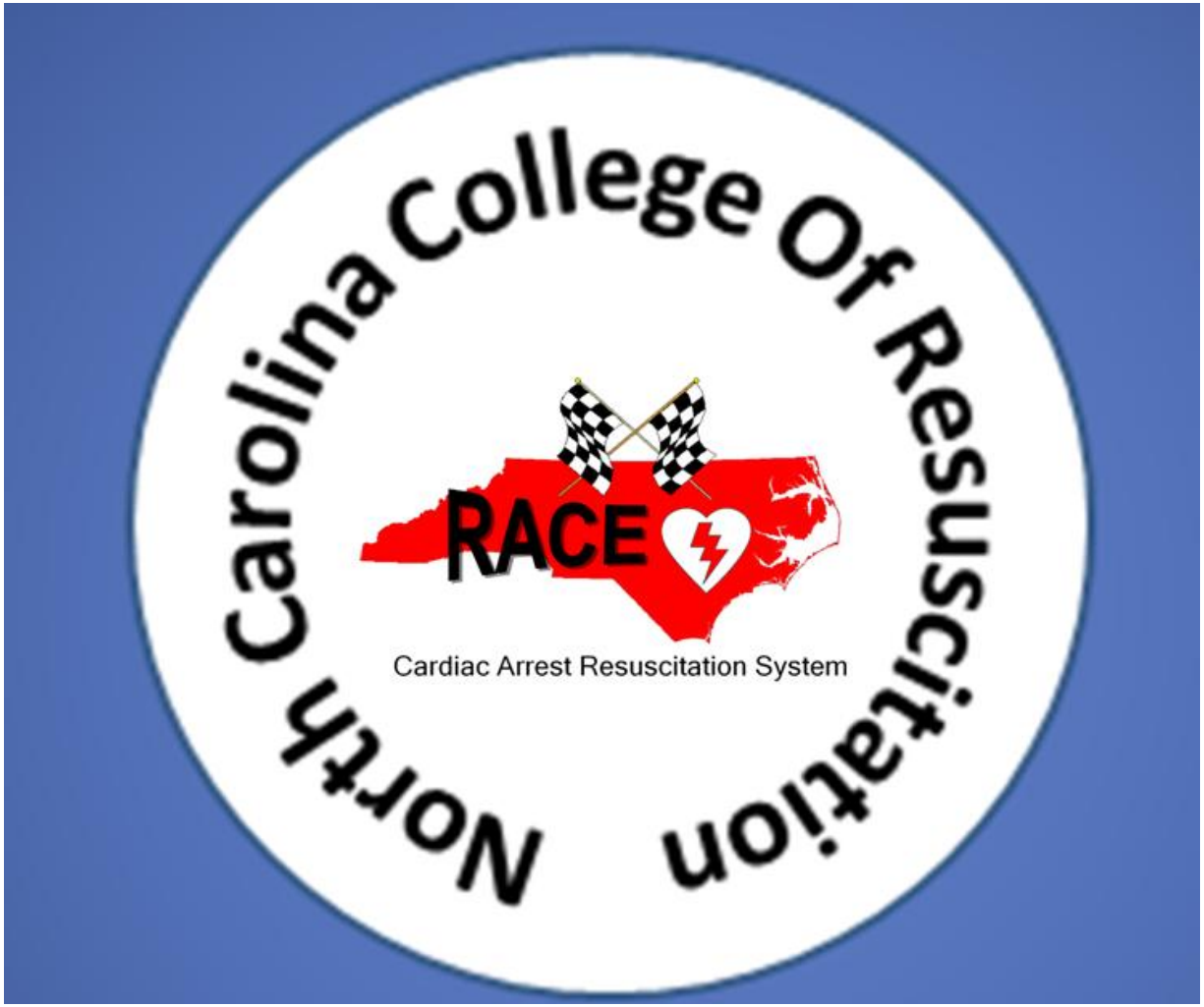
MODULE 2


North Carolina College Of Resuscitation
RACE
Cardiac Arrest Resuscitation System

Emergency Medical Dispatch

Improving Outcomes by Wire

Darrell Nelson, MD, FACEP
Forsyth Medical Center
Emergency Department
Stokes Co Medical Director

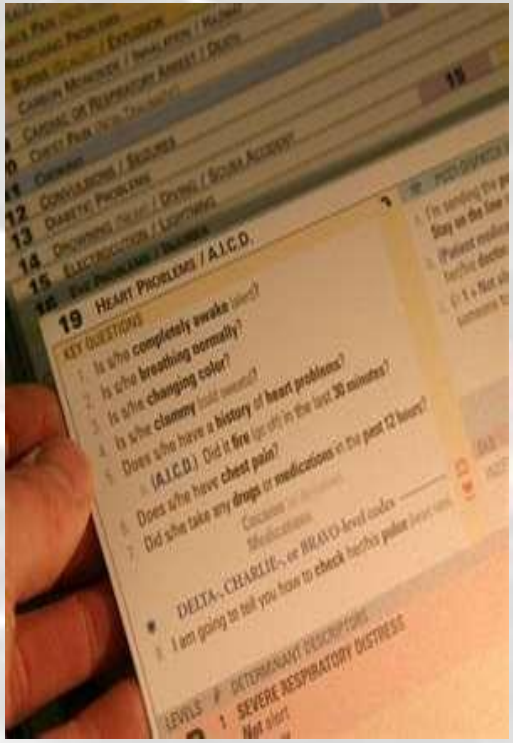
Who I am?

- Manage calls
- Maintain communications
- Read maps
- Technical skills
- Record keeping
- Computer skills
- Prioritizing
- Counselor
- Calming
- Multi-tasker
- Clear speaker
- Adapts to changing environment
- Flexible for schedule
- Handles stress
- Cooperation
- Typing
- Walks on water

Dispatcher

System Capabilities:

- Computer Aided Dispatch
- Cards
- Written local protocols
- No pre-arrival instructions



- NC: 70% of counties have EMD
  - What about the rest

Dispatch Training

- National Certification from National Academies of Emergency Dispatch
- State Training
- CPR certification
- Does NC have a standard?
- Do you think this would be helpful?

