
Singapore Resuscitation Academy
RESUSCITATION ACADEMY
September 29-30, 2016

# Special Thanks


- Dr. Peter Kudenchuk
- Dr. Mickey Eisenberg
- Dr. Tom Rea
- Dr. Michael Sayre
- Dr. Michael Copass
- Dr. Leonard Cobb
- Paramedic Jon Larsen (Seattle Fire)
- Ann Doll (GRA, Global Alliance)

# Special Thanks…

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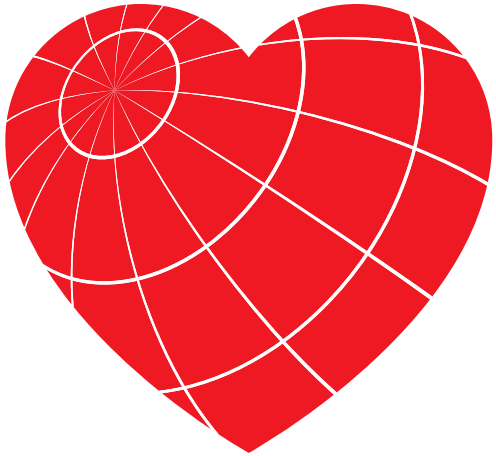
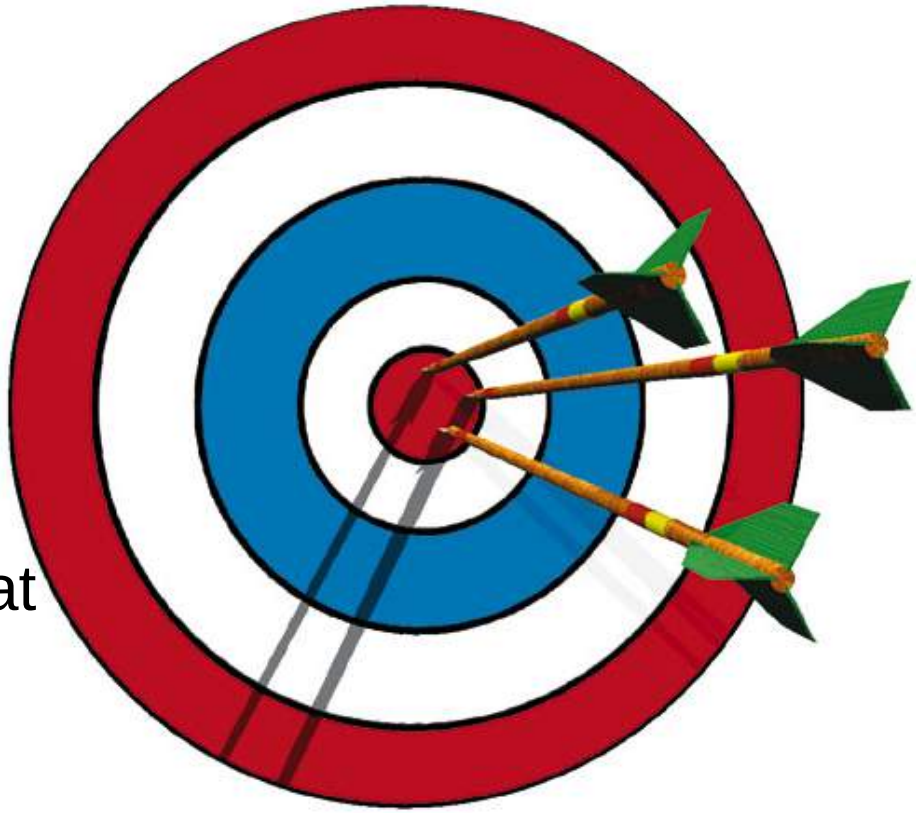


Global Resuscitation Alliance

# RA Goal…

**Increase cardiac arrest survival rates in your community**

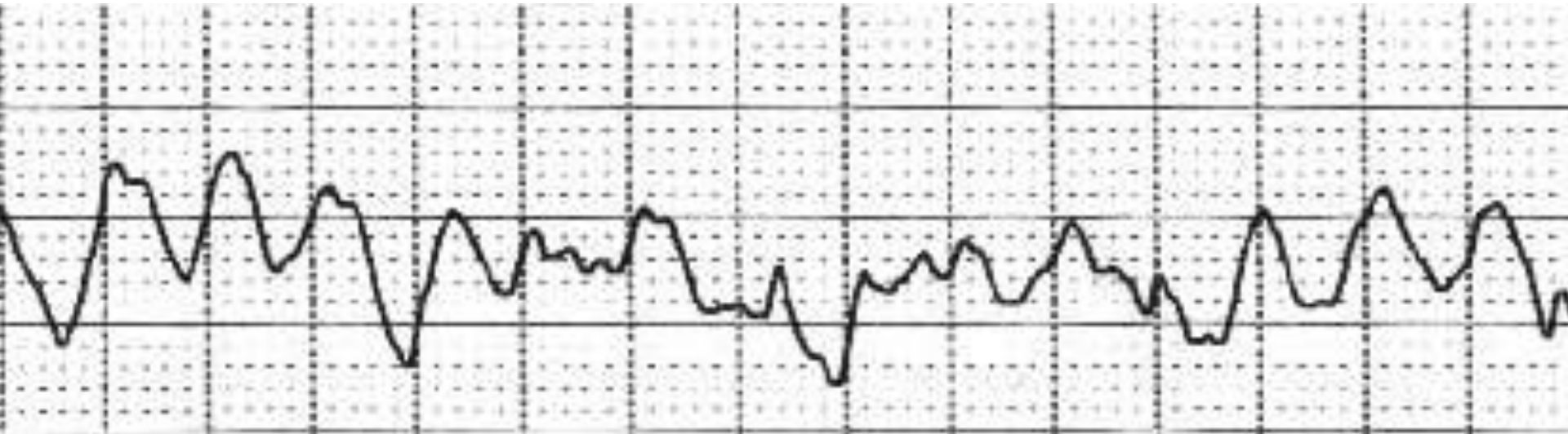


- Enhance your cardiac arrest QI program
  - ***Measure:*** Carefully look at the components of your system
  - ***Improve:*** Make programmatic changes

# **Focus:** Witnessed VF

Survival from witnessed VF is the best metric to measure an EMS system's performance

**Unified Reporting** - *The Utstein Template* *(cir.1990)*




MEASURE
Seattle/King County
Mantra
IMPROVE

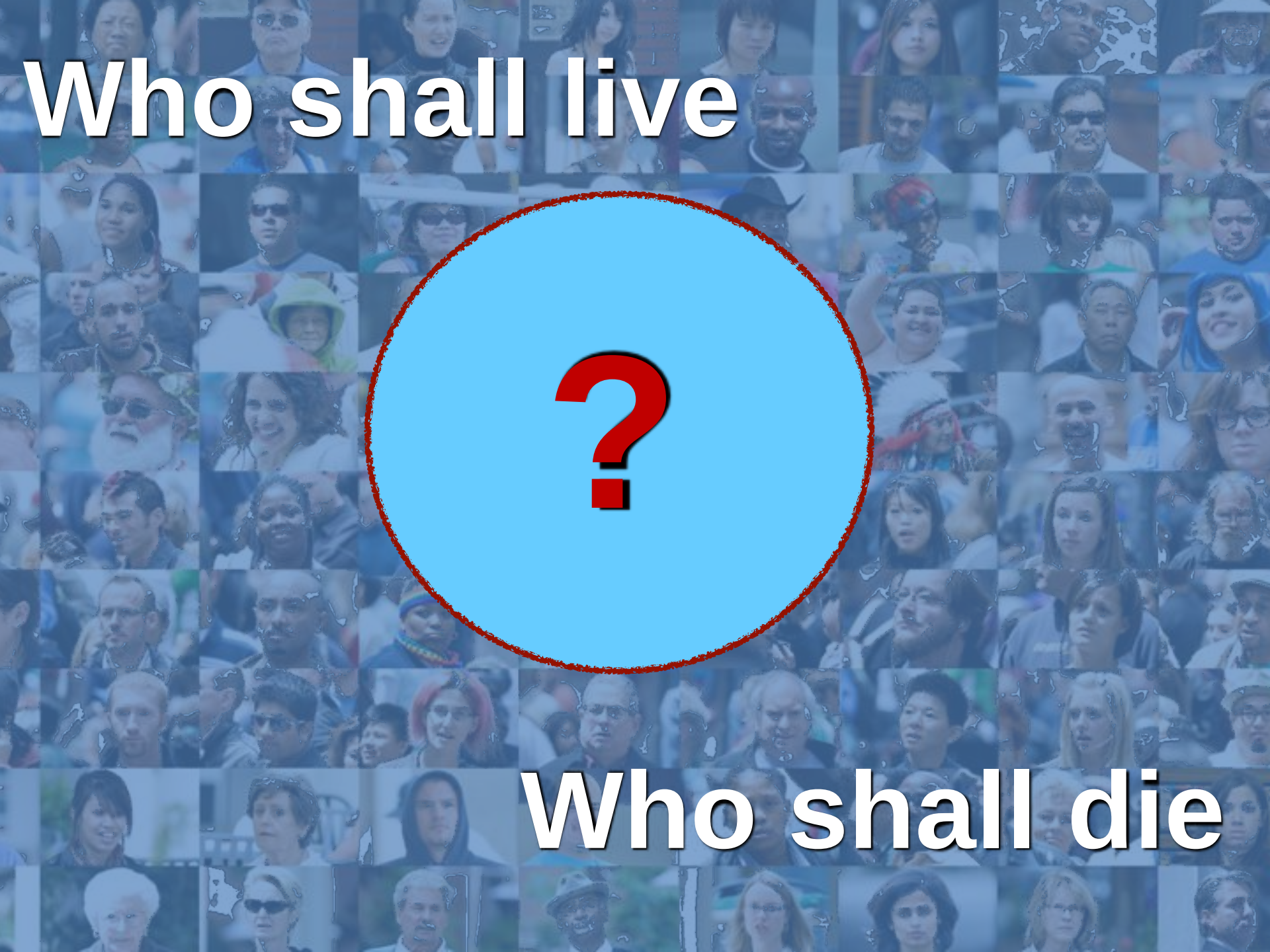

Our #1 Goal…
Increase Survival!

