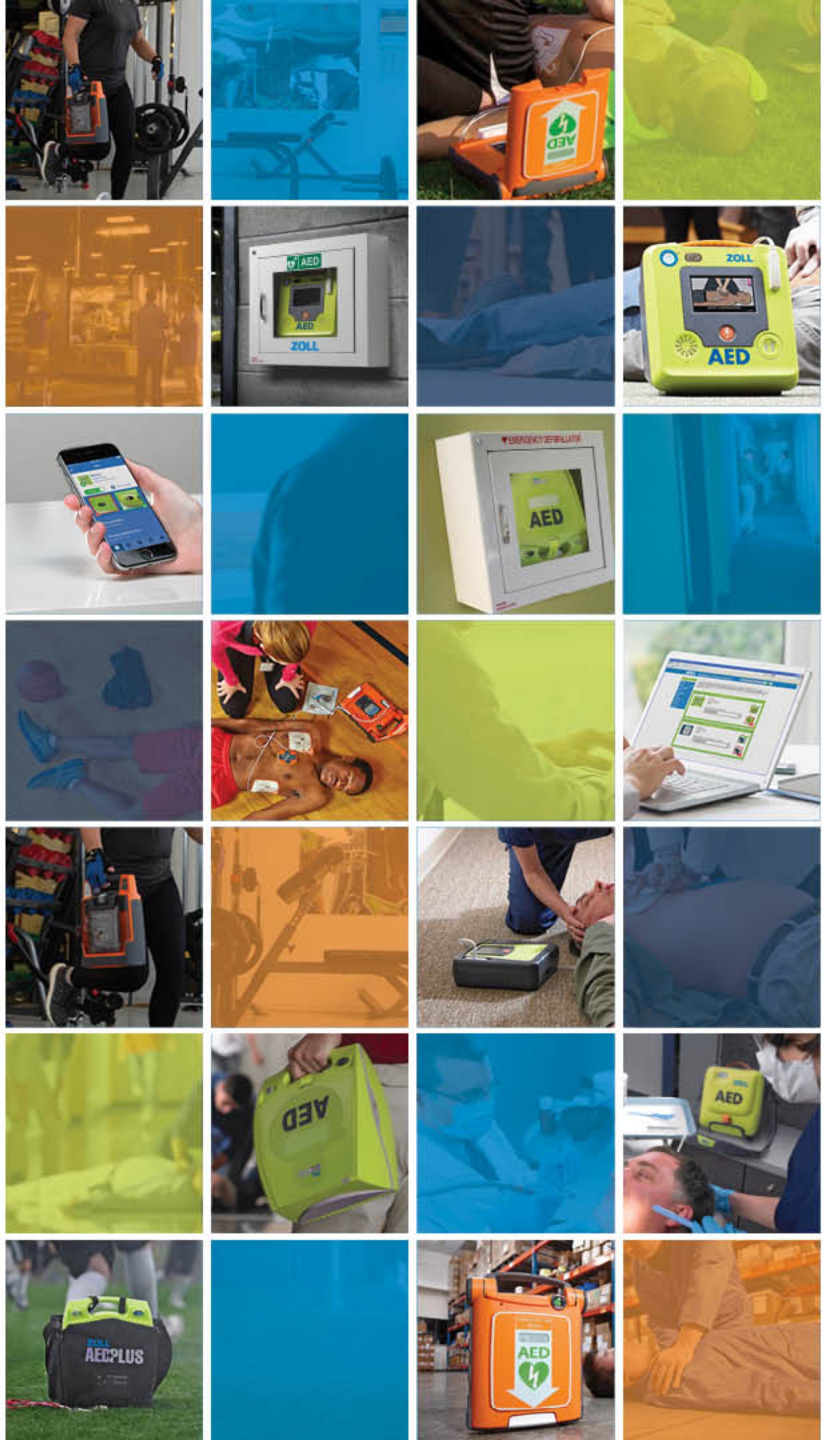


ERC Guidelines 2021

EUROPEAN
RESUSCITATION
COUNCIL

ZOLL
an Asahi Kasei company

ERC 2021 Guidelines and ZOLL Public Safety

- No Changes Needed – *Our AEDs Already Comply*!
- Continuing to Support ZOLL-relevant Recommendations
- Reaffirmed Immediate High-quality CPR and Early Defibrillation Save Lives
- ZOLL Is Uniquely Positioned to Support "System Saving Lives"
- ZOLL Solutions Span the *New* "Formula for Survival"
- Debriefing (w/ objective and quantifiable data) is Heavily Promoted