Questioning the 9-1-1 Caller

- Determine chief complaint
- Obtain identifying information & location
- Determine if the patient is in cardiac arrest
  - Example of actual call

Let’s listen:

What would you do differently?

All Callers Interrogation

2 Questions:

- "Is the patient conscious?"
  - Why do we ask this first? If they are unconscious then what do we ask?

- "Is the patient breathing normally?"
  - Why don't we ask this if the patient is conscious /awake?

All Callers Interrogation:

- If unsure about consciousness, ask:
  - Does the person respond to you?
  - Talk to you?
  - Answer you?
  - Hear you?
  - Does the person move?
  - Flinch?
  - Move arm or legs?
  - Look at you when you call their name?
  - Respond to touch?

All Callers Interrogation

- If the person is unconscious, ask "Is the person breathing NORMALLY?"
  - What is breathing normally?
  - If unsure ask:
    - Is the chest rising and falling?
  - If reporting party cannot tell or is still unsure, start CPR instructions

Agonal Respirations:

- Slow, passive & ***ineffective breathing***.

- Chest does not rise and fall NORMALLY – in a rhythmic pattern

- Agonal breathing is often mistaken by caller as breathing.

Agonal Respirations:

- Described by callers in a variety of ways:
  - barely breathing
  - heavy, labored breathing
  - gasping
  - snoring, snorting
  - gurgling
  - groaning, moaning
  - breathing every once in awhile

All Callers Interrogation:

- Unconscious / Not Breathing (normally)
- Requires BLS response & immediate CPR instructions!
  - "Stay on the line."
  - *(Dispatch ALS)*
  - "Help has been dispatched."

All Callers Interrogation:

- Unconscious / Breathing Normally
- “Stay on the line!”
- *Dispatch BLS and ALS for confirmed unconscious patient!*
- “Help has been dispatched.”
- *Proceed to Unconscious / Breathing Normal instructions*

CPR Pre-arrival instructions not given

SITUATIONS **WHERE** CPR WOULD NOT BE OFFERED

Situations where CPR would not be offered

- Trauma-induced cardiac arrest cases- except drowning, strangulation, hanging or electrocution
- Obvious DOA – cold, stiff, decapitated etc.
- DANGER TO THE RESCUER

What causes the delays?

DELAYS IN DELIVERING CPR IN EMD

Common Delays in Delivering CPR:

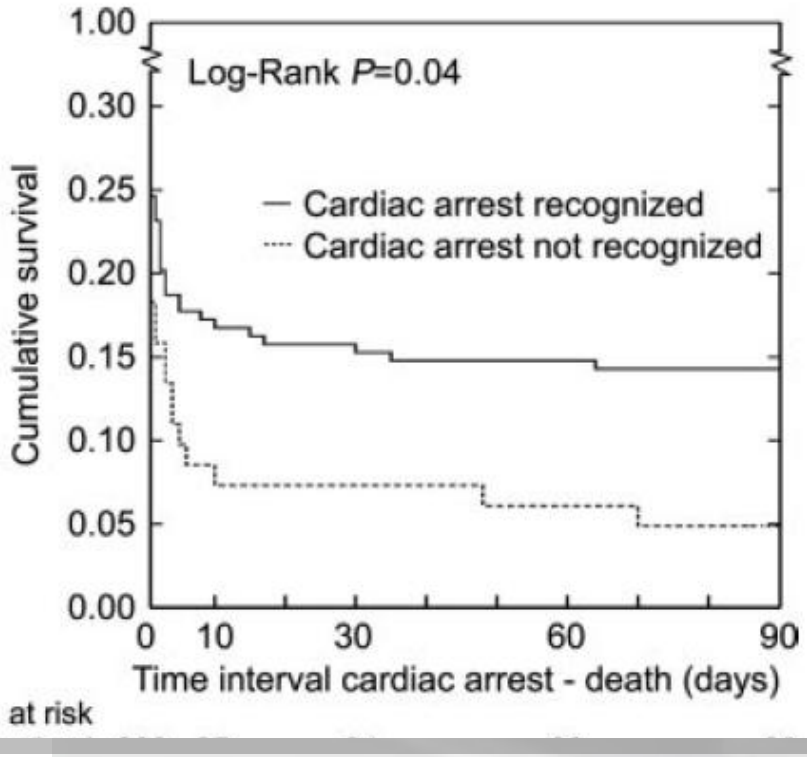
- Research showed these common causes of delay to CPR:
  - Unnecessary questions asked
  - Bystander not near patient
  - Omission of “breathing normally”
  - Deviation from protocols

Unnecessary questions cause delays:

- How old is the patient?
- Does the patient have a heart history?
- Duplication of questions.
- What is the patient experiencing?

- Amsterdam dispatch
- 506 cardiac arrest emergency calls (3%)
- Unrecognized, dispatch 0.9 min later, on scene 1.4 minute later
- Main reason in not recognizing cardiac arrest - not asking if the patient was breathing (42 of 82) / describe the type of breathing

3 month survival by dispatch recognition



Resuscitation Science

Importance of the First Link

Description and Recognition of an Out-of-Hospital Cardiac Arrest in an Emergency Call

Jocelyn Berdowski, MS, MSE; Freerk Beekhuis, RN; Aeilko H. Zwinderman, PhD; Jan G.P. Tijssen, PhD; Rudolph W. Koster, MD, PhD

Berdowski, *J. Circulation*. 2009;119:2096-2102

If patient is not conscious and not breathing - normally do we really need to know medical history?