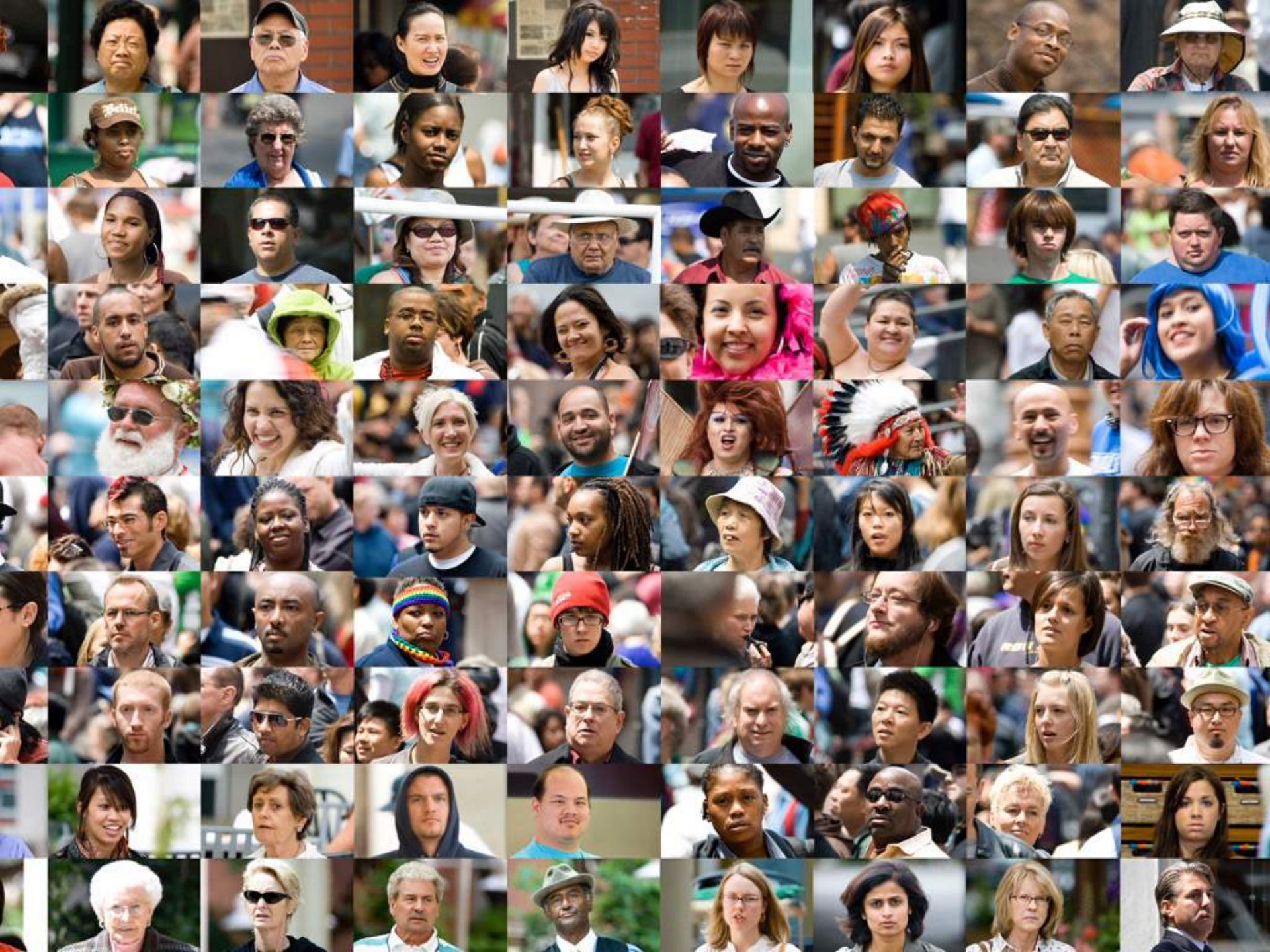
# Programmatic Changes


| | Before and After RA |
|---|---|
| ☑ Cardiac arrest registry | 31% to **85%** |
| ☑ QI for T-CPR | 46% to **83%** |
| ☑ QI for HP-CPR | 17% to **76%*** ** |
| ☑ QI for cardiac arrests | 40% to **86%** |
| ☑ Police AED | 34% to **48%** |
| ☑ Public access AED program | 58% to **76%** |
| ☑ Public CPR training | 77% to **91%** |


It takes a
SYSTEM
to save a victim


“We CANNOT over-prepare…for treating someone in cardiac arrest”.


Who shall live
?
Who shall die




CASE #1
To review

# Bob

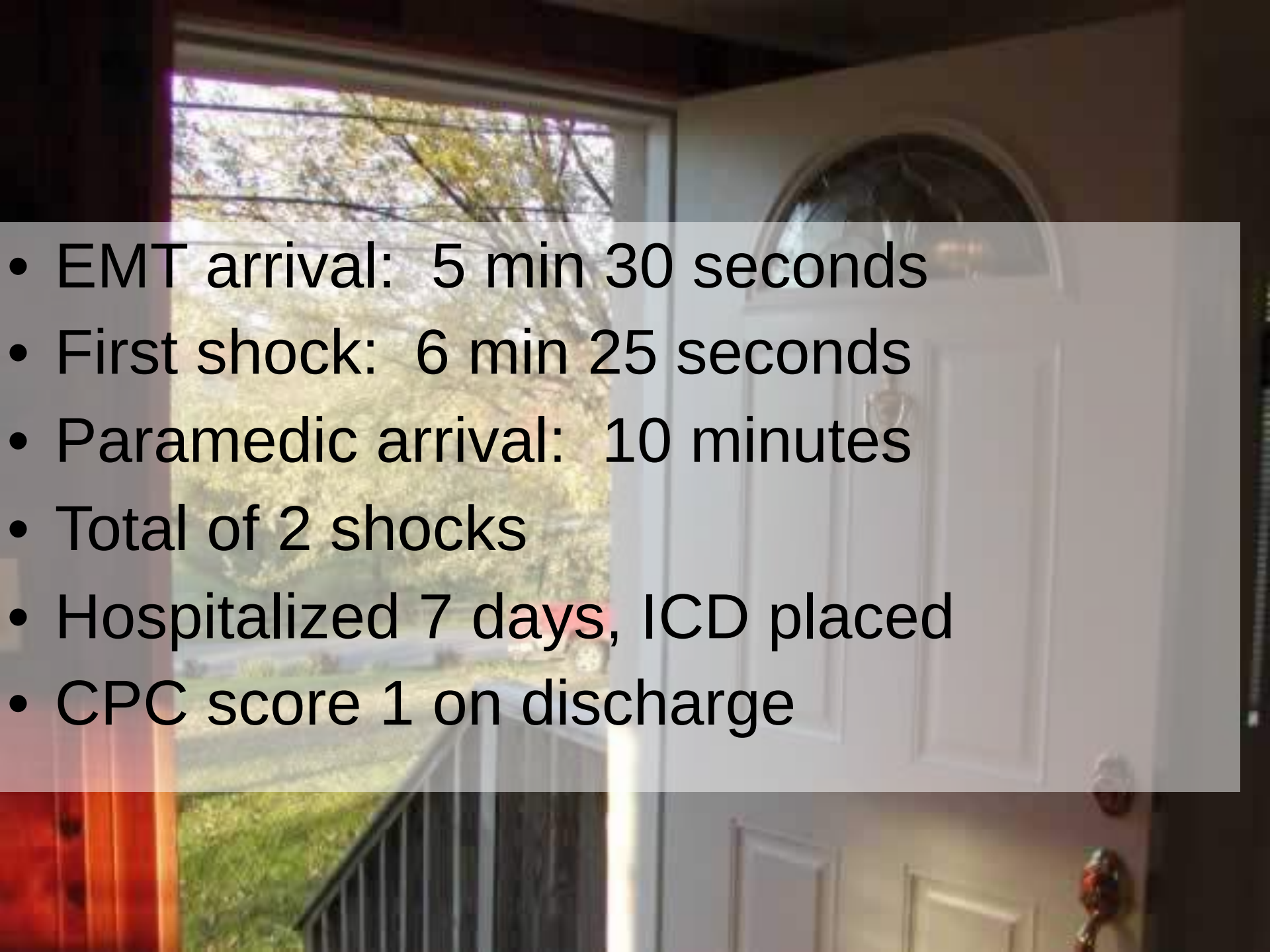
- 63 year old male, buyer for Macy's
- Witnessed collapse at home
- Need for CPR identified:  20 seconds
- First compression:  1 minute 25 seconds

# Case 1


Transfer call from Sheriff's dispatcher

☑ Focused, calm and directed instruction

☑ Move patient from bed to floor



- EMT arrival:  5 min 30 seconds
- First shock:  6 min 25 seconds
- Paramedic arrival:  10 minutes
- Total of 2 shocks
- Hospitalized 7 days, ICD placed
- CPC score 1 on discharge

