

Reports should inform employees, management, and stake holders about performance levels related to established benchmarks and standards.

Feedback reports to employees should:

- Identify gaps between training and performance.
- Identify performance strengths and weaknesses.
- Provide training and direction on how to improve performance.

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Additionally, your feedback process should allow for audio of 9-1-1 call to be included as part of employee feedback whenever possible.

Performance reports should:

- Analyze performance trends with an individual, a work group (consider comparing performance between shifts, supervisor assignments, training groups, years of service, and so on), and entire agency.
- Compliance to protocols and standard operating procedures.

Additional reports to consider:

- Reports to supervisors and management, to include training section, that identify current and over-time trends.
- Reports to be published on public access sites.
- Reports that will be used in formal presentations to internal and external customers and stakeholders.

To be effective, feedback needs to be timely. Reviews and reports should occur as soon as possible following an incident.

4.6: Program Development – Develop SOP

- Policies are clear, simple statements about how your agency intends to conduct business, and includes guiding principles to help with decision making.
- Procedures describe step-by-step descriptions on how the policy will be carried out.

It is important that you formalize the purpose and process of your T-CPR program in a department SOP, outlining:



- Scope of QI reviews.
- Performance standards.
- Communication plan to ensure timely feedback to employee and stakeholders.

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- Roles and responsibilities of QI evaluators and oversight committee.
- Action plans to address performance issues in response to QI findings.
- Process to appeal QI findings.
- Retention period for reviews.

4.7: Program Development – Establish QI review and oversight group

Who will conduct your QI reviews? In most centers, the responsibility for conducting QI reviews falls to supervisors. Some agencies utilize their CTO group to conduct reviews, while others allow for peer or self-review. More important than the reviewer's job title is their ability to objectively conduct a review.

Essential knowledge, skills, and abilities of your reviewers are:

- Knowledge of cardiac arrest, CPR, and role of telecommunicators in survival.
- Understanding of position duties and responsibilities.
- Knowledge of performance standards and expectations, including benchmark times.
- Demonstrates ability to comply with agency expectations of professional conduct.
- Excellent communication skills, both written and verbal.
- Ability to generate reports.
- Knowledge of, and ability to use, technology utilized for QI reviews and reporting.
- Ability to analyze and synthesize data to identify trends.
- Ability to develop recommendations for performance improvement.

In addition to creating your core QI review group, your agency will benefit from the establishment of a QI oversight group. This group can be made up of members of your QI review team, supervisors, training section, employees, and even external stakeholders, such as EMS chiefs and responders.

The purpose of the oversight group is to support your program through analysis of trends in performance, recommend resources to sustain or improve performance as necessary. Additionally, this group can monitor QI program efficiency, making recommendations for improvements and resources to ensure your program is meeting its objectives and goals.

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T-CPR QI Program Design and Development



QI Process Development

- Identify QI priorities and objectives
- Seek employee and stakeholder input
- Develop evaluation elements
- Create Standard Evaluation Guidelines (SEGs)
- Create evaluation forms and reports
- Develop SOP
- Establish QI review and oversight group

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Unit 5 - T-CPR QI Program Design and Development – Step 1

You can't really know where you
are going until you know where
you have been.

Maya Angelou

In this phase of your program design and development, you will establish your desired performance benchmarks. But first you need to know how your employees are currently performing. In addition to establishing realistic performance goals, it will also identify the training needs.

5.1: Program Development – Measure current performance levels

Start this phase by measuring your current performance levels. Pull a sampling of calls (recommended: minimum 10% of cardiac arrest calls in a month. Or for a larger sampling, 10% CA calls from a quarter), and conduct QI reviews utilizing your identified evaluation elements to determine what your current level of performance is.

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5.2: Program Development – Establish performance benchmarks and priorities

In Unit 1 and Unit 2 you were provided with the AHA T-CPR performance recommendations, which are:

- Total OHCA cases correctly identified by the PSAP – 75%¹⁶
- OHCA cases correctly identified by the PSAP there were recognizable – 95%¹⁷
- Percentage of call taker recognized OHCA receiving T-CPR – 75%¹⁸
- Median time between 9-1-1 call and OHCA recognition - <120 / <60 seconds after address verification¹⁹
- Median time between 9-1-1 call and first T-CPR directed compression - <180 seconds / <120 seconds after address verification²⁰



These performance recommendations are your goal, but your agency may not be there yet.

long term performance goals

5.3: Program Development – Set immediate and

If after your review you find that your agency is only identifying cardiac arrest 55% of the time, a performance goal of 75% is not realistic at this time. If you insist upon keeping 75% as your established performance goal, your telecommunicators, and your leadership, will quickly become discouraged and view this standard as unattainable, so “why bother?”

While our goal may be 75%, we must set realistic, and attainable, performance goals to get there. If in 2017 your recognition compliance rate was 55%, make 2018’s goal

¹⁶ AHA T-CPR Performance Recommendation #1

¹⁷ AHA T-CPR Performance Recommendation #2

¹⁸ AHA T-CPR Performance Recommendation #3

¹⁹ AHA T-CPR Performance Recommendation #4

²⁰ AHA T-CPR Performance Recommendation #5

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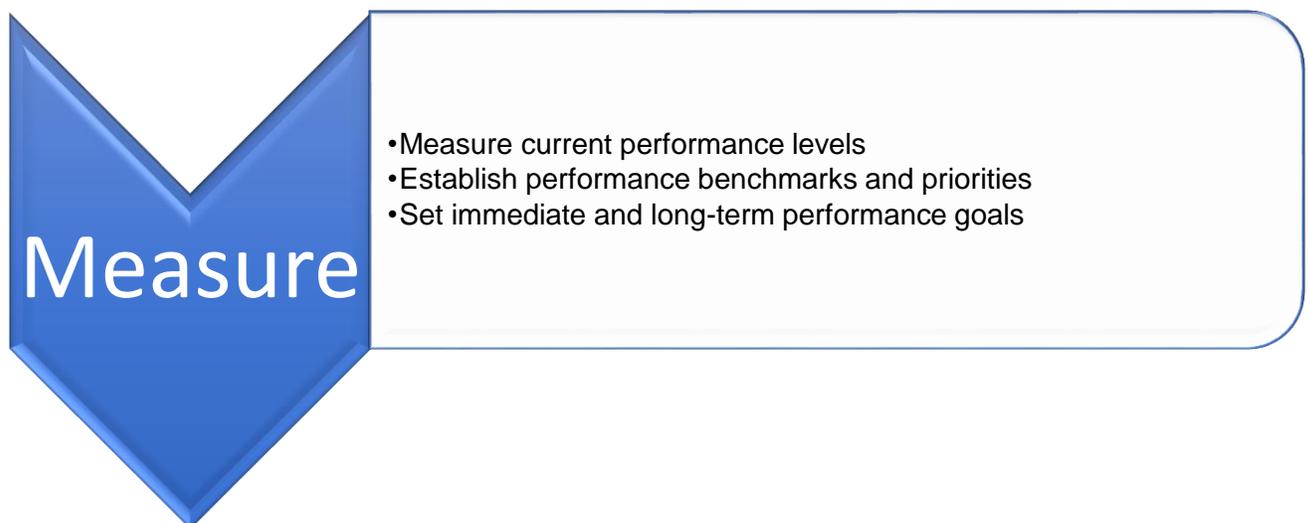
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60% or even 65%, increasing the performance expectation each year until you reach 75%.