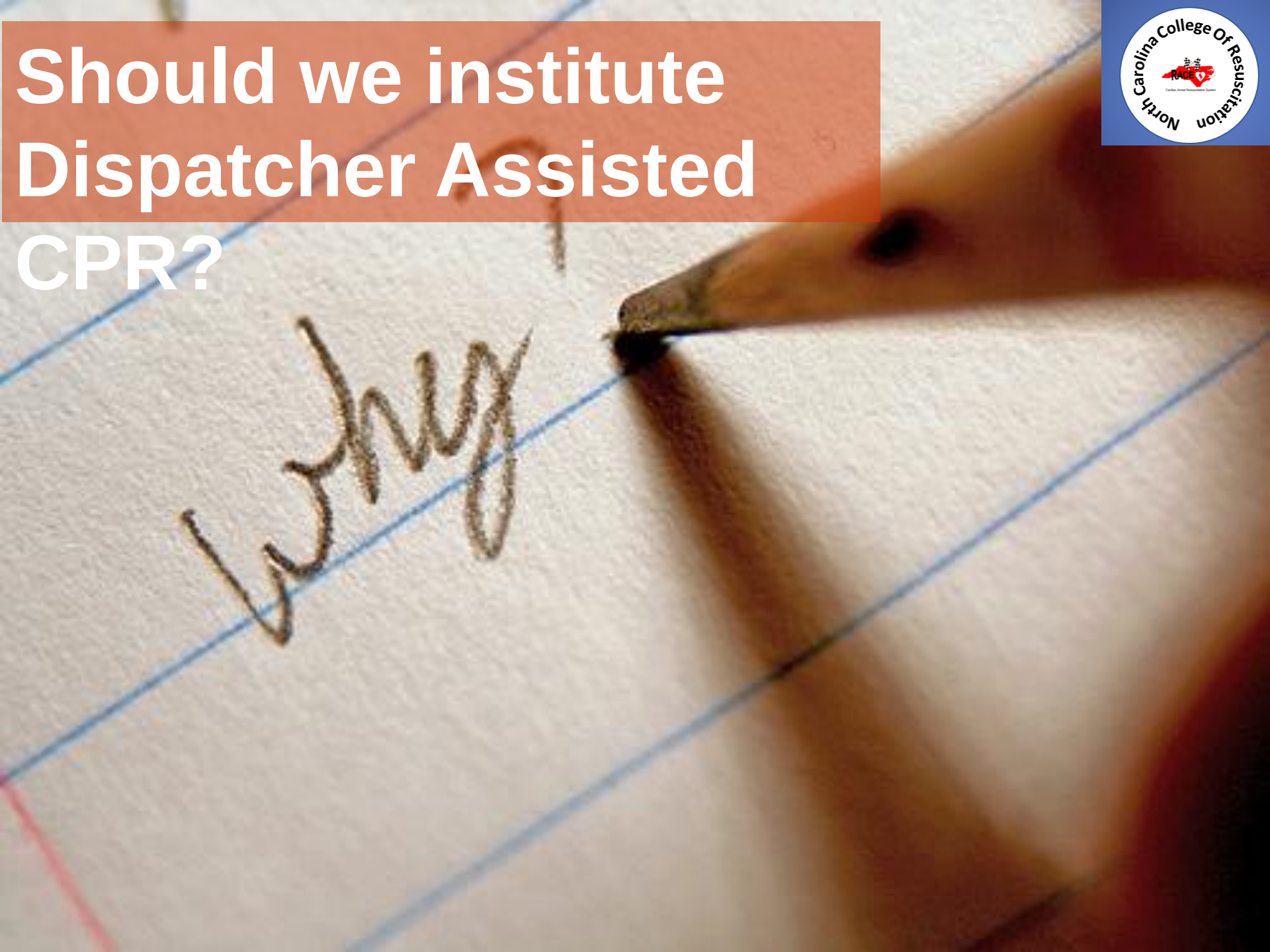
All we need to know

…<u>the patient is dead</u>.

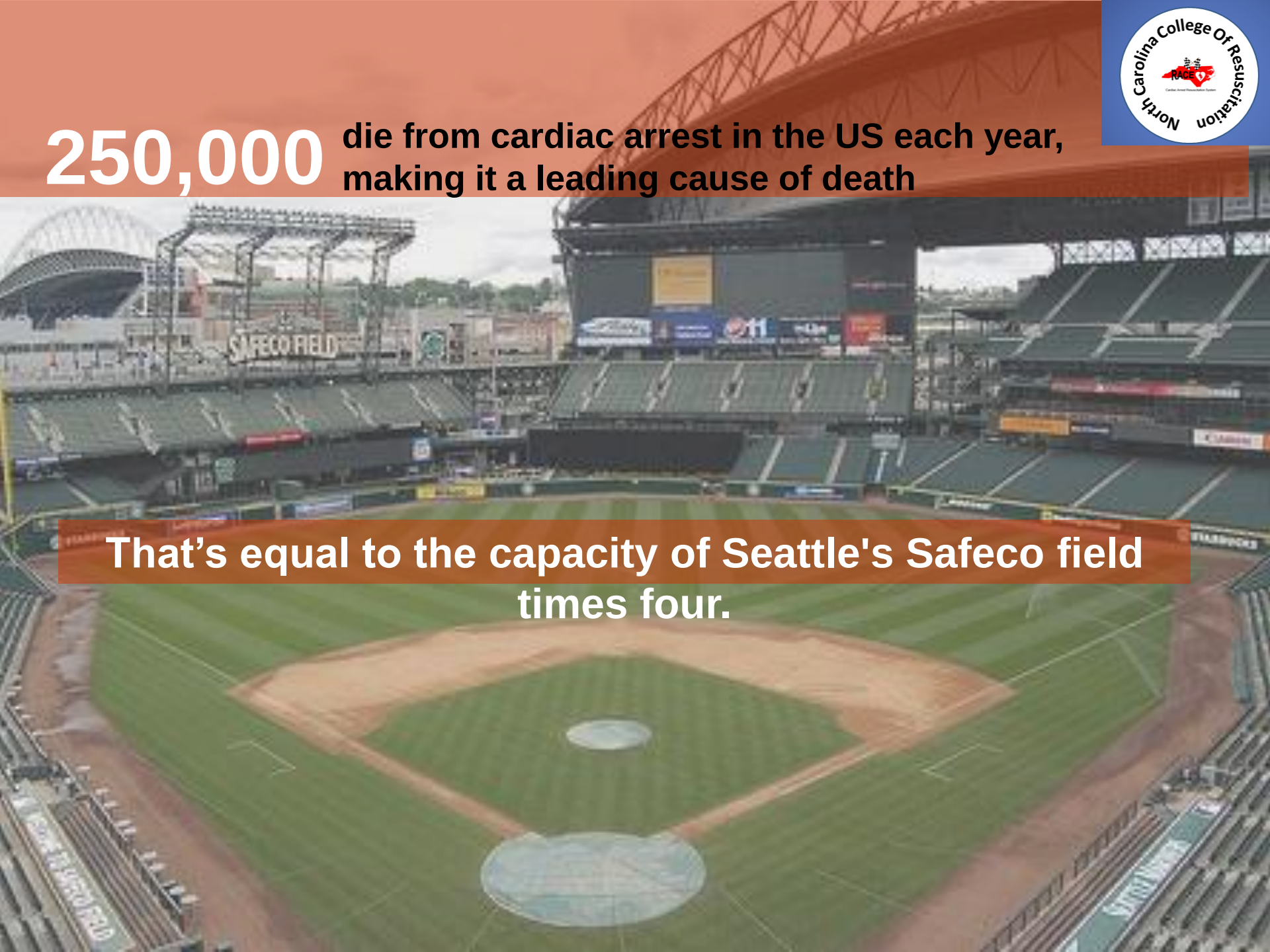
We need to offer CPR without delay and inform the caller that we will help them – example:

Let’s listen:

Should we institute Dispatcher Assisted CPR?



250,000 die from cardiac arrest in the US each year, making it a leading cause of death



That’s equal to the capacity of Seattle's Safeco field times four.


How often is CPR performed by bystanders?
Much less than we might imagine...
Only 25% of the time
North Carolina College Of Resuscitation
RACE

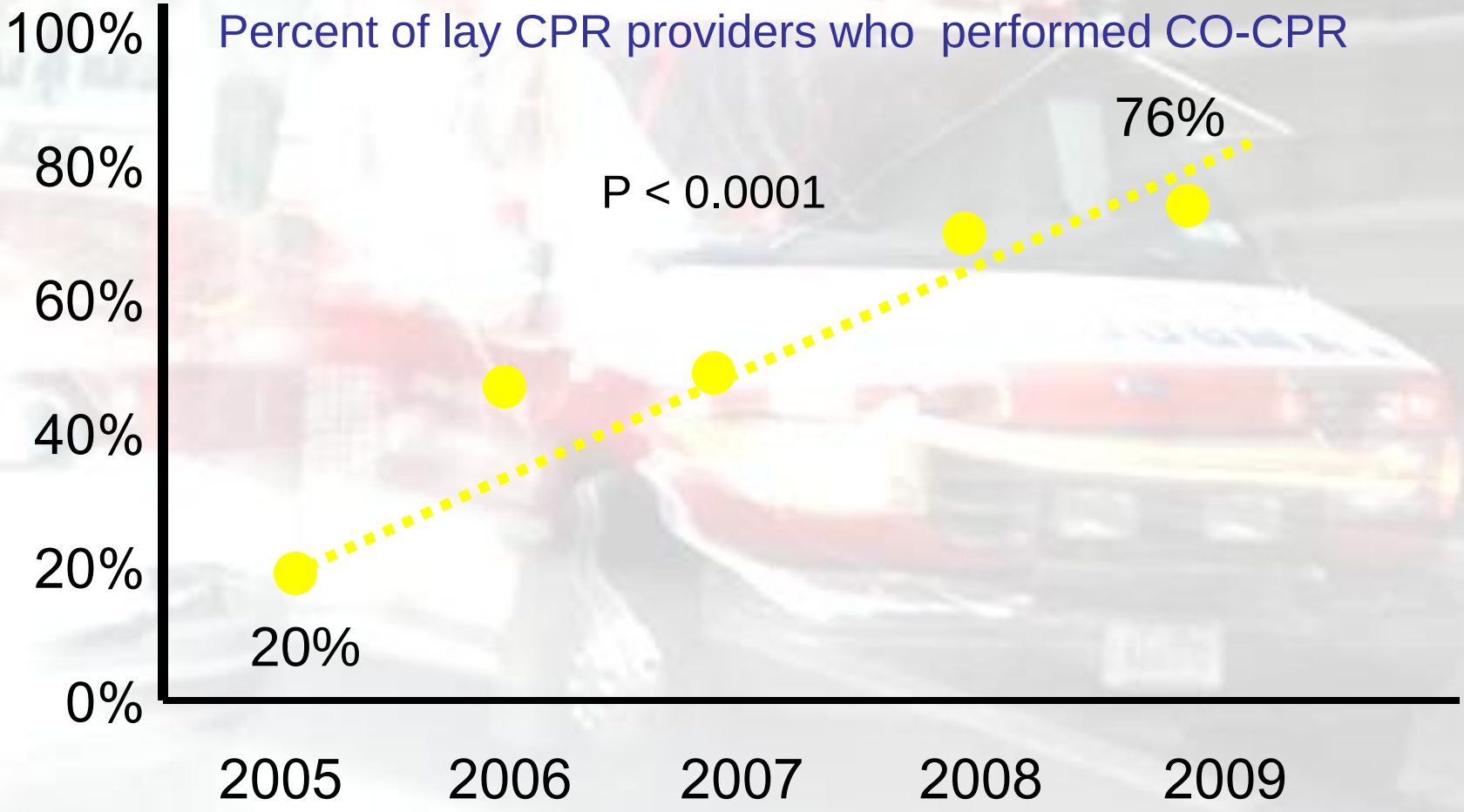
JAMA ORIGIONAL CONTRIBUTION

Chest Compression-Only CPR by Lay Rescuers and Survival From Out-of-Hospital Cardiac Arrest