# CASE #2

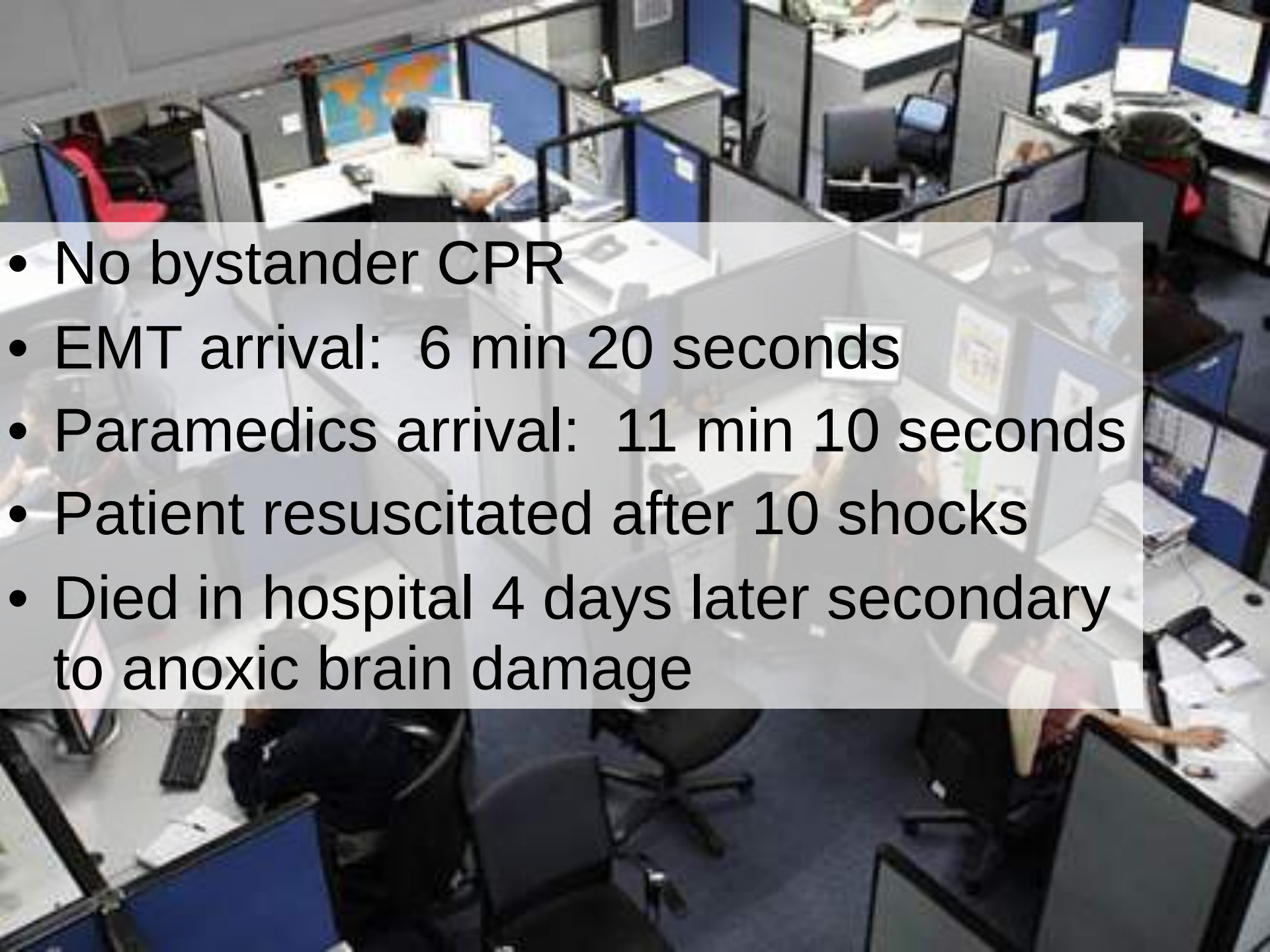
## Sir

- 65 year old male, Boeing engineer
- Witnessed collapse in an office
- No telephone CPR instructions

# Case 2


Delay in recognition of agonal breathing

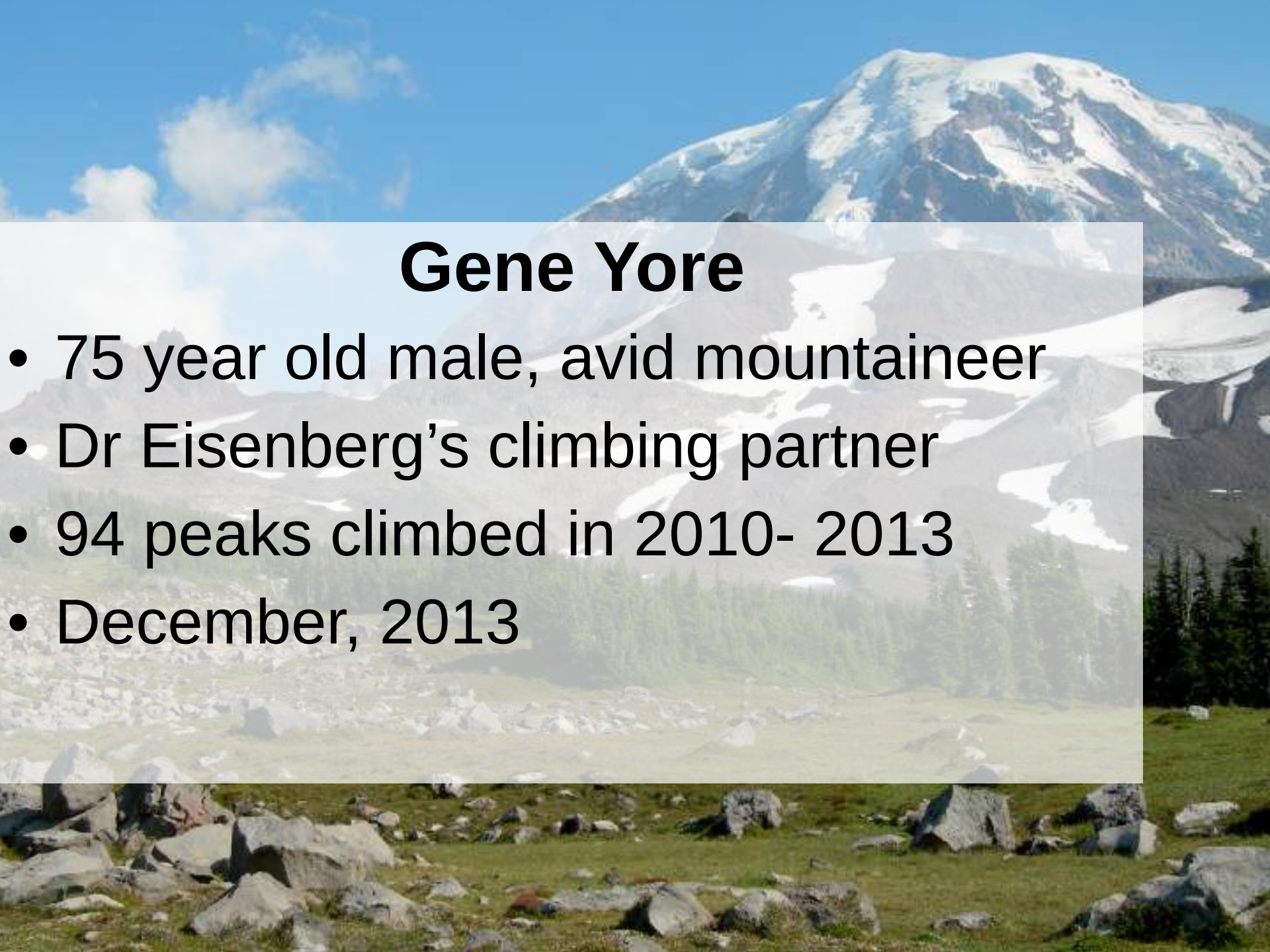
☑ Never asked “Is he breathing normally?”



- No bystander CPR
- EMT arrival:  6 min 20 seconds
- Paramedics arrival:  11 min 10 seconds
- Patient resuscitated after 10 shocks
- Died in hospital 4 days later secondary to anoxic brain damage

# CASE #3

A personal case…



# Gene Yore

- 75 year old male, avid mountaineer
- Dr Eisenberg's climbing partner
- 94 peaks climbed in 2010- 2013
- December, 2013

# Gene Yore

- Cardiac arrest (agonal sounds heard by wife)
- Telecommunicator recognized cardiac arrest in:

- ☑ 20 seconds
- ☑ 1st compression in 75 seconds
- ☑ One shock - conversion to NSR
- ☑ ICD placed in hospital
- ☑ Full recovery


VF/VT are survivable rhythms!

# U.S. cardiac arrest survival

All rhythms: **6%**

All rhythms witnessed: **15%**

VF witnessed: **30%**

# Disparity

***All rhythm survival***

(communities with over 100 arrests annually)

**3% to 30%**

***10 fold disparity***

****Ventricular Fibrillation (VF)***

(communities with over 20 witnessed VF arrests)

**4% to 62%**

***15 fold disparity***


Utstein Template (CPC 1-2)
9.6%
(up from 5% in 2001)
~8 Million


57%
MAYO CLINIC


Utstein Template (CPC 1-2)
62%
(up from 35% in 2005)
~2.2 Million

# The first year we introduced HP-CPR…

We had a 13% increase in survival!!