Setting progressive performance goals is not enough though. You must also provide training to address the performance gap and to realize improvement. It will be through these efforts, coupled with your ongoing T-CPR QI reviews, that you will ultimately achieve your goal of complying with established performance recommendations.

T-CPR QI Program Design and Development



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Unit 6 - T-CPR QI Program Design and Development – Step 2

6.1: Program Development – Provide basic (and ongoing) training on cardiac arrest and CPR

Telecommunicators from around the country come from a variety of background with different levels of education and experience. Whether your center is staffed by sworn personnel with extensive medical training, or a civilian center where employees may have very limited medical knowledge; your agency is capable of meeting these American Heart Association T-CPR Performance Recommendations.

Regardless of your employee's experience or background, 3-4 hours of initial training on T-CPR, as well as 2-3 hours of annual continuing education related to T-CPR and cardiac arrest, should be provided to all telecommunicators²¹.

Topics to be considered in initial training include:

- Anatomy & physiology of the circulatory and cardiovascular system
- Relationship between circulatory, respiratory, and nervous system
- Signs and symptoms of acute coronary syndrome (ACS)
- Signs of life recognition
- Early recognition of the need for CPR (Conscious/Breathing normally)
- Agonal respirations
- Hypoxic seizures and sudden cardiac arrest
- Pathophysiology of sudden cardiac death/cardiac arrest
- The role of T-CPR in cardiac arrest survival
- The importance of minimizing disruptions when T-CPR is in progress
- Physiology behind the performance of the instructions
- AEDs and the role they play in resuscitation

²¹ AHA T-CPR Program Recommendation #2

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- Explanation, with practical training exercises, for different T-CPR instructions, including:
 - Adult
 - Child
 - Infant
 - Neonate
 - Pregnant patients
 - Obese patients
 - Stoma patients

Your quality improvement process is the greatest resource you have to identify current performance deficiencies, and to inform you development of annual continuing education.

Additional topics to consider as part of your on-going continuing education program includes:

- Critical Incident Stress Management (CISM)
 - The reality of cardiac arrest calls is that we will lose more people than we save. This can take an emotional toll on your employees. You must care for your most valuable resource, your telecommunicators. Training that offers insight and awareness about critical incident stress, including available resources, such as EAPs, peer support groups, or department chaplains should be included in this curriculum.
- Unusual circumstances that pose challenges to the delivery of T-CPR instructions, such as:
 - Patient's with DNR orders
 - Patient's on ventilators
 - Post-Op patients
 - Obvious DOA
 - Electrocutation
 - Drowning
 - Strangulation
 - Two rescuer-ventilations
 - Cardiac arrest secondary to trauma

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As much as possible, opportunities for hands-on, practical application of training should be provided, with emphasis on appropriate workflow, which is:

- Verify address
- Dispatch EMS response as soon as it is clear the call is for a medical emergency
- Begin cardiac arrest assessment:
 - ***Is the patient conscious?***
 - If **NO**
 - ***Are they breathing normally?***
 - If **NO**
 - **GO WITH CPR INSTRUCTIONS WITHOUT DELAY**

Your training program is only limited by your creativity. Remember, not all training needs to be conducted off the floor and in a classroom. Providing your employees access to online videos, articles, written scenarios, and even EMS ride-along opportunities will help further their development and understanding of cardiac arrest and the role they play in survival.



6.2: Program Development – Train telecommunicators on process, policy, expectations, and performance

Prior to conducting your first QI review, telecommunicators should be provided training on evaluation practices, including performance expectations, standards, and benchmarks.

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6.3: Program Development – Train QI evaluators and supervisors on process, policy, expectations, and performance

In addition to receiving training outlined in 6.2, your QI evaluation team will receive training on performance standards and benchmarks, process for accessing data, and forms and programs to complete reviews.

6.3.1: Role of Supervisors

Typically, QI duties fall to supervisors, but not always. And not all supervisors perform QI.

Supervisors are in the unique position of providing real-time feedback to telecommunicators by live monitoring T-CPR calls. This provides for immediate feedback to telecommunicators that will reinforce desired behaviors, and provide training and correction when necessary. Because of this, all supervisors should be included in this training whether they are part of your evaluation team or not.

6.3.2: CTOs and training program

Consideration should be given to including your training program (CTOs, academy instructors, training program manager) in this training. Your training program lays the performance foundation for your new hires. It is critical that they understand performance standards and expectations to ensure they are providing proper feedback and guidance to your trainees from the beginning.

6.3.3: Scenario based training

Scenario based training is not just for telecommunicators. Your QI evaluators should be given the opportunity to practice their skills providing feedback with an opportunity of their own to receive correction and guidance.

Written practical

Using the performance evaluation forms and SEGs you have developed, provide your evaluators the opportunity to listen to calls, completing a written review as part of the practical exercise. This will help ensure that your evaluator group understands the expectations and processes that are part of your program. It will

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also give you an opportunity to provide feedback on their feedback. Is it objective? Is it clear? Is it concise?

Verbal practical

Providing verbal feedback to an employee is not always easy, especially when performance deficiencies have been identified. Some employees will be open and accountable for their performance, but others may become defensive and even combative.

Providing your evaluators an opportunity to role-play different feedback scenarios (confrontational employee, emotional/crying employee) allows for them to practice their skills of active listening and de-escalation in a safe environment.

6.3.3: Calibration



Nothing will cause your program to lose credibility with your employees faster than inconsistency. To address this, periodically assess to ensure that all members of your QI evaluation team is being consistent, fair, and equitable in their reviews.

To do this, provide a common call for your group to review. Once all of the reviews are complete, come together to discuss the results, addressing issues of inconsistency that arose. Sometimes these inconsistencies are a result of a lack of clarity in the evaluation guidelines.