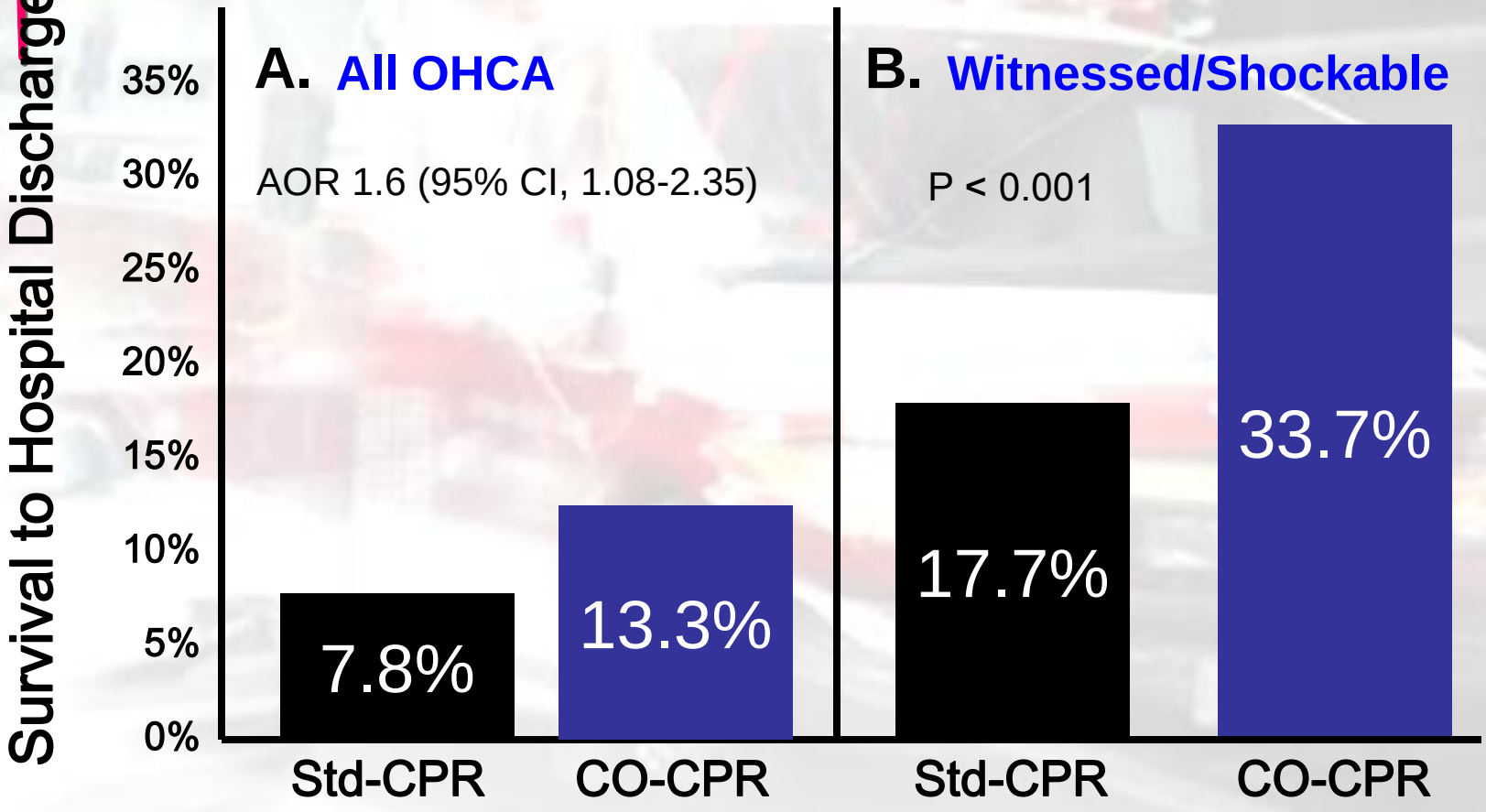
Bobrow *et al.*

JAMA 2010;304:1447-1454

Bystander CPR for OHCA in Arizona (2005 to 2010)



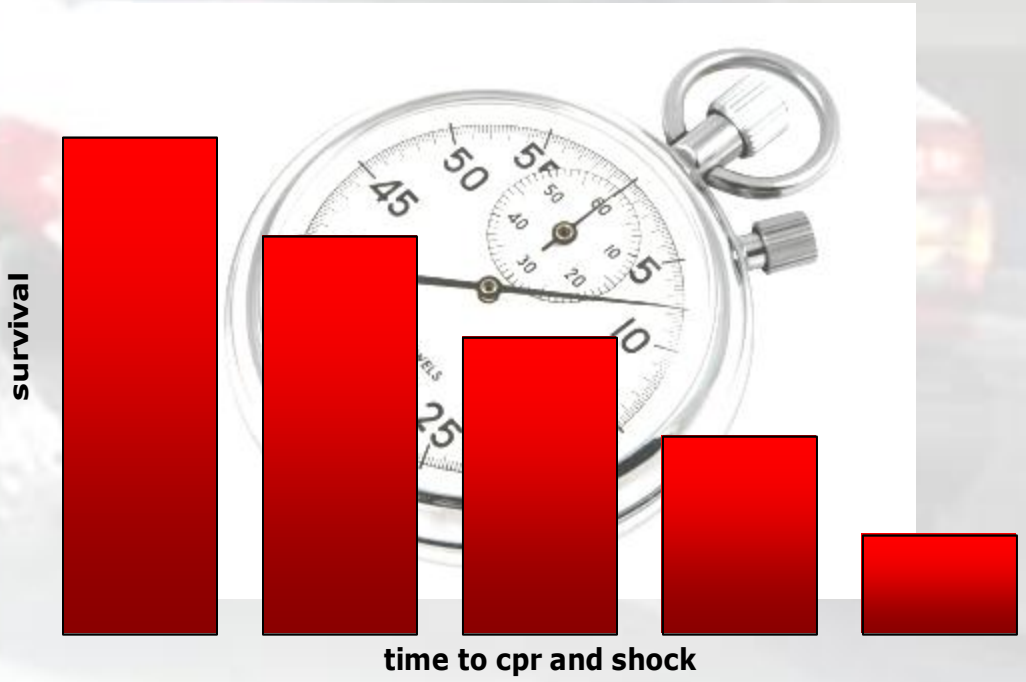
Bobrow, et al. JAMA October 6 2010



Bobrow, et al. JAMA 2010:304:1447-1454

Time is critical:

Survival decreases by 10% for every minute treatment is delayed



What is Dispatcher Assisted CPR?