Systems Saving Lives – Focus within the ERC Guidelines

- Recognition that a *Comprehensive AED Program* Saves Lives:
  - Chain of Survival & the Formula of Survival
  - Measuring the Performance of Resuscitation Systems
  - Social Media and Smartphones Apps for Engaging the Community
  - European Restart a Heart Day (ERHD) & World Restart a Heart (WRAH)
  - KIDS SAVE LIVES Initiative
  - Community Initiatives to Promote Early CPR and AED Programs
  - Role of Dispatcher in Responding to SCA
  - Low-resource Settings
  - Early Warning Scores, Rapid Response Systems, and Medical Emergency Teams
  - Cardiac Arrest Centers

ZOLL Supports the "System"

- Guidelines Reinforce that:
  - Immediate CPR and Use of AED Increases Survival
  - High-Quality CPR Increases Chances of Survival
  - Reductions in Pauses are Important → RapidShock Analysis
  - Importance to Measure and Report Post-use

- Systems of Care Save Lives
  - Important to Recognise SCA and Act
  - Important to Use an AED
  - Important to Provide Post-event Support

How ZOLL Supports Systems Saving Lives

Systems Saving Lives (Comprehensive AED Programs)

Feedback Driven AED / CPR Training

- Virtual Reality
- CPR Challenges
- Clinical Device in Training
- RescueNet Event Summary
- ZOLL AED 3 Trainer
- RescueNet CaseReview

AED Program Compliance Tools

- PlusTrac
- CheckAED App

Device Status Reporting Tools

- ZOLL AED 3

Post-event Review Tools

- RescueNet Code Review
- AED Manager
- RescueLink
- RescueNet CaseReview

Clinical Technologies to Improve Care

- Real CPR Help
- Rectilinear Biphasic Waveform
- RescueCoach
- Intellisense CPR
- Paediatric Capabilities
- RapidShock Analysis
- Star Biphasic Waveform
- CPR Uni-padz

Systems Save Lives

> *The benefits of early defibrillation on survival and functional outcome, though public-access defibrillation programs and greater accessibility and availability of AEDs in the community, are unquestionable.* These benefits have been attributed to the decreased time to defibrillation by bystanders versus EMS because survival in shockable OHCA decreases significantly with each minute of delay in defibrillation. *Defibrillation within 3-5 min of collapse can produce survival rates as high as 50-70%. This can be achieved only by public access programs and onsite AEDs.* Each minute of delay to defibrillation reduces the probability of survival to discharge by 10-12%. The links in the chain work better together: when bystander CPR is provided, the decline in survival is more gradual and averages 3-5% per minute delay to defibrillation.
>
> Page 4, European Resuscitation Council Guidelines 2021: Systems saving lives

Chain of Survival → Formula for Survival

- ERC 2021 Chain of Survival

- ERC 2021 Formula for Survival
  - Three *Interactive* Factors:
    - Guideline Quality (*Science*),
    - Efficient Education of Patient Caregivers (*Education*), and
    - A Well-functioning Chain of Survival at a Local Level (*Local Implementation*).

> The chain of survival was extended to the formula for survival because it was realised that the *goal of saving more lives relies not only on high-quality science but also on effective education* of lay people and healthcare professionals
>
> Page 5, European Resuscitation Council Guidelines 2021: Systems saving lives

Why is this Important?

- Recognition that ***education*** plays an important role in survival from out of hospital cardiac arrest
- Recommendation that both organisations and communities ***evaluate performance*** and use that information to target areas to improve

> ILCOR recommends that organisations or communities that treat cardiac arrest should *evaluate their performance* and target key areas with the goal of improving performance.
>
> Page 5, European Resuscitation Council Guidelines 2021: Systems saving lives

ERC 2021 Guidelines

Basic Life Support Recommendations

ERC Guidelines 2021: Adult Basic Life Support

- Key Takeaways: ***NO Major Changes from 2015***
  - Start CPR on *Anyone* with "*unresponsive with absent or abnormal breathing*"
  - High-quality CPR is Important
  - Reinforces the Importance of Using an AED
  - Emerging Technologies can Help

> The probability of survival after OHCA can be *markedly increased* if victims receive immediate CPR and a defibrillator is used.
>
> Page 9, European Resuscitation Council Guidelines 2021: Basic Life Support

> Failing to recognise cardiac arrest remains a barrier to saving more lives.
>
> Page 2, European Resuscitation Council Guidelines 2021: Basic Life Support

High-quality CPR is Important

- High quality chest compressions
  - Start chest compressions as soon as possible.
  - Deliver compressions on the lower half of the sternum ('in the centre of the chest').
  - Compress to a depth of at least 5 cm but not more than 6 cm.
  - Compress the chest at a rate of 100-120 min with as few interruptions as possible.
  - Allow the chest to recoil completely after each compression; do not lean on the chest.
  - Perform chest compressions on a firm surface whenever feasible.