Being able to identify and resolve these problem areas in your program pro-actively will ensure you can achieve your goals of ongoing performance improvement.

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6.4: Program Development – Develop action plans to address performance issues in response to QI findings

QI Reviews Are Training

It is expected that performance deficiencies will be identified through the course of the QI review process. But not all performance deficiencies are created equal. It is important that your QI review group understand performance data to identify if performance issues are isolated to an individual employee, or is it broader, spread across a specific group of employees (night shift, newly released), or is more systemic across all employees.

How you will resolve the identified performance issue(s) will depend upon the extent of the problem. How you will address these issues, regardless of the scope, should be pre-determined to the extent possible so that remedial training solutions can quickly be applied. To the extent possible, involve your training program in the creation of these solutions.

6.4.4: Discipline associated with QI

Our employees should be open and receptive to the QI program and the feedback they are provided. To do that, they must feel safe. Associating discipline to a review will do little more than create a sense of fear in your workgroup.

This is not to say that poor performance should be ignored. Instead, consider your QI program as an early warning system. If a call taker is failing to perform a task on one call, they are probably doing it on others.

Utilize the QI reviews to help you determine who needs to be more closely monitored, or even live monitored, while call taking. If a performance improvement plan (PIP) is required,

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T-CPR QI Program Design and Development



- Provide basic (and ongoing) training on cardiac arrest and CPR
- Train telecommunicators on process, policy, expectations, and performance
- Train QI evaluators and supervisors on process, policy, expectations, and performance
- Develop action plans to address performance issues in response to QI findings

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Unit 7 - T-CPR QI Program Design and Development – Step 3

**After many hours of hard work and dedication to the process,
it's time to go live with your program!**

7.1: Program Development - Publish policy

Through the course of your training it is possible that you have found areas for improvement in your program and process that should be reflected in an updated SOP. If that is the case, ensure your employees have received the most current SOP and are provided an opportunity to ask questions or seek clarification before “go-live.”

7.2: Program Development - Collect calls for review

AHA Program Recommendation #3 advises that 100% of calls in which resuscitation is attempted must have the call audited for QI purposes. As you are ramping up your program, it is possible that you may not have the resources to review 100% of those calls. That is OK, for now. Some QI is better than no QI. The important thing is that you are doing *something*.

It is highly suggested that you start out selecting calls for review that have a positive result. This will benefit you as you work to integrate this new process into your center's culture and allow your employees to become familiar and comfortable with this new program.



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7.3: Program Development - Analyze data

The initial data you collect as part of your review process is very important as it provides you with a starting point for your program and your employee's performance. This data will be used to compare the effectiveness of training and ongoing QI.

Quality improvement is an ongoing process, and success does not come overnight. Only through consistent feedback and training will you see the benefits of the process.

7.4: Program Development - Provide employee feedback

Employees should never just be handed a written review. It should be accompanied by a sit-down meeting with the QI reviewer who will explain to the call taker why their call was evaluated the way it was. It also provides your employee a chance to ask questions and seek clarification. Recommendations for improvement should be clearly articulated during the review process.

As previously stated, the 9-1-1 audio associated with the QI should be included as part of the feedback process.

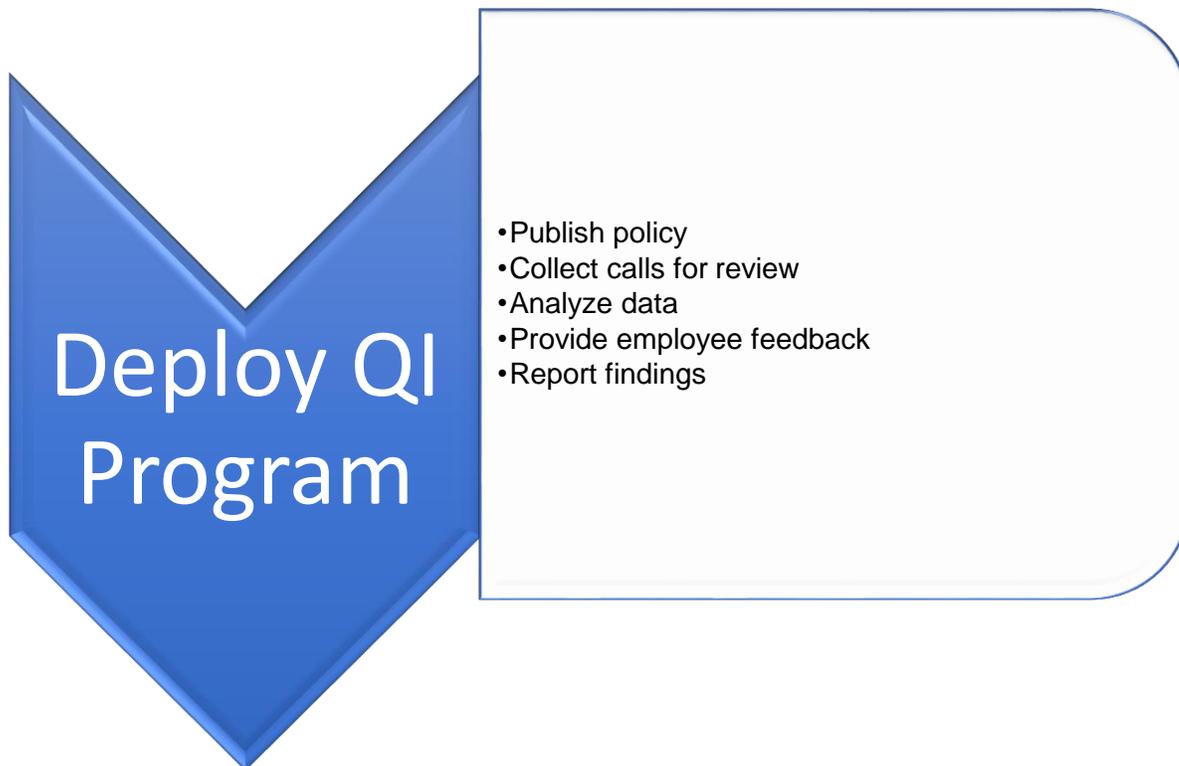
7.5: Program Development - Report findings

Once you have collected your data, summarizing performance and trends, share this information with your agency and stakeholders. It's important to remember that you are in the beginning stages of an improvement process. What is important is not where you are today, but where you are tomorrow. The goal is ongoing improvement.

Additionally, the initial findings will help your program identify and prioritize training needs.