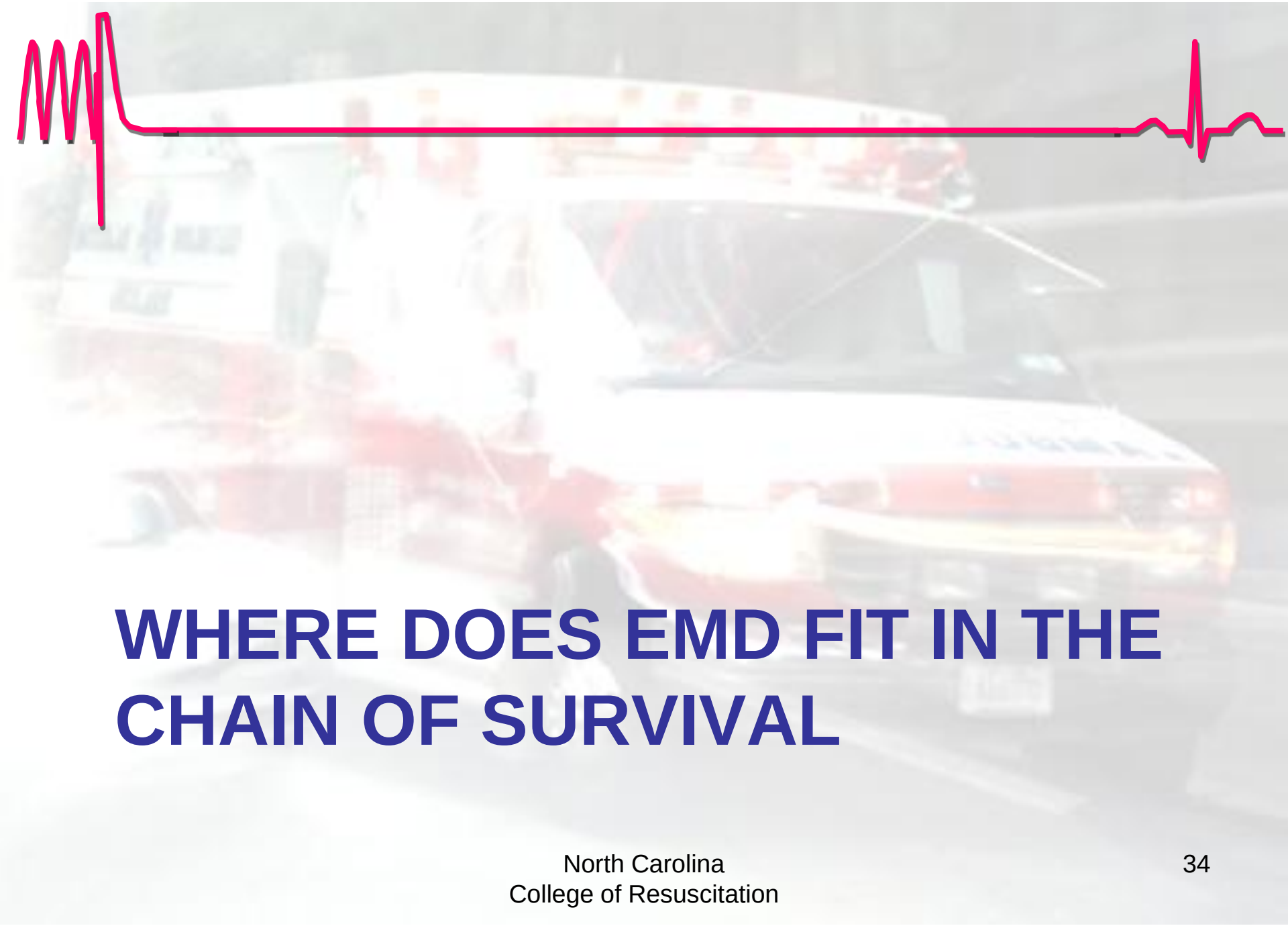
- Quick and efficient call handling
- Immediate recognition of cardiac arrest
- Rapid dispatch of Basic Life Support (BLS) units
- Quickly determining the presence of Public Access Automatic External Defibrillators (AED)
- Rapid dispatch of Advanced Life Support (ALS) units
- **Assisting in the quick and efficient delivery of CPR by the caller or bystander**

Elements of a Dispatcher Assisted CPR program

- Planning
- Protocols
- Training
- Quality Improvement
- Continuing Education

Key Points: Dispatcher Assisted CPR

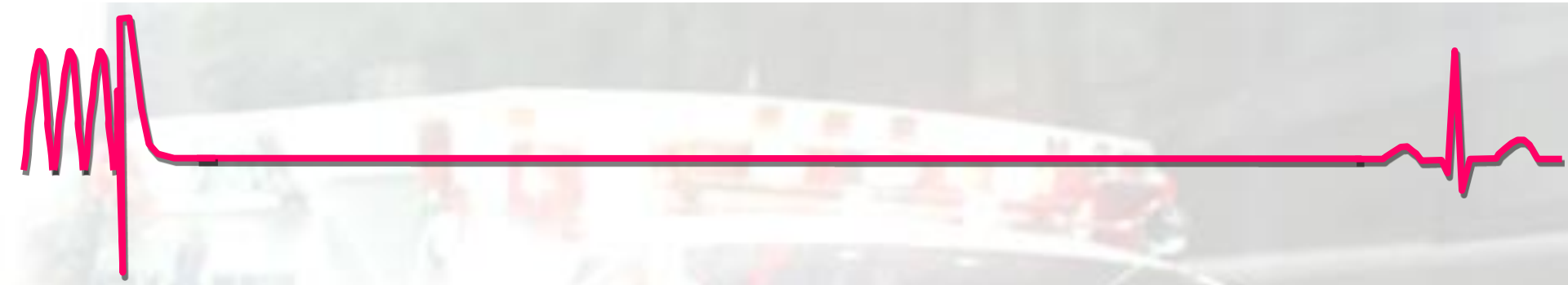
- Average EMS response times are 4-6 minutes
- Dispatchers can help callers begin CPR within 1 minute
- Early CPR = Increased chance of patient survival
- Can nearly double the rate of bystander CPR
- Has become a recognized “standard of care”