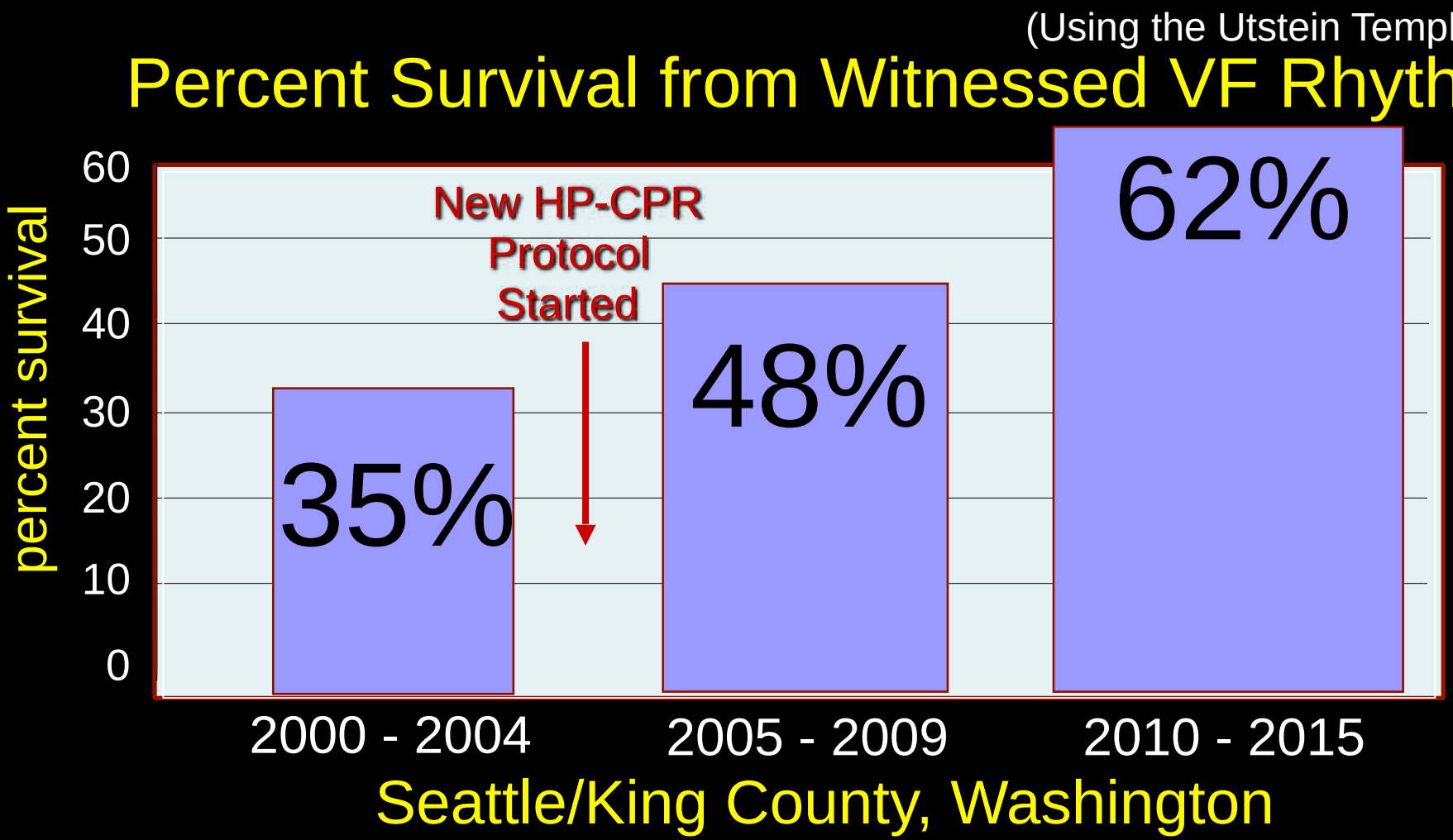
(using the Utstein Template)

- no new equipment
- no additional manpower
- no new drugs

*We simply identified the issue and CHANGED the CULTURE of how we perform a resuscitation!*

# Importance of HP-CPR Resuscitation

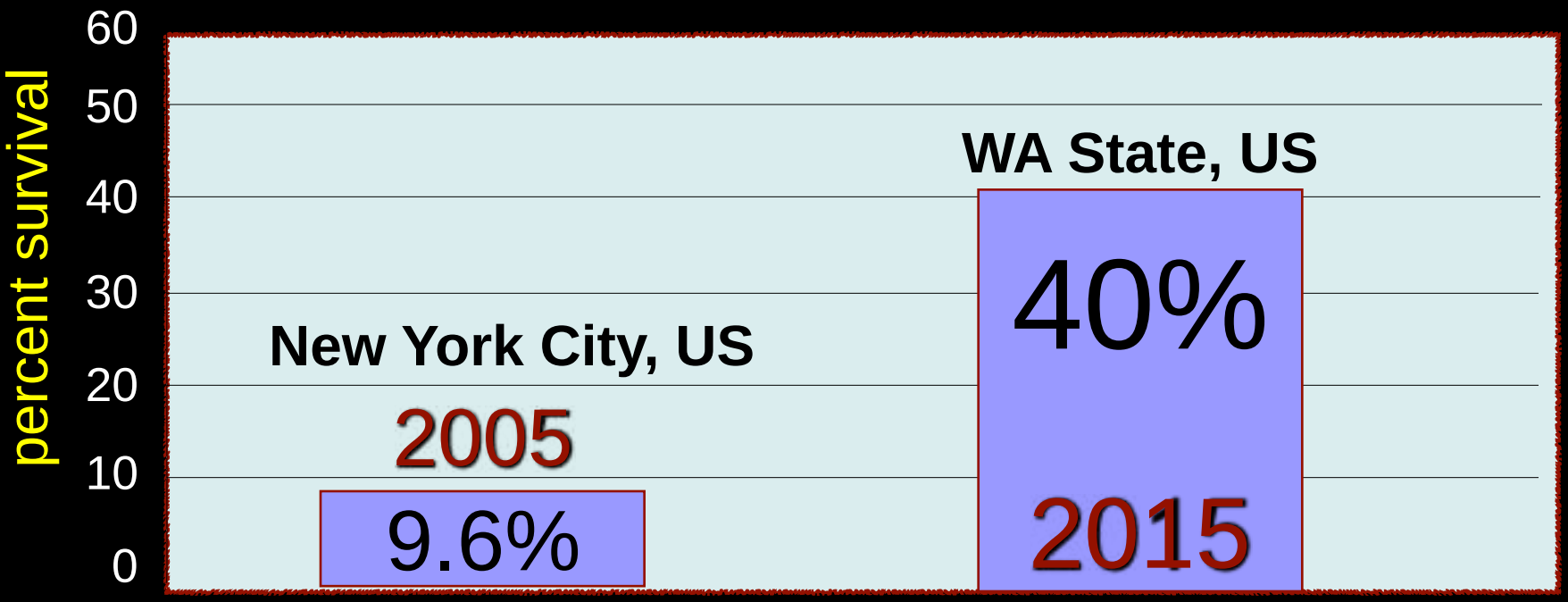
(Using the Utstein Template)



# Importance of HP-CPR Resuscitation

(Using the Utstein Template)

## Percent Survival from Witnessed VF Rhythm




WA vs. NY City - Survival

*Population ~7,000,000*

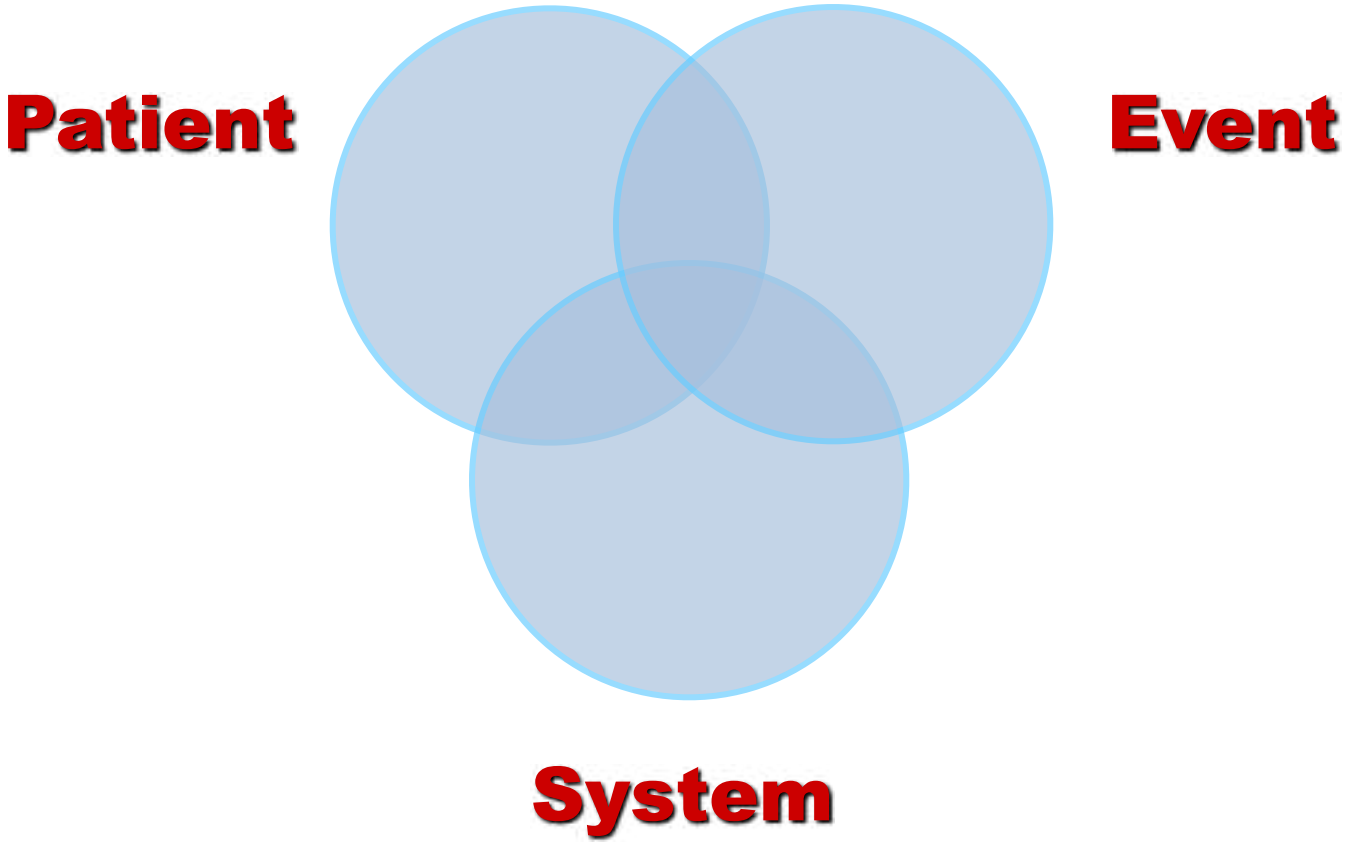
**Why** **is there**

such a large difference

in survival from VF

cardiac arrest ?