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T-CPR QI Program Design and Development



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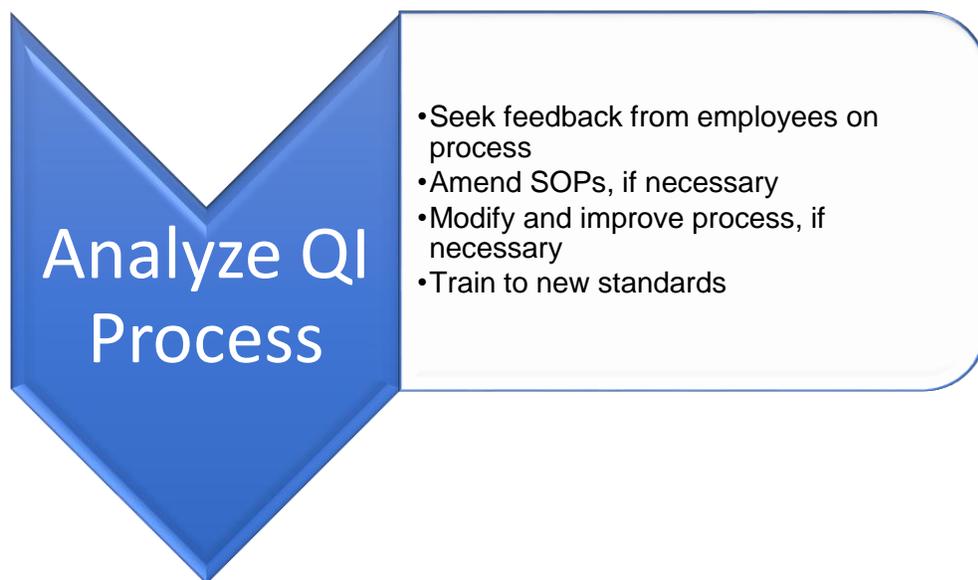
The Role of Telecommunicators and Telephone-CPR QI in Cardiac Arrest Survival

Unit 8 - T-CPR QI Program Design and Development – Step 4

This phase of your program, like the others, will be ongoing for the life of your program. You must constantly evaluate your program to ensure that what you developed today will meet the needs of your agency tomorrow. Ask your employees and your stakeholders what is working, and what isn't. This can be done as part of your QI review meetings, or anonymously using a free online survey site.

It is recommended that you review your program and processes on a quarterly basis for the first year, and then annually after that.

T-CPR QI Program Design and Development

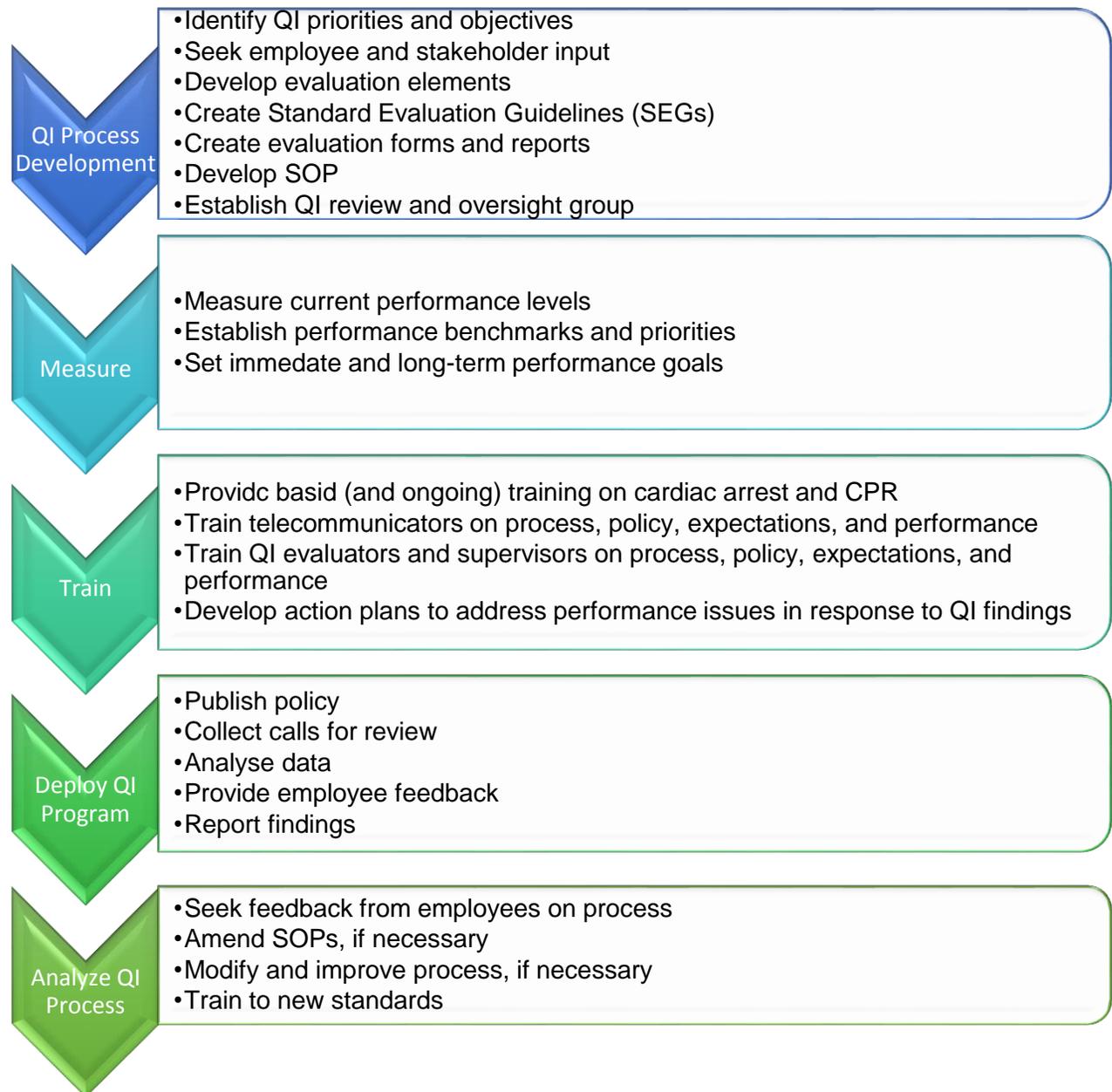


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QI Program Development - Process Overview