WHERE DOES EMD FIT IN THE CHAIN OF SURVIVAL

Chain of Survival:

1. **Access to 911**
2. **CPR**
3. **Defibrillation**
4. **ALS**
5. **Integrated post cardiac arrest care**



Challenges

LINKS 1 AND 2
CHAIN OF SURVIVAL

Early CPR Challenges:

- Cardiac arrest is hard to identify
- Rescuers lack confidence to act
- CPR can be technically difficult

Recognition and activation:

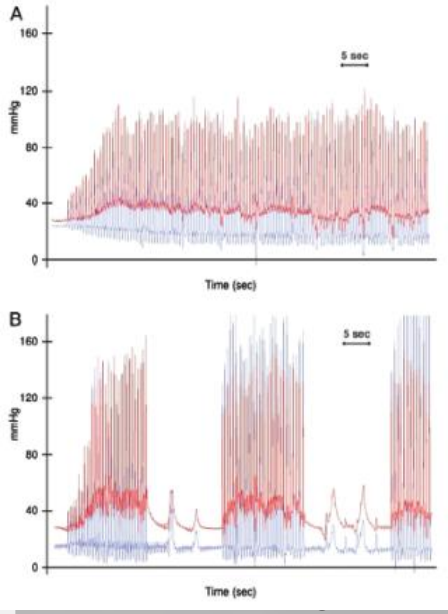
Dispatchers should instruct untrained lay rescuers to provide **Hands-Only CPR** for adults who are unresponsive with no breathing or no normal breathing

Cardiac / Respiratory Arrest Instructions

- Does anyone there know CPR? *(Trained bystanders may still need instructions. Ask!)*
- Get the phone next to the person if you can.
- Listen carefully. I'll tell you what to do.
  - Get the phone next to the patient whenever possible
  - * *Follow the Emergency Instructions*

Chest compression only CPR:

- Bystanders more willing to initiate
- Arterial blood is adequately oxygenated at onset of ***primary cardiac arrest***
- Less likely to cause regurgitation of stomach contents
- Rescue breathing interrupts chest compressions
- Easier to teach
- Observational evidence of improved survival



Ramaraj R, Ewy GA. Heart 2009;95:1978–1982.

Barriers to Dispatcher Assisted CPR:

Misconceptions and Accepted Knowledge

"We couldn't **handle** the increased workload."

"Dispatchers do not want **another** responsibility."

"Patients not in cardiac arrest could be **injured** by the dispatcher's instructions."

"It would increase our **liability** unacceptably."

Instructing callers

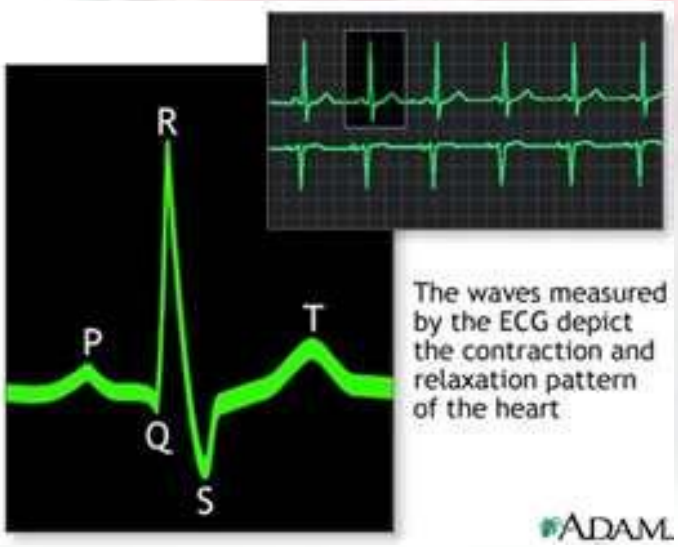
DISPATCHER AND AEDS

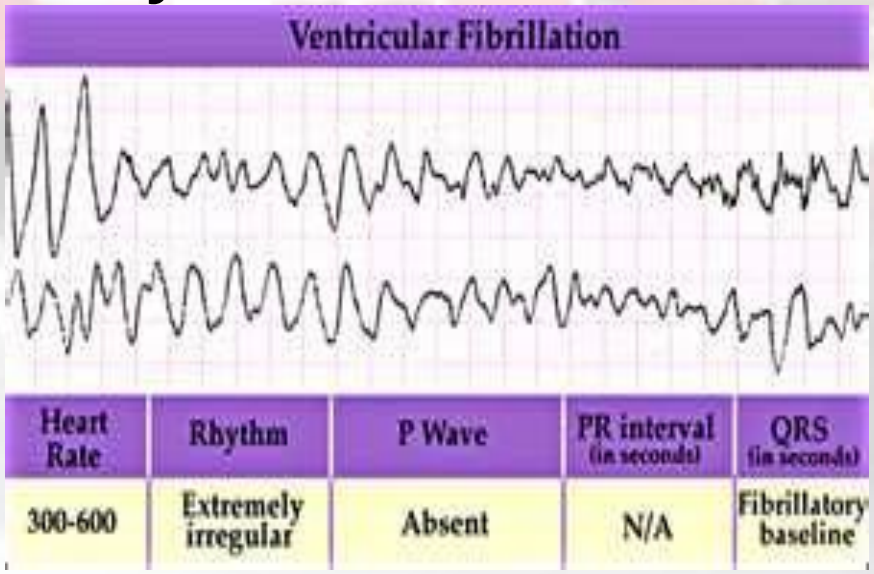
What is an AED?