> *Chest compressions are the key component of effective CPR* as the widely available means to provide organ perfusion during cardiac arrest. The effectiveness of chest compressions is dependent on correct hand position and chest compression depth, rate, and degree of chest wall recoil. Any pauses in chest compressions mean pauses in organ perfusion, and consequently need to be minimised to prevent ischaemic injury.
>
> Page 2, European Resuscitation Council Guidelines 2021: Basic Life Support

AEDs are an Important Tool at Improving Survival

- ERC Recognises
  - The Importance of Lay Responders in providing CPR and Early Defibrillation
  - The Importance in Measuring key CPR Metrics

> To improve CPR quality, *key CPR metrics need to be measured*. CPR quality data can be presented to the rescuer in real-time and/or provided in a summary report at the end of a resuscitation.
>
> Page 9, European Resuscitation Council Guidelines 2021: Basic Life Support

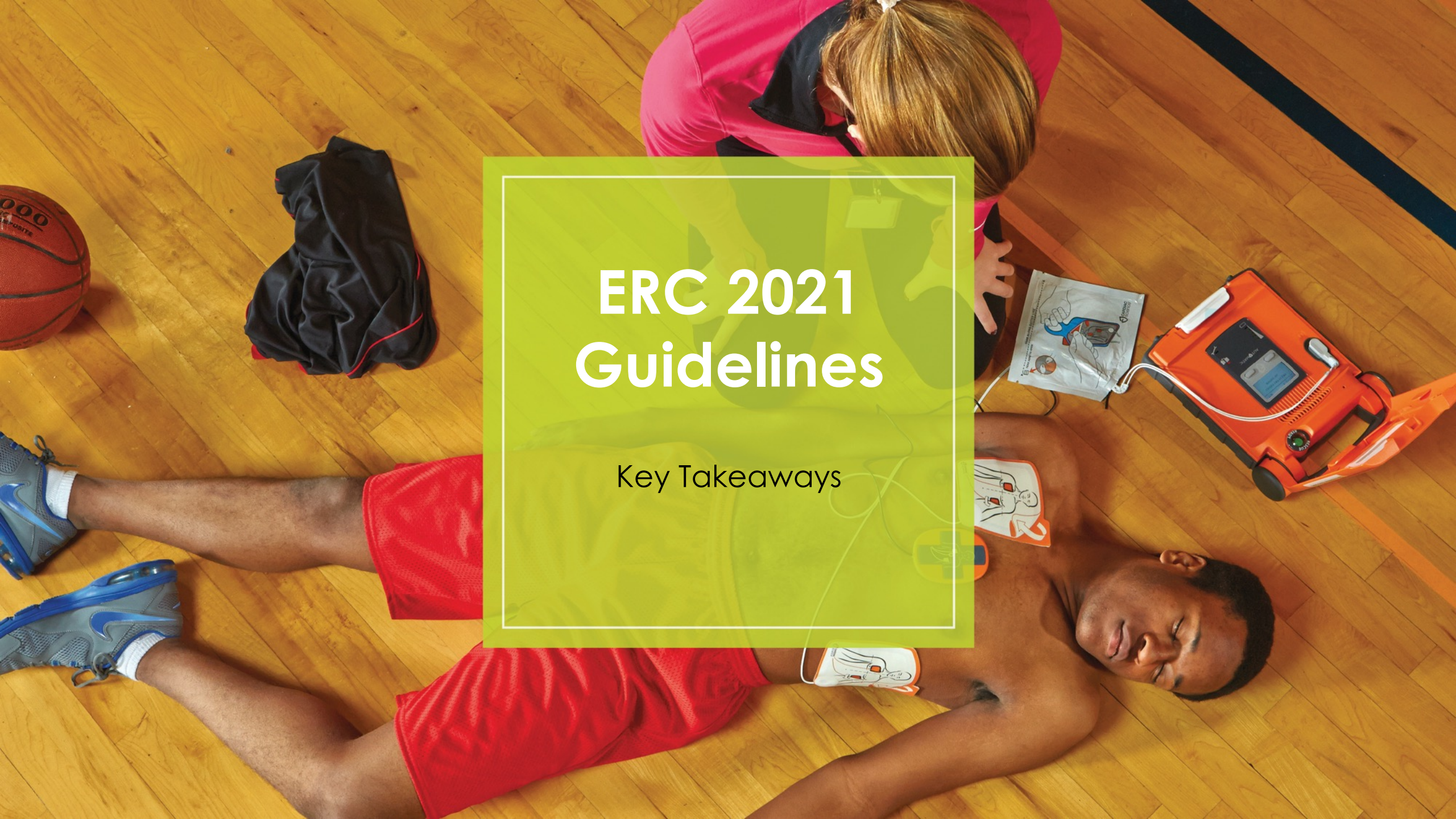
> *The probability of survival after OHCA can be markedly increased if victims receive immediate CPR and a defibrillator is used.*
> AEDs make it possible for laypeople to attempt defibrillation following cardiac arrest many minutes before professional help arrives; each minute of delay decreases the chance of successful resuscitation by about 3-5%.
>
> Page 9, European Resuscitation Council Guidelines 2021: Basic Life Support