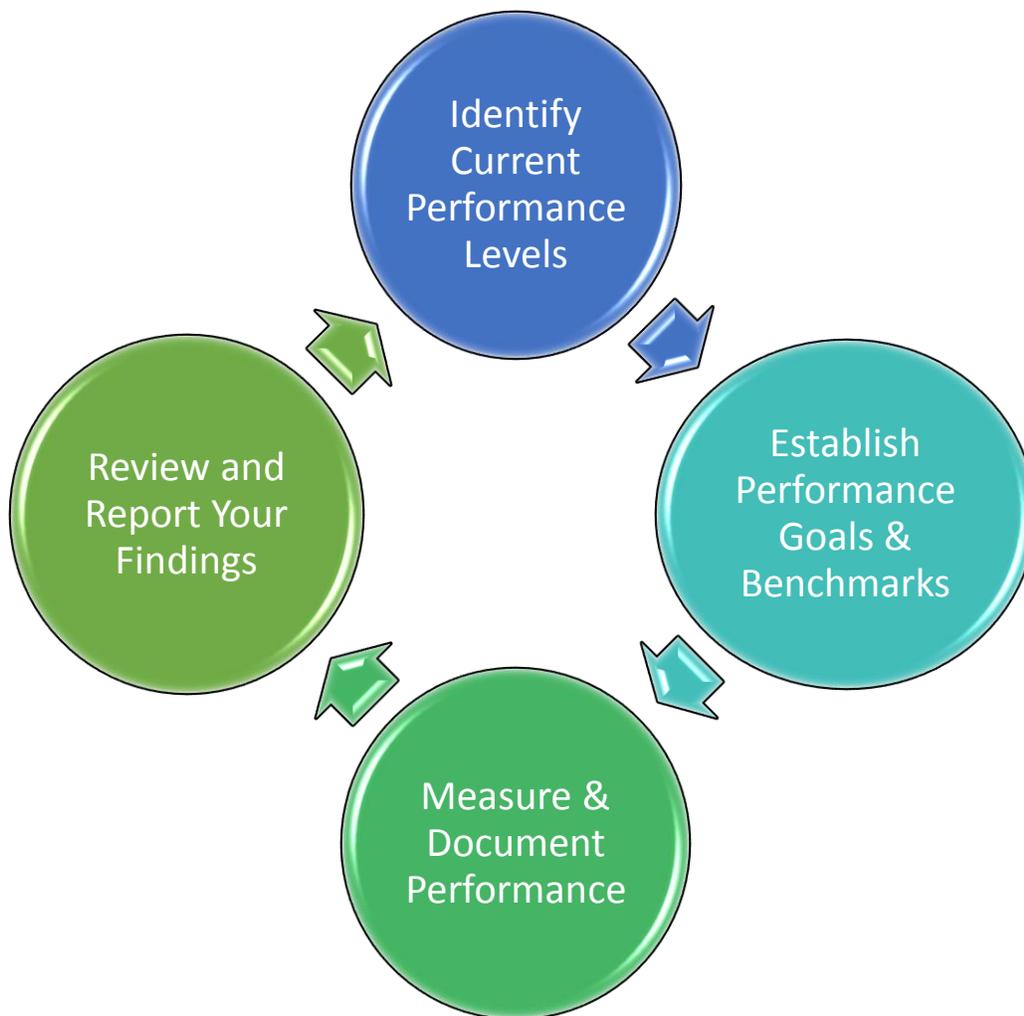


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The Cyclical Process of Improvement



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Unit 9 – Employee Recognition Program

The importance of employee recognition cannot be overstated. Recognizing your employees for achieving performance goals will result in increased telecommunicator engagement, morale, and productivity. Recognition helps to reinforce desired behaviors, and celebrates successful outcomes.

When developing your program, and creating your operational budget, consideration should be given to allocating resources for recognition opportunities.

So, what should you recognize? Here are some ideas:

Individual recognition

- CPR Save
- Sustained performance – Meeting T-CPR performance standards for a period of time, such as during the quarter, or during the course of the year

Team recognition

- Achieving performance goals



As stated in the beginning of this material, telecommunicators are a vital member of the EMS team. Now is the time to take advantage of the relationships built with your external stakeholders during the process of developing your program. Working with your EMS agencies, explore ways to include telecommunicators when “meet and greets” take place with survivors.

Your recognition program is only limited by your imagination, and it does not have to break the bank. Consider a lanyard pin, or even a certificate with a roll of Lifesavers attached as a fun way to recognize a CPR save. How about a pizza party for the team when your performance goals are achieved?



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Acknowledge the accomplishments of your employees publicly, at board meetings, council meetings, newsletters or on your social media. Again, you are only limited by your creativity.

Remember, despite best efforts, the fact is that not everyone will live. The impact of this on your employees cannot be minimized. Not only can this be emotionally draining, but it is highly discouraging as well. “I’m doing everything right, so why don’t they survive?” It is important that our telecommunicators remain motivated and committed to the process. Because even though it is hard for them to see sometimes, what they do does matter, and they are making a difference.

Finally, the most important recognition we can give doesn’t have to cost us a thing. You cannot put a price on the value of a supervisor, co-worker, or EMS crew telling a call taker “good job”, regardless of the outcome of the call.

A Person Who Feels Appreciated Will Always Do More Than What is Expected



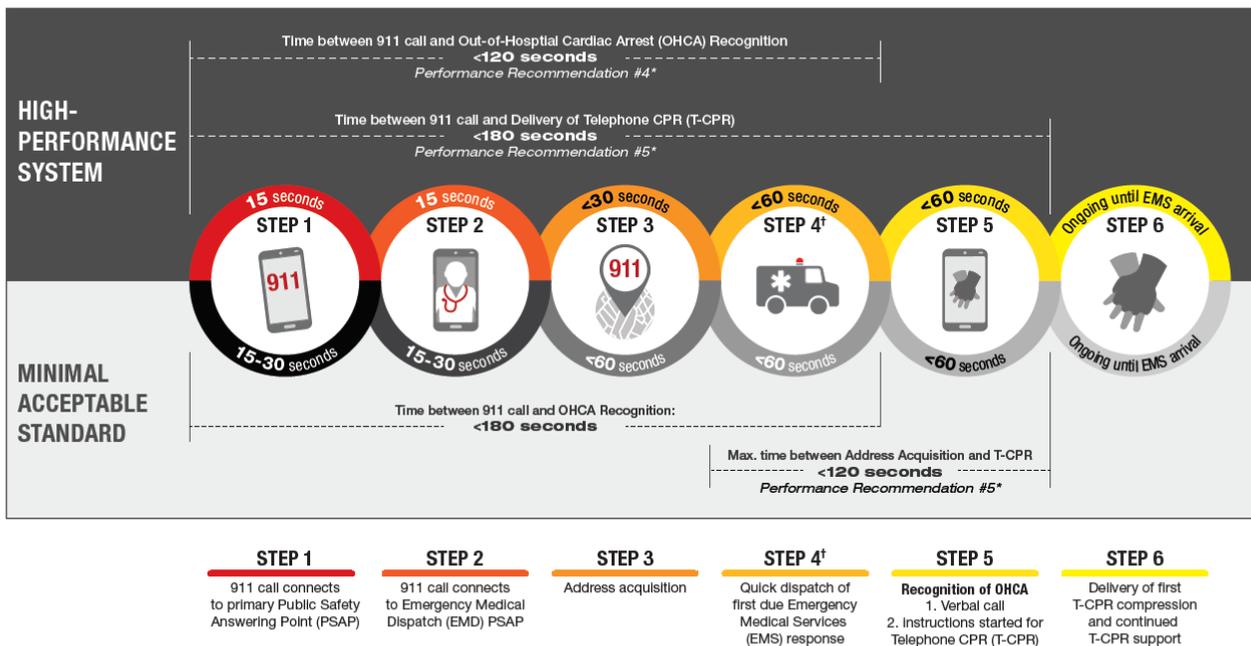
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American Heart Association T-CPR Performance Recommendations Time Interval Standards