- **Automated external defibrillator** or **AED**
  - Is a portable electronic device
- Automatically diagnoses the potentially life threatening irregular heart rhythms (ventricular fibrillation or ventricular tachycardia)
- Treats through defibrillation
  - the application of electrical therapy which stops the irregular beats and allows the heart to start beating normally again

Ventricular Fibrillation (VF)

- VF is a disturbance in the electrical heart rhythm.
- Defibrillation is the only definitive treatment



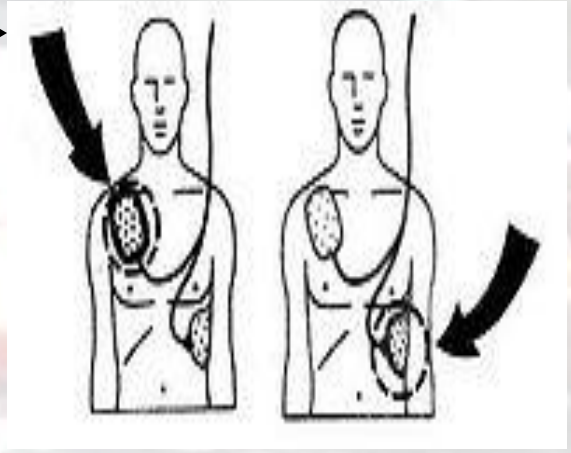



PHILIPS
ON • OFF
1
2
3
DELIVER SHOCK NOW
PRESS ORANGE BUTTON
PAUSE FOR CPR
HEART
START

Steps in AED Use

- Locate an AED

- Open
- Follow Prompts
- Turn On
- Attach Pads
  - To patient
  - Plug into AED



- Analyze
  - Listen to machine, may push button or may begin analyzing once attached, do not touch or move patient
- Shock
  - What does the machine say, shock patient, stand clear, push button when the machine tells you to

Current use of AEDs:

- EMT defibrillation is a standard of care in most communities
- Currently, few bystanders use an AED
  - NC 2010 1.3%
- Created for lay rescuers
- Follow simple prompts of AED

Frequently Asked Questions:

- Can I harm the patient?
- Should dispatcher's be trained in CPR?
- Caller doesn’t want to perform CPR?
- Caller knows CPR and is doing it?
- Dispatcher feels bad if person dies?
- Cannot get patient into position for CPR?
- Most die, why all the work?

Review from our Ops Manual

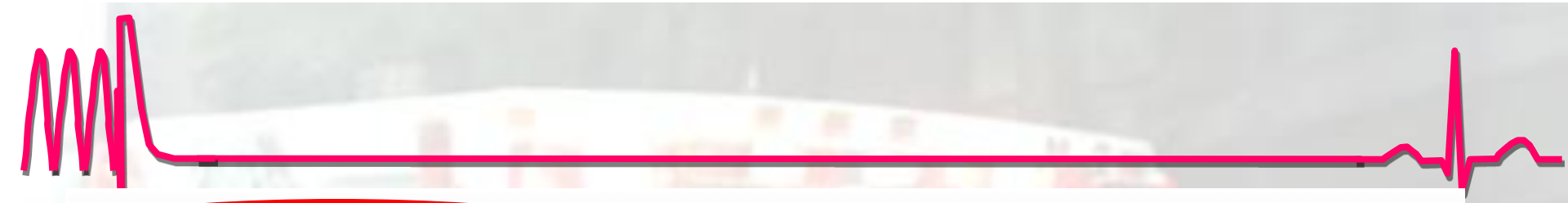
Emergency Response Plan: Goal: To improve survival from cardiac arrest by 50%	
9-1-1	
☐	9-1-1 Dispatches asks: is the patient is able to talk and are they are breathing normally (gasping is not normal)
☐	Dispatcher recognizes cardiac arrest
☐	Dispatcher sends appropriate units to scene
☐	Dispatcher gives bystander instructions for hands only chest compressions and to get an AED if available: 1. Place heel of hand in center of chest, over breast bone 2. Place other hand on top of that first hand 3. Push hard 4. Push fast *If AED location is known by dispatcher, can send bystander/s to get AED
☐	Attach AED if available, follow instructions
☐	Dispatcher stays on phone until responders arrive

How do we get better?

QUALITY IMPROVEMENT IN EMD

Quality Improvement (QI):

- Response Times:
  - The time required from receipt of the 911 call through arrival at the patient's side
  - All components of the response time should be reviewed to include the time required from receipt of the 911 call through patient final outcome.
  - A plan to decrease delays should be developed and tested
    - Early identification of cardiac arrest
    - Dispatch of appropriate unit
    - Other process variables that could effect timeliness of response (transfer call, how long to answer, etc)
  - Team Approach to include data sharing and feedback with all components of the system: Dispatch, First Responders, EMS, and hospitals



Response and Treatment Times

57 - Time call received at dispatch center	hh : mm : ss	
58 - Time First Responder dispatched	hh : mm : ss	☐ 56 - No First Responder dispatched
59 - Time of First Responder en route	hh : mm : ss	
60 - Time Ambulance dispatched	hh : mm : ss	
61 - Time for Ambulance en route	hh : mm : ss	
62 - Time First responder arrived at scene	hh : mm : ss	
63 - Time Ambulance arrived at scene	hh : mm : ss	
64 - Time EMS arrived at patient side	hh : mm : ss	
65 - Time Ambulance left scene	hh : mm : ss	
66 - Time Ambulance arrived at ED	hh : mm : ss	

General Comments

Save

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Quality Improvement (QI):

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  - Team Approach to include data sharing and feedback with all components of the system: Dispatch, First Responders, EMS, and hospitals

Summary:

- EMD vital to successful outcomes in cardiac arrest
  - Recognition of cardiac arrest by dispatcher
  - Immediate dispatch of BLS and ALS providers
- Knowledge of Public AED locations
- Dispatcher assisted CPR increases bystander CPR rates and thereby improves outcomes