Real-time CPR Feedback

- ERC 2021 Guidelines Support Real-time audio visual CPR Feedback and prompt devices during CPR
  - Recognise the *Key* Role Real-time CPR Feedback Provides in Responders Providing High-quality CPR
  - Recognises that People Need to be Trained in Both HQCPR and CPR Feedback Devices to Provide HQCPR

- Only ZOLL Can Deliver the Solutions our Customer Need to Meet This Recommendation
  - Real-time CPR Feedback / Collection in Training
  - Real-time CPR Feedback in Clinical Use
  - Post-event Debriefing Using CPR Performance Data

> Taking these data together *ILCOR suggested the use of real-time audio visual feedback and prompt devices during CPR in clinical practice* as part of a comprehensive quality improvement programme for cardiac arrest designed to ensure high-quality CPR delivery and resuscitation care across resuscitation systems, but suggested against the use of real-time audiovisual feedback and prompt devices in isolation (ie, not part of a comprehensive quality improvement programme).
>
> Page 10, European Resuscitation Council Guidelines 2021: Basic Life Support



ERC 2021 Guidelines

Key Takeaways

Key Takeaways from ERC 2021 Guidelines

- **Systems Save Lives**
  - AEDs Provide the Shock, But the Responder Saves the Life
  - Having an AED is not Enough
  - The System in Place is What Saves Lives

- **ZOLL Has the Solutions to Drive "Systems Save Lives"**
  - Real-time CPR Feedback and Reporting During Training
  - PlusTrac to Maintain Compliant and Ready AED Programs
  - ZOLL AEDs with Real-time Feedback Help Responders Provide the *Highest Quality CPR* they Are Able
  - ZOLL's Data Solutions Provide the Tools for Post-event Review and Improvements

ZOLL AEDs are Already Compliant with 2021 ERC Guidelines

- Summary: ZOLL AED's Meet the Guideline Recommendations
  - Reinforce **immediate high-quality CPR** and **early defibrillation**
  - **CPR feedback** devices with **audio-visual coaching** continue to be recommended
  - ZOLL **solutions span all aspects of the (NEW) Formula for Survival**
  - Increased **emphasis on programs to enable lay responders** to address sudden cardiac arrest (SCA)
  - Increased emphasis on using **emergency response apps**
  - Emphasis on **no superiority in one biphasic waveform over another**

A System Saves Lives

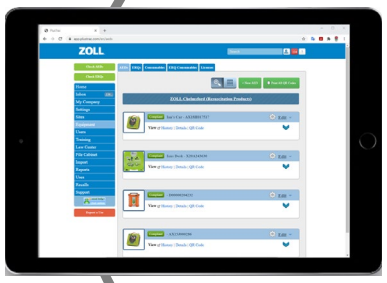
- Summary: ZOLL is Uniquely Positioned to Meet the 2021 ERC Recommendations
  - High-quality CPR and Early Defibrillation is the Foundation
  - Training Leads to Improved Outcomes
  - You cannot measure and improve what you can't see
  - Comprehensive AED Programs are Key to Supporting the 'System'

- Systems Save Lives Shows:
  - Importance of Interactive and Feedback Driven CPR / AED Training
  - Importance of Real-time Feedback
  - Importance of Reviewing Clinical Event Data with Responders
  - Training + AED + Post-event Review = More Lives Saved

How ZOLL Supports this System

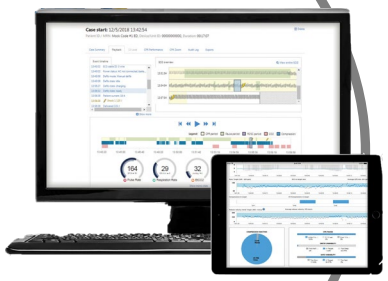
Systems Saving Lives
(Comprehensive AED Programs)

ZOLL Public Safety
Emergency Response Solutions



Feedback Driven
AED / CPR Training

Post-event
Review Tools



AED Program
Compliance Tools

Clinical Technologies
to Improve Care

Device Status
Reporting Tools

THANK YOU