Telephone CPR Program Time Interval Standards



*These recommended performance intervals should be as short as possible as described in the "High Performance System"

#'s provided are minimal acceptable performance

[†]As soon as a medical emergency is recognized, dispatch of the 1st due EMS response should occur in parallel with other EMD processes and within 30 secs of address acquisition.

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American Heart Association Telephone CPR (T-CPR) Program Recommendations and Performance Measures

Sudden cardiac arrest (SCA) is the sudden, unexpected loss of heart function, breathing and consciousness, and is commonly the result of an electrical disturbance in the heart. Each year an estimated 350,000 cardiac arrest events occur in the United States in an out-of-hospital environment. Almost all of these events result in a call for help to 911. Without quick intervention in the form of cardiopulmonary resuscitation (CPR) and defibrillation, death from SCA is certain.

Telecommunicators are the true, first responders and a critical link in the cardiac arrest chain of survival. It is the telecommunicator, in partnership with the caller, who has the opportunity to identify a patient in cardiac arrest, providing the initial level of care by delivering telephone CPR (T-CPR) instructions to the caller, and quickly dispatching the appropriate level of help. It is through these actions that the telecommunicator can make the difference between life and death. It is important to emphasize that the telecommunicator and the caller form a unique team in which the expertise of the telecommunicator and the willingness of the caller to provide T-CPR represents the best opportunity to improve survival from SCA.

The information below outlines the minimal acceptable standards for timely and high-quality delivery of T-CPR instructions by emergency telecommunicators. Where possible, these processes should occur in parallel, rather than in series, to minimize the overall time interval from 911 call to T-CPR as much as possible.

Every emergency dispatch center in the nation should be aware of the following:

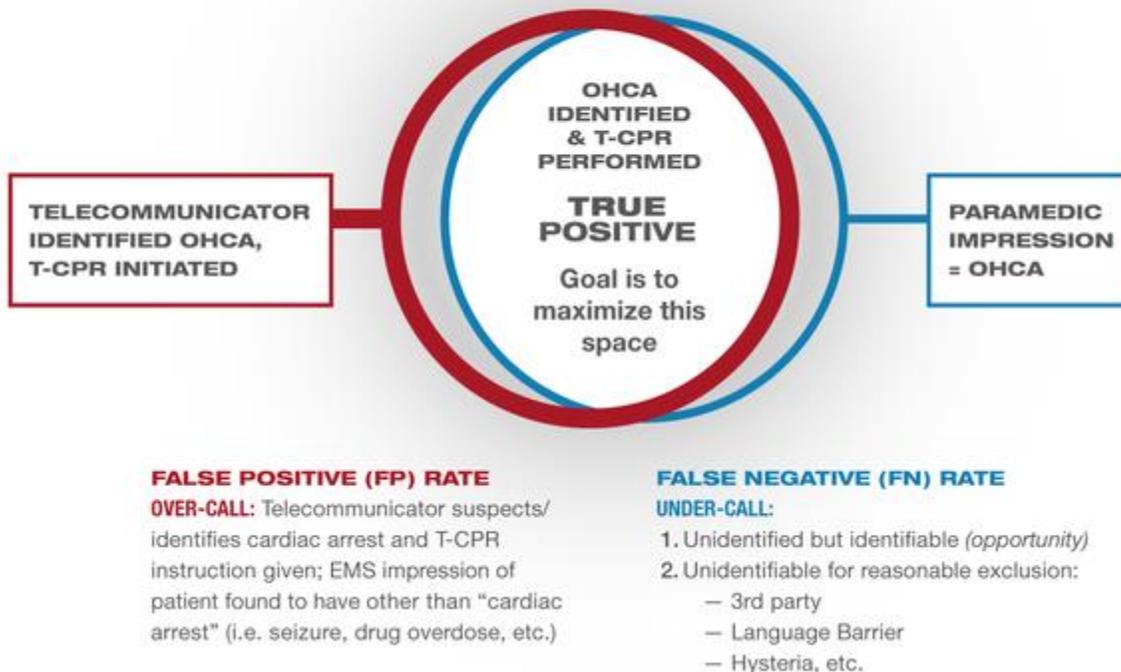
- The provision of T-CPR instruction for virtually all cardiac arrests is a standard of care.
- Meeting this standard requires training, ongoing training, and continuous quality improvement.
- Meeting this standard saves lives.
- Not meeting this standard results in deaths that are preventable.

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Program Recommendations



1. Commitment to T-CPR:

- The emergency communications center will commit to providing effective T-CPR.
- The dispatch center director must provide leadership and hold the staff accountable for implementation.

2. Train and Provide Continuing Education in T-CPR for all Telecommunicators

- Require initial training for 100% of call takers and dispatchers. Initial training will require an estimated 3-4 hours.
 - Require ongoing continuing education. This will require 2-3 hours annually.
-

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3. Conduct Ongoing Quality Improvement (QI) for all Calls in which a Cardiac Arrest is Confirmed by EMS Personnel and in which Resuscitation is Attempted

- 100% of calls in which resuscitation is attempted must have the dispatch call audited for QI purposes.
- The QI must collect key time intervals and reasons for non-recognition of cardiac arrest and reasons for delays.
- Individual QI review of every cardiac arrest call provided by the supervisor (or designated QI person) including helpful feedback.
- QI reports must be summarized annually and secular trends reported.
- QI reports should be used to identify training needs.