# Factors Which Determine Survival From Cardiac Arrest

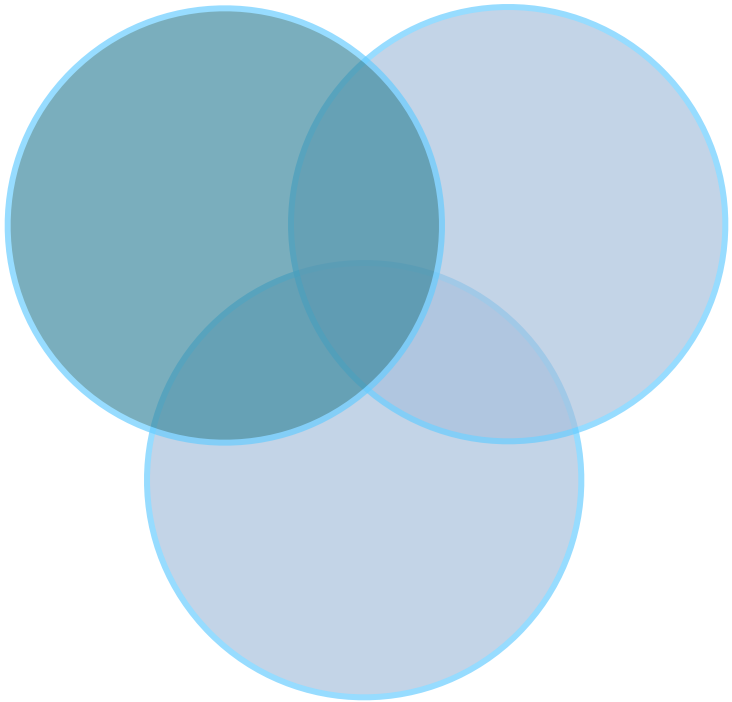


# Factors Which Determine Survival

From Cardiac Arrest

**Patient**

Gender
Age
Co-morbidity

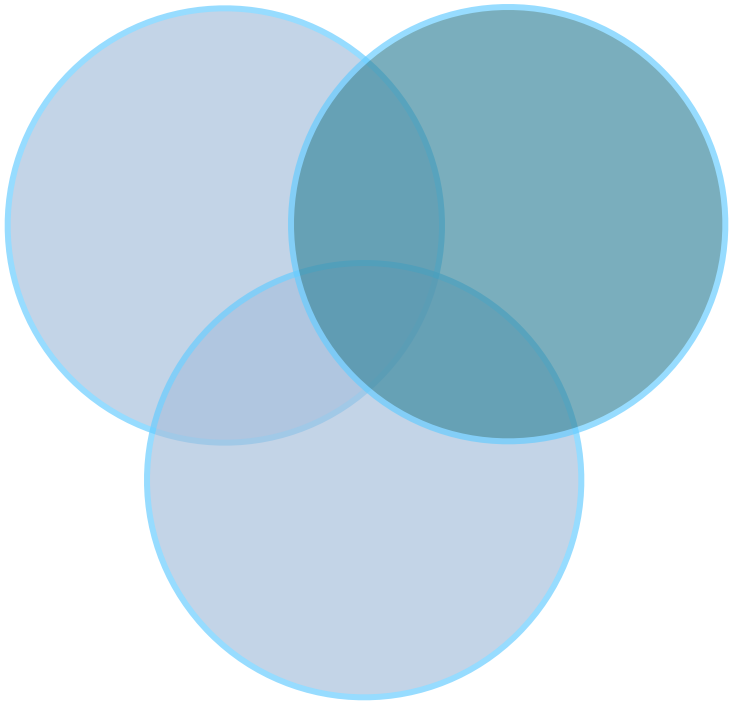


**Event**

**System**

# Factors Which Determine Survival

From Cardiac Arrest



**Patient**

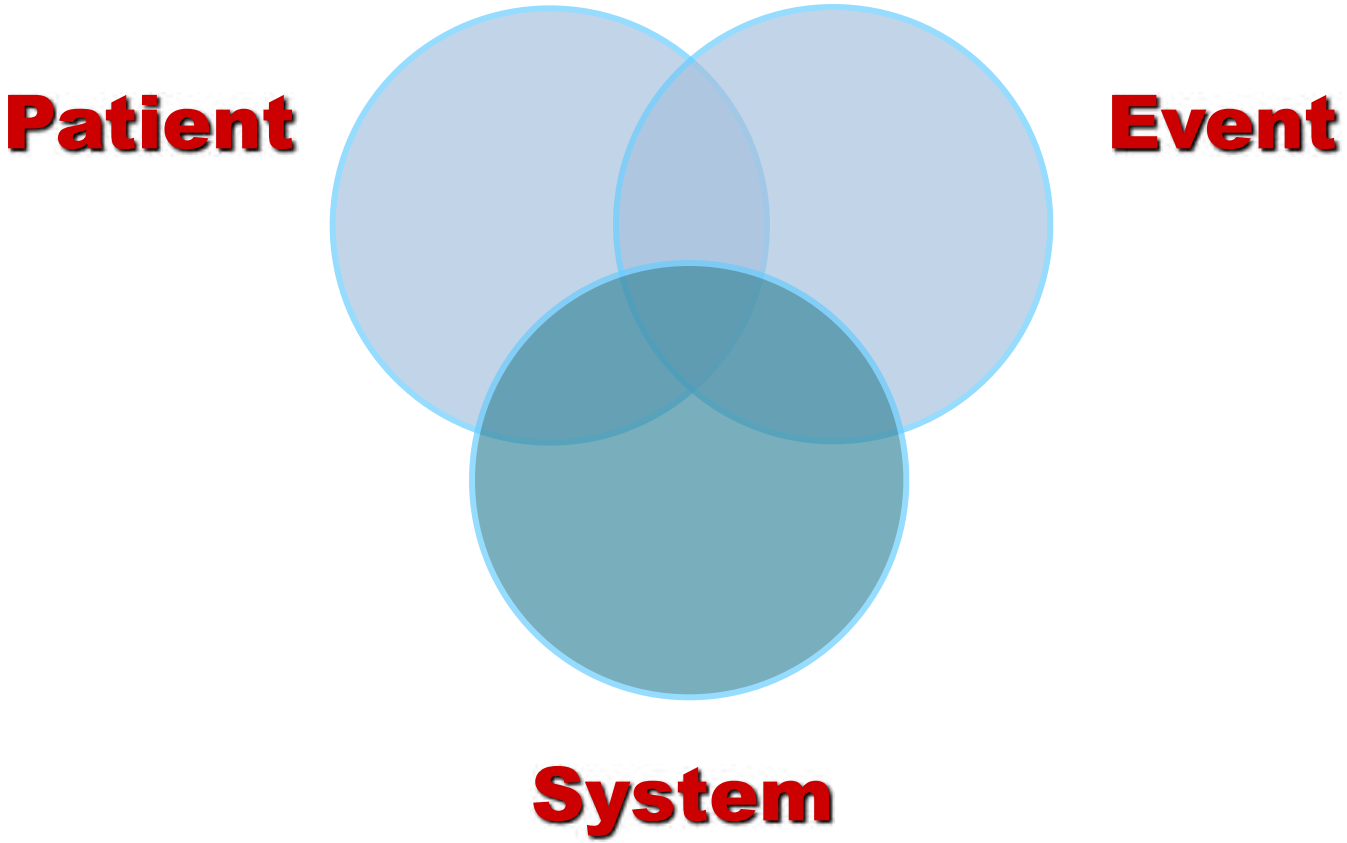
**Event**

Witnessed collapse
Location
Rhythm

**System**

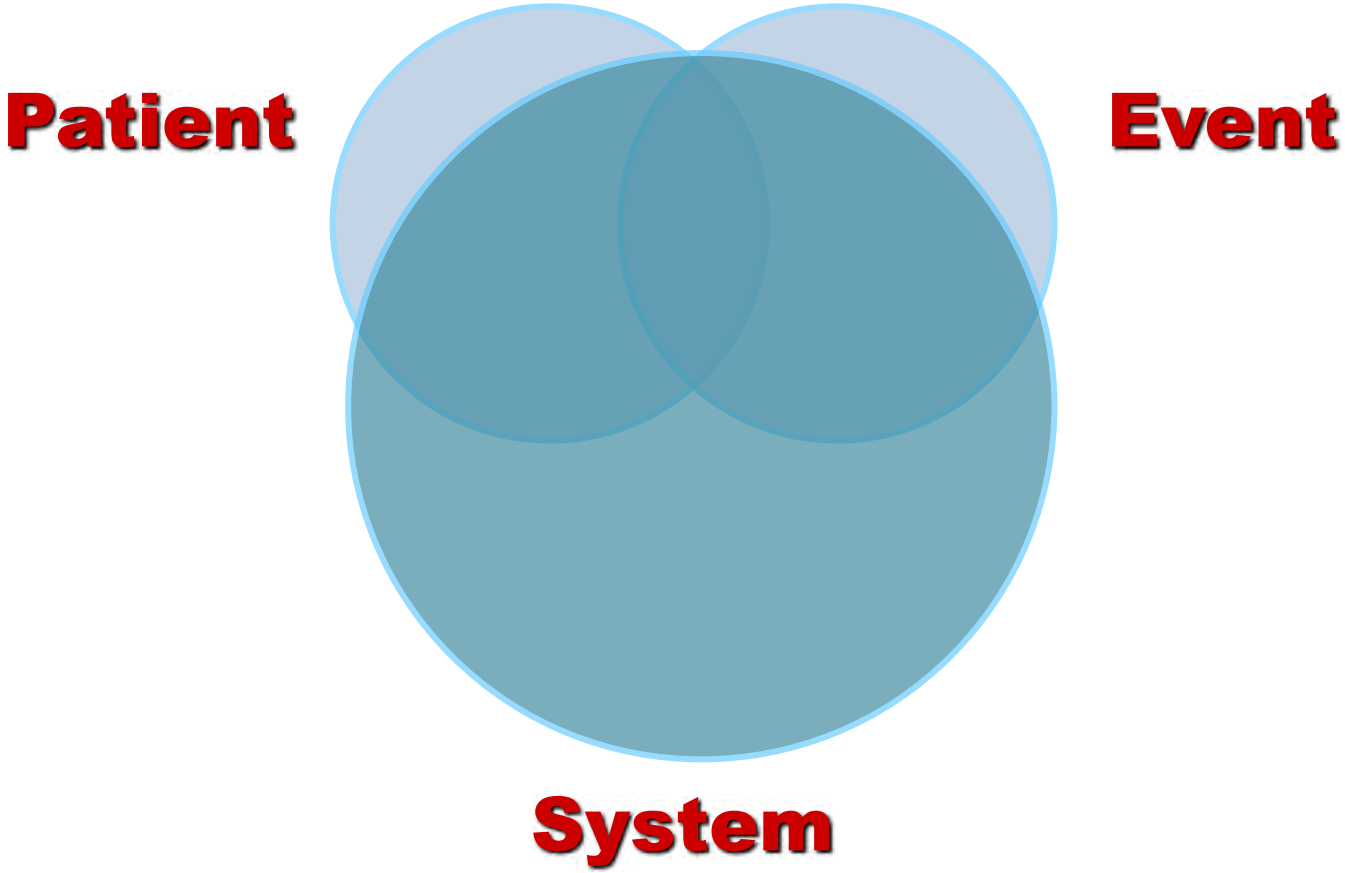
# Factors Which Determine Survival

From Cardiac Arrest



# Factors Which Determine Survival

From Cardiac Arrest



# Options and Therapies Available Today!

High school mandatory CPR training

Cardiac arrest registry

QI feedback for HP-CPR

Rapid dispatch

Cath for STEMI

High school mandatory training

Voice record all resuscitations

Invasive vascular support

Police defibrillation

Public access defibrillation

Targeted temperature management

QI feedback for telecommunicators

High-Performance CPR

Telecommunicator-CPR

Community CPR training

Registry of AEDs 911 centers

Mechanical CPR devices

High dose epinephrine

ITD airways

Resuscitation advisory committee

Digital activation of rescuer

Double dose defibrillation

Double dose defibrillation

High school mandatory CPR training

# High-Performance CPR

# Rapid dispatch


Cath for STEMI

suscitations

defibrillation

QI feedback for telecommunicators

# Cardiac arrest registry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Police defibrillation


s 911 centers

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Resuscitation advisory committee

# Telecommunicator-CPR


devices