4. Connection to EMS Agency

- Close engagement with the EMS agency is required to link data from dispatch audio with EMS run report data.
- Linkage with EMS is required to identify the denominator of total cardiac arrest cases and the percentage of all cardiac arrests which are recognized as cardiac arrest by the telecommunicator/dispatcher.

5. Designated Medical Director

- There must be a designated communications center medical director who shall issue the dispatch protocols for T-CPR and be able to work closely with the EMS agency. Ideally there should be a combined medical director for the dispatch center and EMS agency.

6. Recognition for Outstanding Performance

- Telecommunicator recognition program for outstanding performance in the recognition of cardiac arrest and delivery of T-CPR instructions.

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Performance Recommendations

1. Percentage of Total Out-of-Hospital Cardiac Arrest (OHCA) Cases Correctly Identified by Public Safety Answering Point (PSAP)

- Definition: telecommunicator recognized / total OHCA (confirmed by EMS impression)
- Numerator: # of QI reviewed EMS confirmed OHCA with recognition noted
- Denominator: EMS confirmed OHCA
- **Performance Goal: 75%**

2. Percentage of OHCA Cases Correctly Identified by PSAP that were Recognizable

- Definition: telecommunicator recognized / number of cases deemed identifiable
- Numerator: number of QI reviewed EMS confirmed OHCA with recognition noted
- Denominator: number of QI reviewed EMS confirmed OHCA deemed identifiable by supervisor
- Exclusions from denominator:
 - 3rd party calls
 - Hang up
 - Hysteria
 - CPR in progress
 - Language barrier
 - Other circumstances supervisor deems “unidentifiable”
- Performance Goal: **95%**

3. Percentage of Call-Taker Recognized OHCA Receiving T-CPR

- Definition: number of telecommunicator recognized OHCA cases receiving call-taker directed T-CPR / number of call-taker recognized OHCA cases
 - Numerator: number of QI reviewed EMS confirmed OHCA with recognition noted where call-taker directed T-CPR is preformed
 - Denominator: number of QI reviewed EMS confirmed OHCA with recognition noted
 - Exclusions from denominator:
 - CPR is already in progress by bystander
 - Caller is unable to physically perform CPR (ie, call being made from alternative location to OHCA)
 - Caller is unable to get patient into appropriate position for CPR (i.e., can't move patient from bed to floor)
 - Call-taker refuses
 - For safety, T-CPR instructions are not given (e.g., traumatic cause, disaster scenario, etc.)
-

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- Hang up
- Other circumstances supervisor deems T-CPR could not be performed
- **Performance Goal: 75%**

4. Median Time Between 911 Call and OHCA Recognition

- Definition: median amount of time in seconds between 911 call connected and OHCA recognition
- Benchmark: < 120 seconds (less than 60 seconds from address acquisition to telecommunicator recognition of OHCA)
- **We acknowledge:**
 - This performance goal may be challenging to meet in the short-term due to PSAP call transfer protocols that may lie outside the authority of the PSAP responsible for EMS dispatch.
 - Measurement of intervals prior to call transfer to the PSAP responsible for dispatching EMS should be included, however where impractical, the minimal acceptable performance recommendation should revert to less than 60 seconds from address acquisition to telecommunicator recognition of OHCA.

5. Median Time Between 911 Call and First T-CPR Directed Compression

- Definition: median amount of time in seconds between 911 call connected and first CPR compression directed by telecommunicator
 - Benchmark: < 180 seconds (less than 120 seconds from address acquisition to first CPR compression directed by telecommunicator)
- **We acknowledge:**
 - This performance goal may be challenging to meet in the short-term due to PSAP call transfer protocols that may lie outside the authority of the PSAP responsible for EMS dispatch.
 - Measurement of intervals prior to call transfer to the PSAP responsible for dispatching EMS should be included, however where impractical, the minimal acceptable performance recommendation should revert to less than 120 seconds from address acquisition to first telecommunicator directed T-CPR compression.

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Sample QI Forms

Review Date: _____

Employee Name: _____ T-CPR QI Review Performed by: _____

Incident Date: _____ Incident Time: _____ Incident Number: _____

1. Time of address verification: _____:_____

(min) (sec)

2. Was the need for T-CPR identified?

Yes No

2a. Time of Recognition: _____:_____

(min) (sec)

2b. Reason for delay, if any:

- | | |
|---|---|
| <input type="checkbox"/> Lost call/Line disconnected | <input type="checkbox"/> Caller's emotional state |
| <input type="checkbox"/> RP left the phone | <input type="checkbox"/> Language barrier |
| <input type="checkbox"/> RP not with patient/3 rd hand party | <input type="checkbox"/> CPR already in progress |
| <input type="checkbox"/> Inappropriate workflow | <input type="checkbox"/> Other _____ |

Comments:

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2. Were T-CPR instructions provided?

Yes No

2a. If yes, indicate all instructions provided:

Positioning (floor/hard flat surface) Compressions

Ventilations, if applicable

2b. Time of first compression: ____:____
(min) (sec)

2c. Reason for delay, if any:

Call taker did not recognize cardiac arrest

Unassisted CPR already in progress

Caller not with patient

Caller is physically unable to perform CPR

Caller is physically unable to position patient

CPR declined

Presence of POLST/DNR orders

Obvious DOA

Unsafe for CPR to be performed (trauma, disaster scenario)

Caller disconnected

Aid arrived prior to delivery of compressions

Patient did not present as cardiac arrest (false negative)

Other _____

Comments:

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Employee Name: _____ T-CPR QI Review performed by: _____
 Review Date: _____ Incident Date: _____ Incident Time: _____
 Time of Address Acquisition: _____ : _____ Incident Number: _____

Cardiac Arrest Recognition					
Q1	Was the need for T-CPR identified?	Yes	No	N/A	Comments

Q2 Time of Recognition: _____ : _____
Performance Goal: Time between 9-1-1 call and OHCA Recognition - <120 seconds (less than 60 seconds from address acquisition)
 Q3 Was performance goal met? Yes No N/A Comments

T-CPR Instructions					
Q4	Were T-CPR Instructions Provided	Yes	No	N/A	Comments

Q5 If yes, indicate all instructions provided: _____ Positioning _____ Compressions _____ Ventilations, if applicable _____
 Q6 Time of first compression: _____ : _____
 Q7 Reason for delay, if any:
 Call taker did not recognize cardiac arrest _____ Unassisted CPR already in progress _____ DNR/POLST _____
 Caller physically unable to position patient _____ Caller physically unable to perform CPR _____ Obvious DOA _____
 Caller not with patient _____ CPR declined _____ Caller disconnected _____
 Unsafe for CPR to be performed _____ Aid arrived prior to instructions _____ Unsafe to perform CPR _____
 False negative _____ CPR already in progress _____ Other _____

Performance Goal: Time between 9-1-1 call and first T-CPR directed compression - <180 seconds (less than 120 seconds from address acquisition)
 Q8 Was performance goal met? Yes No N/A Comments

Employee signature: _____ Date: _____

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Sample Standard Evaluation Guidelines (SEG)

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CARDIAC ARREST IDENTIFICATION

Exceeds Standards	Utilizing agency EMD guidelines, demonstrates appropriate workflow, absent of unnecessary questions, to identify patient in cardiac arrest in 30-45 seconds from address acquisition.
Meets Standards	Utilizing agency EMD guidelines, demonstrates appropriate workflow, absent of unnecessary questions, to identify patient in cardiac arrest in 45-60 seconds from address acquisition.
Below Standards	Workflow is inconsistent with agency EMD guidelines. Signs and symptoms are over-verified. Unnecessary questions asked, such as patient's medical history, or activity prior to collapse. Time to identification of cardiac arrest greater than 60 seconds, or cardiac arrest failed to be identified.

T-CPR INSTRUCTIONS

Exceeds Standards	Delivery of first chest compression within 60 - 90 seconds of cardiac arrest identification. Provides encouragement to caller. Maintains compression rate of 100 - 120 beats per minute with minimal to no interruptions. Is able to problem solve patient positioning issues to ensure patient is in optimal position flat on the back on the floor. Advises caller of AED location on premise, when
Meets Standards	Delivery of first chest compression within 90 - 120 seconds of cardiac arrest identification. Provides encouragement to caller. Maintains compression rate of 100 - 120 beats per minute with no unnecessary interruptions. Is able to problem solve patient positioning issues to ensure patient is in optimal position flat on the back on the floor.
Below Standards	Delivery of first chest compression greater than 120 seconds of cardiac arrest identification, or not at all, excluding calls where CPR is refused by caller or patient has DNR. Fails to problem solve patient positioning issues. Fails to provide encouragement to caller. Compression rate is less than 100 beats per minute. Call taker frequently interrupts caller causing a decrease or cessation of chest compressions.

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Sample QI Policy

QUALITY IMPROVEMENT (QI) PROGRAM STANDARD OPERATING PROCEDURE

1.0 PROCEDURE APPLIES TO

All Employees Operations Administration Technology

2.0 PURPOSE

- 2.1 The purpose and objective of the quality improvement program is to improve the performance of the agency and its employees, increase its operational efficiency, complying with policy and national standards, to identify training needs, and to ensure the highest level of service and care to our customers and citizens.

3.0 POLICY

- 3.1 It is the policy of this agency to ensure its ability to meet performance requirements through a Quality Improvement Program (QI).

4.0 PROCEDURE

- 4.1 The quality improvement program is utilized by this agency to measure individual performance against job performance standards and to apply, when necessary, the appropriate course of action to restore minimum levels of performance.

4.3 Process

- 4.3.1 Quality improvement reviews will be limited to employees who have been released from training in the area being reviewed.
- 4.3.2 Supervisors, or agency designees, will conduct reviews on a random sampling of 2% of calls per month for each employee.

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- 4.3.2.1 100% of calls confirmed as cardiac arrest by EMS, in which resuscitation is attempted, must have the dispatch call audited for QI purposes.
 - 4.4 Copies of completed reviews will be provided to employees within 5 days of completion.
 - 4.4.1 Supervisor, or agency designee, completing the review will meet with employee to review QI feedback.
 - 4.4.2 All quality improvement reviews will include associated 9-1-1 call audio.
 - 4.5 QI's that do not meet standards will be referred to the employee's supervisor and the agency training supervisor for the development of a performance improvement plan (PIP).
 - 4.6 The Operations Manager will prepare monthly and quarterly written reports identifying trends, compliance with established performance standards, citing areas of exemplary performance, and providing information on performance areas of concerns. This report shall be forwarded to all communication center employees and stakeholders.
 - 4.7 QI's will be conducted using the currently approved rating form and performance guidelines.

5.0 PERFORMANCE STANDARDS

To assess agency and employee performance, Quality Improvement Reviews are conducted to ensure compliance to performance measurement standards as outlined in this policy.

- 5.1 Recognition of cardiac arrest in less than 60 seconds from address acquisition.
- 5.2 Delivery of first T-CPR directed chest compression within in 120 seconds from address acquisition.

NOTES

The Road to Recognition and Resuscitation

The Role of Telecommunicators and Telephone-CPR QI in Cardiac Arrest Survival

Definitions

Quality Improvement	Actions taken to identify opportunities for improvement
Quality Assurance	Actions taken to ensure that standards and procedures are being adhered to
Median	The middle number in a given sequence of numbers when it's ordered by rank
Mean	The average of a set of numbers
Benchmark	A standard or point of reference
Triage	The assignment of degree of urgency
Dispatcher	Telecommunicator whose primary responsibility is to maintain contact with responders over the radio while processing calls for service
Telecommunicator	Industry recognized name for professionals working in a communication center in the capacity of a call taker or dispatcher
Call Taker	Telecommunicator whose primary responsibility is to receive incoming calls for service via 9-1-1 and non-emergency lines
Call Receiver	Telecommunicator whose primary responsibility is to receive incoming calls for service via 9-1-1 and non-emergency lines
PSAP	Public Safety Answering Point
Primary PSAP	PSAP which 9-1-1 calls are routed or received directly
Secondary PSAP	PSAP to which 9-1-1 calls are transferred from a primary PSAP
AHA	American Heart Association
RAF	Resuscitation Academy Foundation
T-CPR	Telecommunicator or Telephone CPR

NOTES

The Road to Recognition and Resuscitation

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Resources

American Heart Association

T-CPR Performance

http://cpr.heart.org/AHA/ECC/CPRECC/ResuscitationScience/UCM_477526_CPR-Emergency-Medical-Dispatcher-CPR-Instructions.jsp

APCO/NENA Standards

Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points

<https://www.apcointl.org/doc/911-resources/apco-standards/600-11071-2015-quality-assurance/file.html>

Core Competencies and Minimum Training Standards for Public Safety Communications Quality Assurance Evaluators (QAE)

<https://www.apcointl.org/doc/911-resources/apco-standards/431-competencies-training-requirements-for-public-safety-communications-quality-assurance-evaluators/file.html>

Resuscitation Academy

<http://www.resuscitationacademy.org/>

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