ITD airways

n of rescuer

Community CPR training

STEP 10 Work Toward A Culture of Excellence

**BELIEVE** that VF/VT is a survivable event and they WILL go home!!

*Leonard Cobb, MD,*
*Medic One Founder, Professor Emeritus,*
*University of Washington*
*Harborview Medical Center/Seattle Medic One*

VIDEO

*Michael K. Copass, MD*
*Professor, University of Washington*
*Harborview Medical Center/Seattle Medic One*

VIDEO

**BUILD** your own Culture of Excellence, AND…


911
H
Early Access
Early CPR
Early Defibrillation
Early ACLS
Early Post Resusitative Care


Recognition
Rapid dispatch


Community CPR training
Telecommunicator-CPR
HP-CPR
Digital alert of nearby rescuer
Community mandatory training

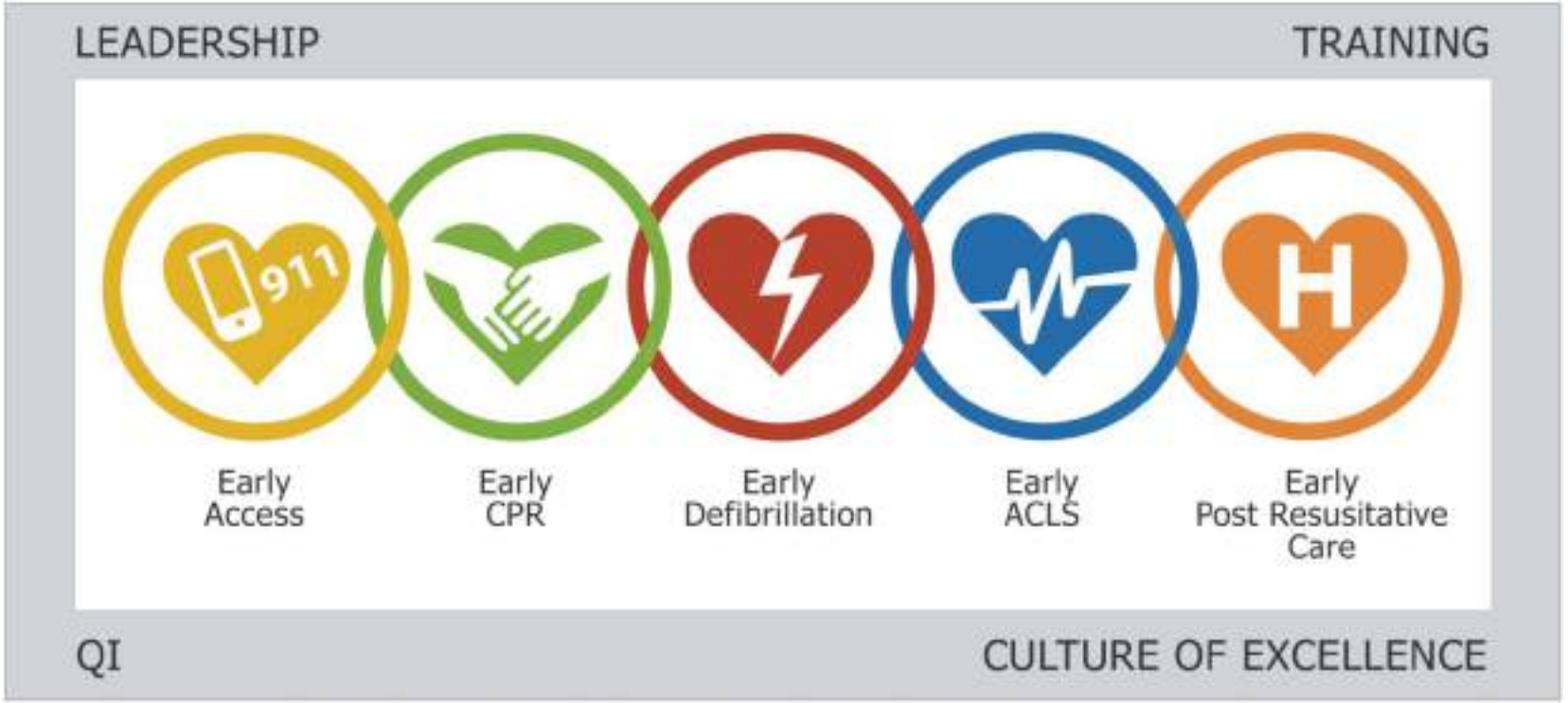

Public access defibrillation
Police defibrillation
Digital alert of rescuer
Community awareness


Airway control
Medications


Cath for STEMI
Targeted temperature
Invasive vascular support

# Quantitative Factors

# Quantitative and Qualitative Factors



## Programs

- Cardiac arrest registry
- Telephone CPR
- High performance CPR
- Rapid dispatch
- Measurement of professional resuscitation
- AED program for first responders
- Smart technologies for CPR and AED
- Mandatory training for CPR and AED
- Accountability
- Culture of excellence

## Improved Survival

## Actions

- Form a team
- Select programs
- Plan implementation strategy
- Set specific goals
- Achieve buy-in
- Establish standards
- Pilot the program
- Consult experts
- Communicate progress
- Support, advocate, celebrate

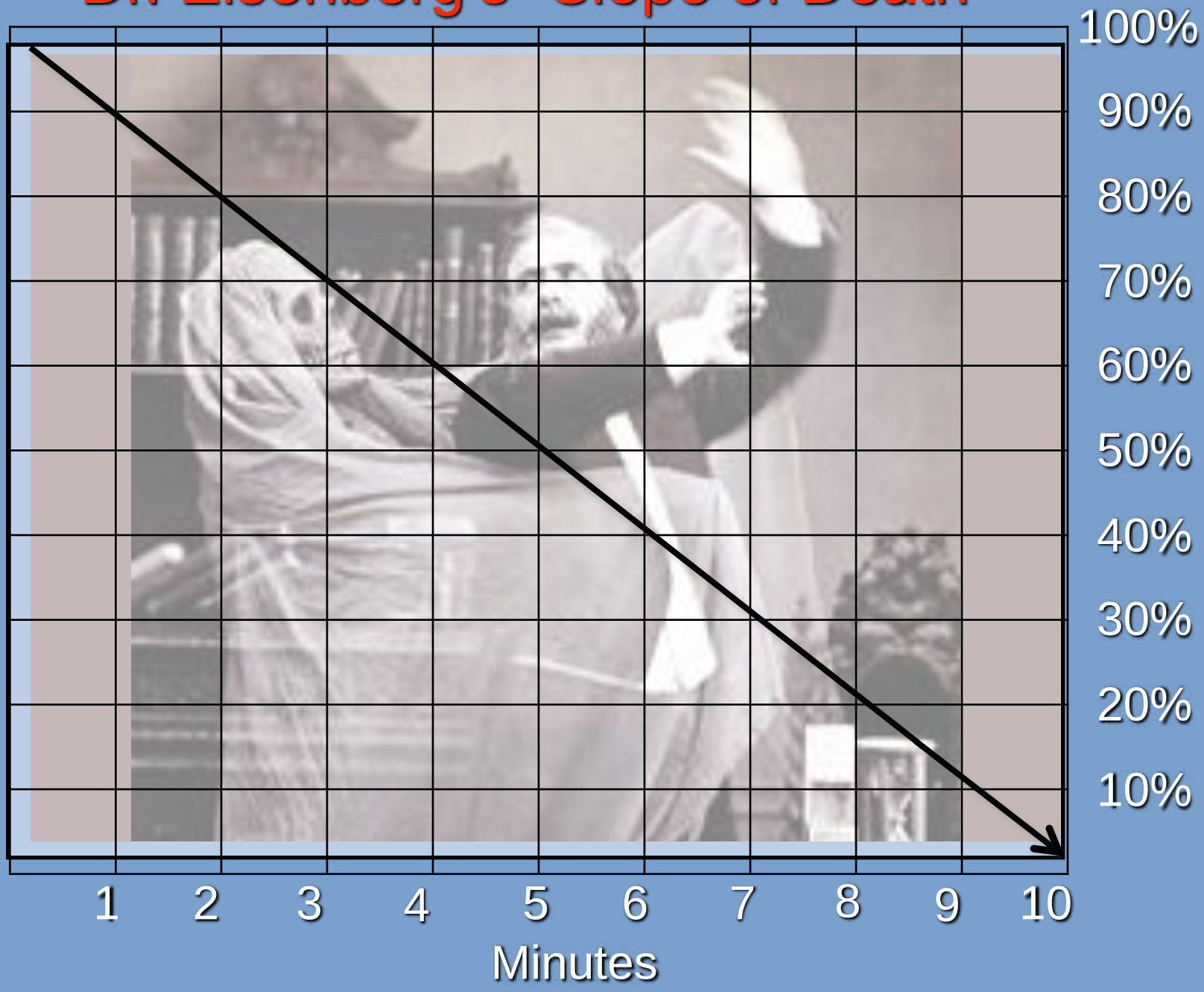
# Characteristics that define a Program:

Is your Program:

- ✓Under Performing
- ✓Average Performing
- ✓“Best Practice”

- ✓*Aspirational Program*

# Dr. Eisenberg's "Slope of Death"

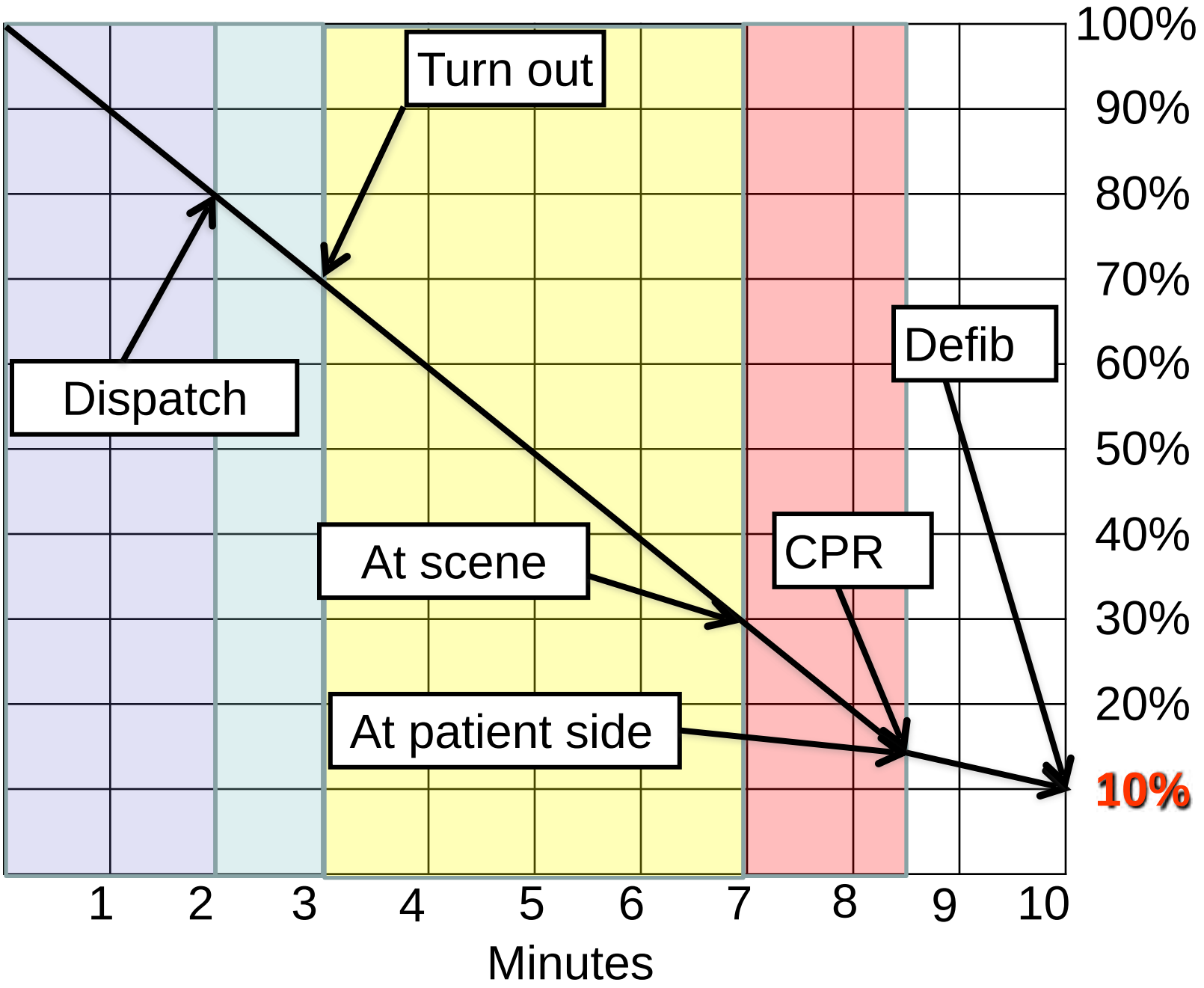


# Assumptions

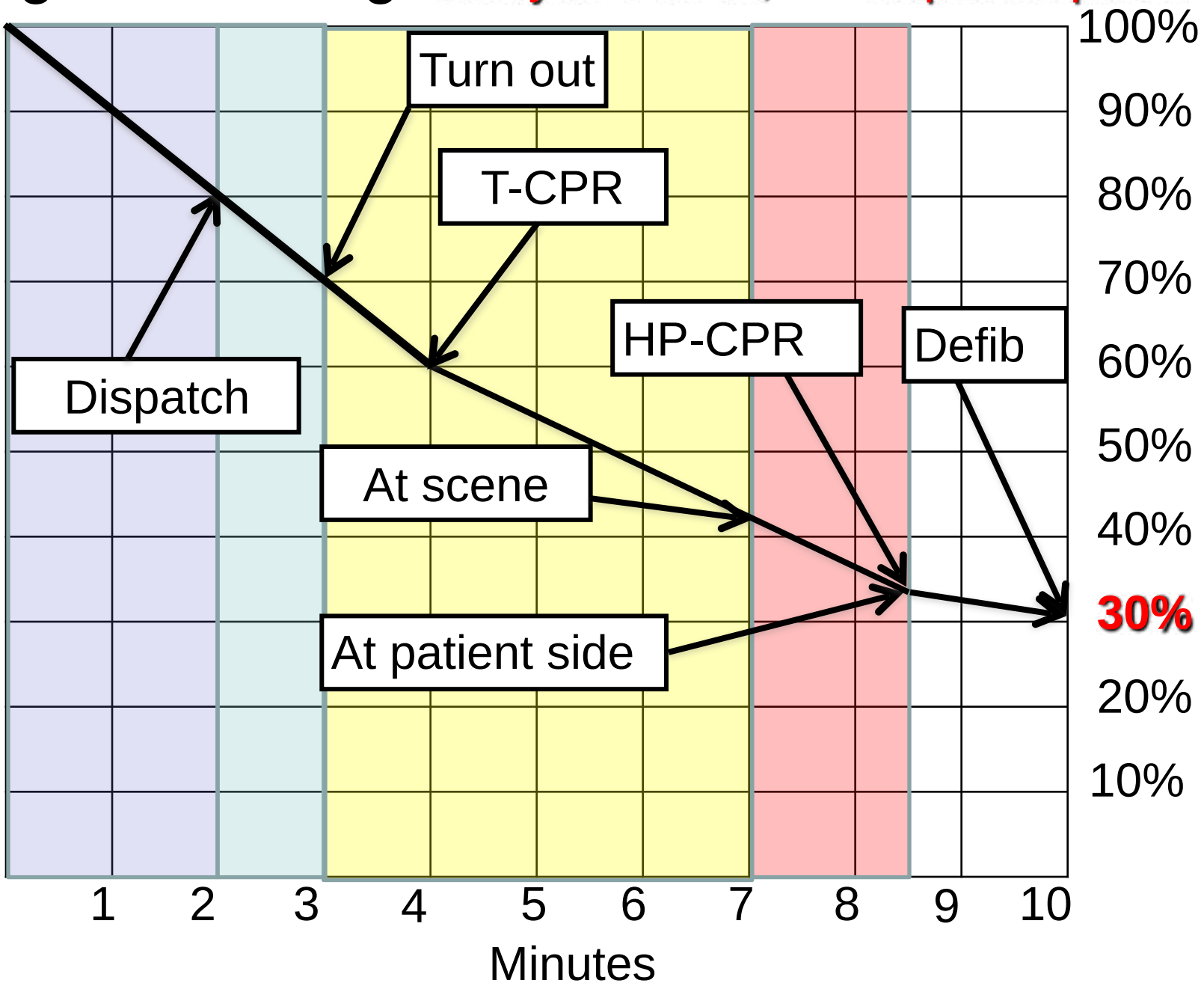
- ✓**Dispatch time:** **2** minutes
- ✓**Turnout time:** **1** minute
- ✓**Travel time to scene:** **4** minutes
- ✓**Scene to pt. and start of HP-CPR:** **1.5** min.
- ✓**HP-CPR to defibrillation:** **1.5** minutes

**TOTAL Time:** ***10 minutes!***

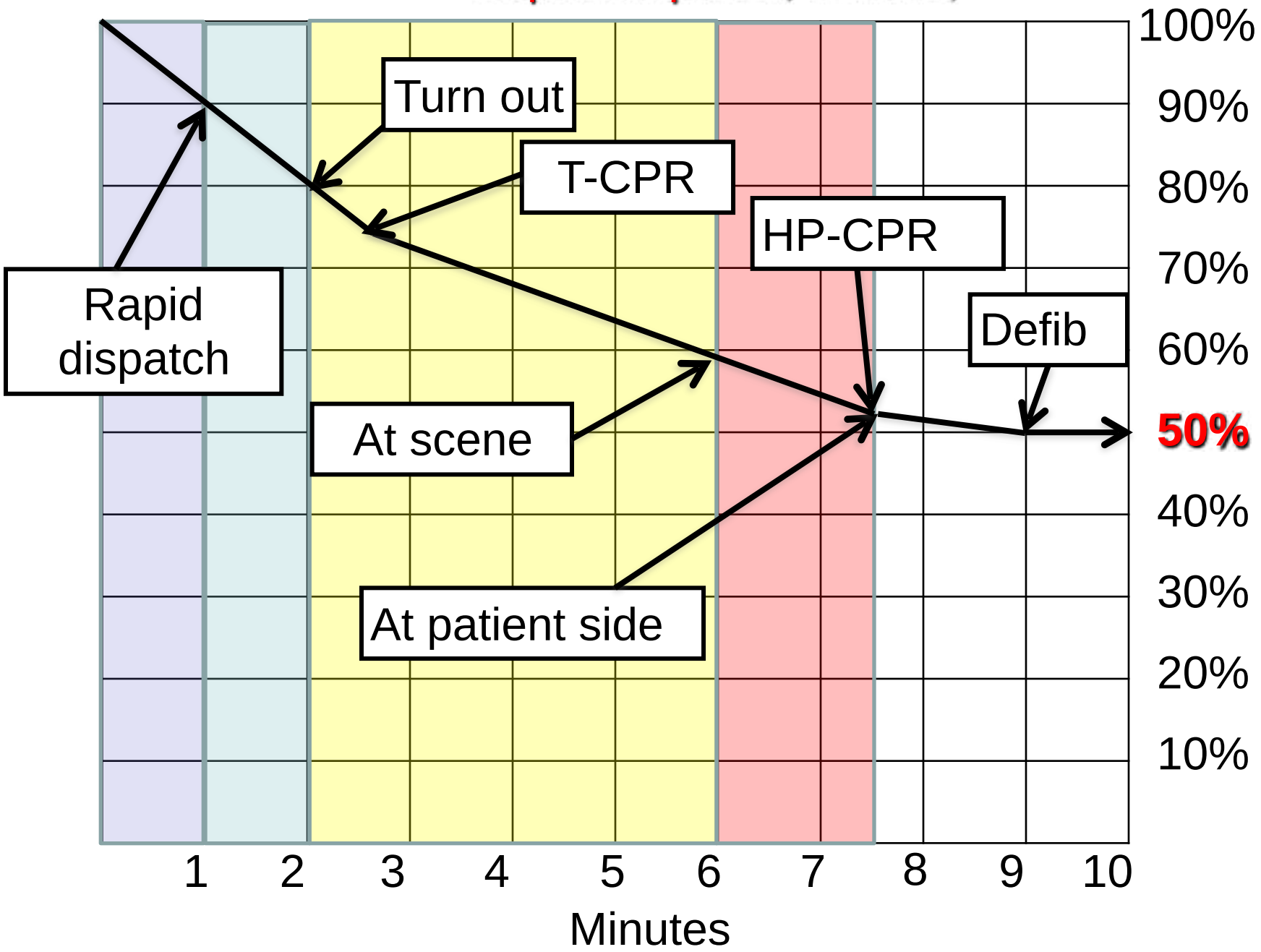
# Under Performing Sys: No T-CPR, No HP-CPR, No Rapid Disp.



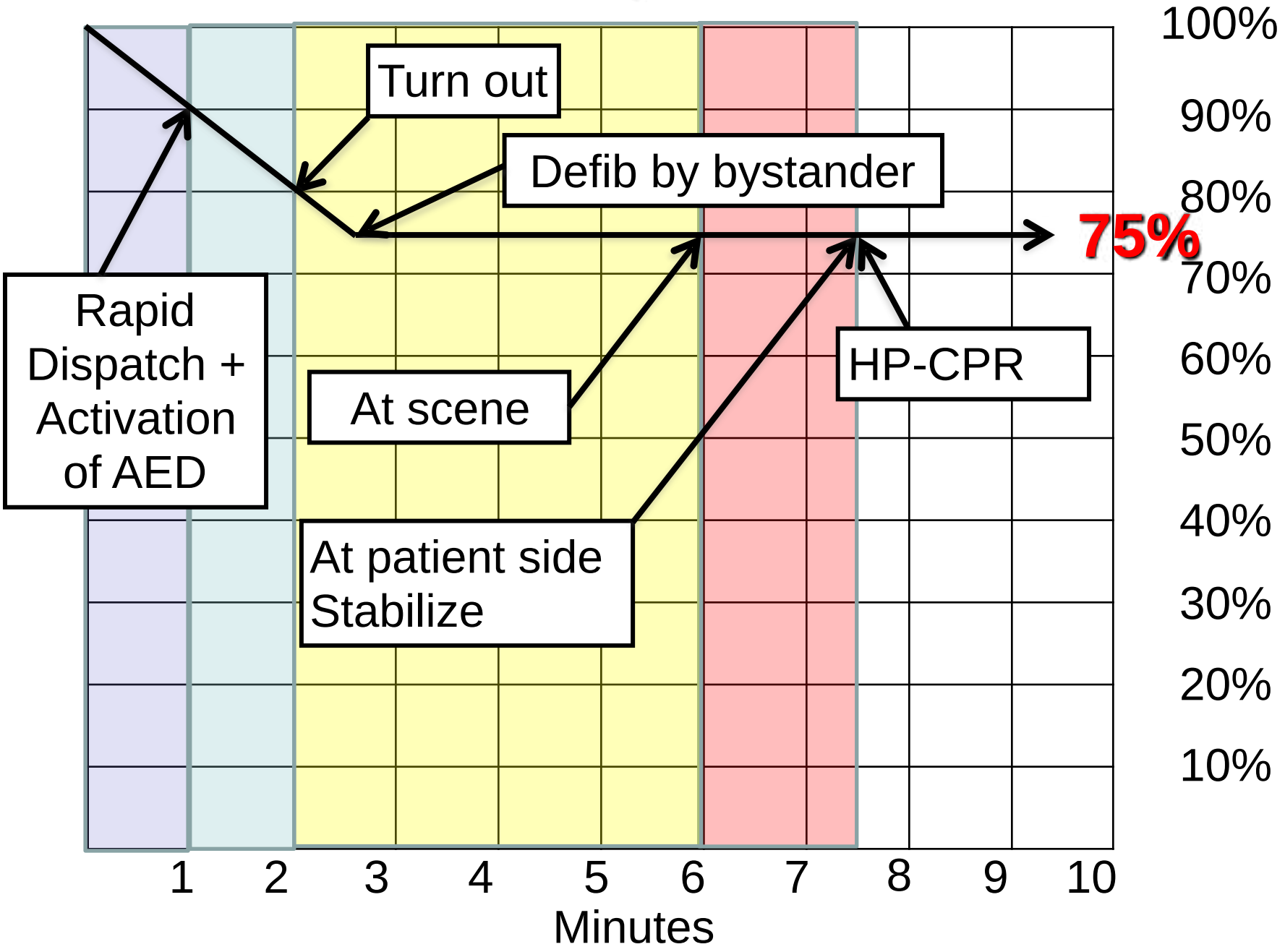
# Average Performing: Delay in T-CPR, **No** Rapid Dispatch



# BEST Practices: Rapid Dispatch, T-CPR, 100% HP-CPR



# Aspirational: Bystander AED



# A Tale of Three Cities…

# “Under” Performing System

**0%** HP-CPR

**12%** bystander CPR

**AED** applied < **6** minutes **1%** of the time

**10%** survival from VF for all communities

# “Average” Performing System

**0%** HP-CPR

**25%** bystander CPR

**AED** applied < **6** minutes **3%** of the time

**30%** survival from VF for all communities

# “Best” Practices

**100%** HP-CPR

**50%** bystander CPR

**AED** applied < **6** minutes **5%** of the time

**50%** survival from VF for all communities

# Aspirational…

**100%** HP-CPR

**75%** bystander CPR

**AED** applied < **6** minutes **50%** of the time

**75%** survival from VF for all communities

# Time

- ✓We measure life in years, but resuscitation in seconds
- ✓Life is finite, death is eternal, and between the two…

*we have about 10 minutes!*

Dr. Mickey Eisenberg

# Wrap up…

Measure and Improve!!
Measure and Improve!!
Measure and Improve!!

MANTRA

# 1 Measure, Improve

"Measure improve, measure, improve..." defines the essence of ongoing quality improvement. If you don't measure something you can't improve it. And once you measure it you will reveal things that need improving. And once you improve the system, measure it again to see if it has improved. And so on, and so on. Measurement and improvement can apply to many elements of an EMS system. First and at the most basic level, it refers to measuring cardiac arrest events and outcomes *(death, survival, neurological recovery)*. But it also applies to components of the EMS system such as time metrics *(time for dispatch, time for response, time for scene arrival, time for patient arrival)*, high-performance CPR metrics *(CPR density, depth of compression, full recoil, duration of pauses)*, and dispatcher assisted CPR metrics *(recognition of agonal breathing, time to recognition of cardiac arrest, time to delivery of chest compression instructions)*.

When you're done…measure again!

REPEAT!

# Mickey Eisenberg, MD …the “10 Steps”


BROUGHT TO YOU BY
THE RESUSCITATION ACADEMY

10
Steps for Improving Survival from Sudden Cardiac Arrest

based on the book “Resuscitate! How Your Community Can Improve Survival from Sudden Cardiac Arrest” by Mickey Eisenberg, M.D. and inspired by the Faculty of the Resuscitation Academy

# In Closing

Resuscitation is ultimately life affirming.

*It's an ennobling act, that reveals much about our society's values – namely, that human life has value.*

# Questions Comments?

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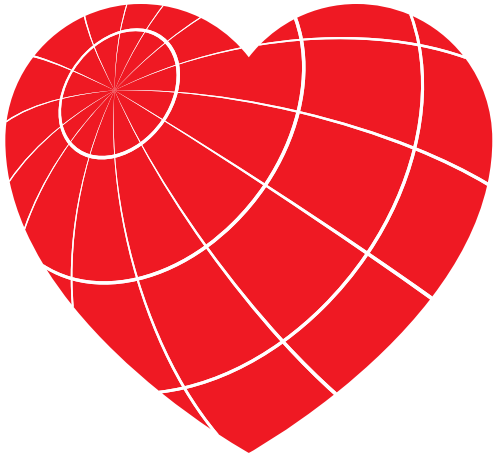

Global Resuscitation Alliance


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