



A NEW ALGORITHM FOR CPR TRAINING: STRENGTHENING THE CHAIN OF SURVIVAL

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A NEW ALGORITHM FOR CPR TRAINING

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Intended Audience

This activity was developed for physicians, nurses, and other healthcare professionals who may be called upon to perform cardiopulmonary resuscitation in the hospital environment.

Original Release: 11/2011

Expires: 11/2014

Commercial Support Acknowledgement

Commercial support in the form of an unrestricted educational grant was provided for the development of this activity by ZOLL Medical Corporation.

Statement of Need

Despite recent changes in the guidelines for CPR, inpatient outcomes following cardiac arrest have not improved as much as expected or desired.

The purpose of this activity is to present the experience and positive outcomes from a pilot program for healthcare facilities, which incorporated (2005) CPR guidelines and a new training algorithm for advanced CPR. The pilot program included more frequent training that was tailored to the needs of specific types of clinicians and that was tied to performance improvement data.

Method of Participation

To complete this activity and obtain continuing education credit, you must do the following:

- Read this Course Introduction/Attestation section in its entirety.
- Read the course material.
- Complete the Post-Test online at www.medcomRN.com/zoll with a score of 80% or greater.
- Submit the online activity evaluation form.

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Overview

The activity will discuss a pilot program of CPR training for inpatient clinicians that dramatically improved patient outcomes after cardiac arrest.

Objectives

After completing this activity, the learner should be able to:

- Discuss the shortcomings of traditional CPR training.
- Discuss the importance of avoiding pauses in chest compressions during CPR.
- State the aspects of innovative CPR training that have been shown to lead to more positive outcomes.

Author/Reviewers

This educational activity is wholly developed, written, and produced by Medcom, Inc., G. Rand Rodriguez, editor. Daniel Davis, M.D., Professor, University of California, San Diego Medical School, served as subject matter expert in review of the content, and performed a content validation review.

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TERMINOLOGY

AART:	Advanced Airway Resuscitation Training is tailored to critical care providers.
ART:	Advanced Resuscitation Training, new resuscitation training program developed by the University of California, San Diego, Medical Center in 2007.
BART:	Basic Airway Resuscitation Training.
Codus Interruptus:	Term coined to represent all of the things that interrupt compressions during a code, with a potential solution identified for each.
ILCOR:	AHA/International Liaison Committee on Resuscitation.
PART:	Pediatric Advanced Resuscitation Training.
PhART:	Pharmacy Advanced Resuscitation Training.
RAT:	Respiratory Advanced Training.
ROSC:	Return of spontaneous circulation.

Introduction

Cardiopulmonary resuscitation (CPR) technique has received increasing attention in recent years. Unfortunately, neither CPR performance nor patient outcomes have undergone the dramatic transformation that was anticipated. This is due in part to the fact that codes are relatively rare in most facilities and constitute an extremely stressful event for staff. In addition, guidelines and algorithms have focused on rhythms at the expense of compressions for the past several decades. It is perhaps more difficult to overcome the lingering effects of old CPR training, habits, and practices than we anticipated.

By 2005, research and guidelines turned toward a rediscovery of chest compressions as the foundation of cardiac arrest resuscitation. Since that time research efforts have continued to underscore the importance of good CPR above all else, and the new American Heart Association (AHA) Guidelines released in 2010 continue to emphasize this point. In addition, it is becoming clearer that the true challenge in changing cardiac arrest outcomes lies in implementation and training issues to achieve optimal resuscitation performance.

Traditional CPR Training

The traditional CPR training model, particularly in the United States, uses standardized courses from the AHA, which have a very specific and rigid content and format. Because each student assumes multiple roles during the course, the training becomes somewhat generic. In addition, the guidelines and algorithms as well as the courses themselves have a pre-hospital focus, in part because that is where most of the evidence is derived. Training is generally infrequent—every two years is the standard required for most in-patient providers. In addition, instructors may lack credibility, either with regard to the science from which the guidelines are derived or the institution- or agency-specific resuscitation performance. Instructors may have little-to-no experience in the students' particular environment or no actual clinical experience at all. Rarely is any effort made to integrate the CPR training with other performance improvement efforts.

A NOVEL TRAINING PROGRAM

The University of California, San Diego, Medical Center developed and instituted a novel resuscitation training program in 2007, called Advanced Resuscitation Training (ART). Not simply a replacement for the traditional training courses, ART is a template or scaffolding for a new strategy of resuscitation oversight within a particular institution or agency. The content and format are flexible to meet the needs of each provider and to address specific issues identified in an institution- or agency-specific performance improvement program. In addition, the training itself occurs more frequently. For example, code nurses are trained every three months as opposed to every two years. All components of resuscitation are monitored via performance improvement data and fed back into the training. In this two-hospital program, ART training was integrated with competency assessments, allowing decisions about clinical practice for particular providers to be made by unit educators.

Three goals were defined for the ART program:

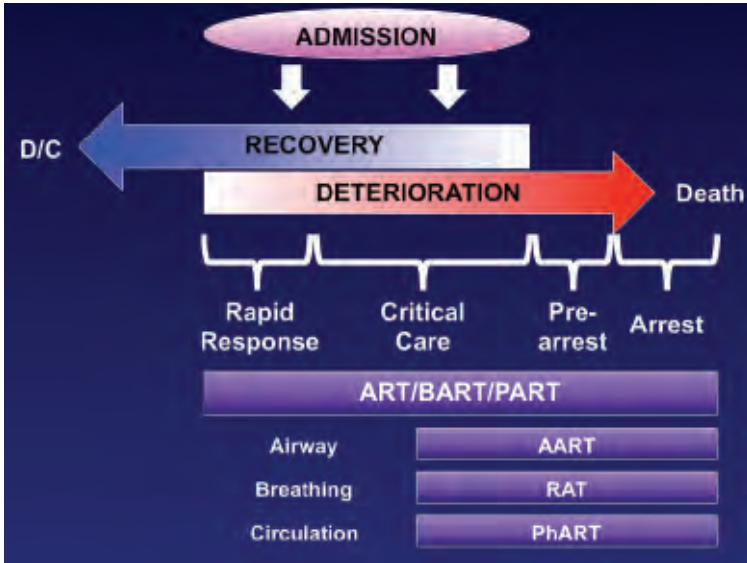
- to prevent the preventable
- to resuscitate the resuscitatable
- to recognize the futile

These goals have characterized the program since its inception. The program was built around a treatment algorithm that is somewhat different from the standard AHA/International Liaison Committee on Resuscitation (ILCOR) algorithm. Instead of the traditional generic training, the program uses an “adaptive” training model, in which providers assumed the roles they would occupy in an actual resuscitation event. For example, pharmacists assume responsibility for drawing and administering medications, respiratory therapists manage the airway, the code nurse oversees the entire resuscitation and handles the crash cart and defibrillator, other nurses start I.V. lines and administer medications, etc. Rapid Response Teams were introduced to reduce the overall incidence of codes, and early detection principles were incorporated into the ART courses for all providers. The program also integrated new technology – defibrillator/CPR monitors – to provide additional resuscitation metrics. Finally, a strong link was created between performance improvement data and training, so that each course was somewhat different than the previous, guided by the performance improvement needs that had been identified.

Comprehensive Training

From a schematic standpoint, the traditional focus of hospital medicine has the patient following a conventional route: admission to the hospital, diagnosis of condition, treatment, improvement, and then discharge. It is uncomfortable to think about other courses, such as the patient becoming worse before improving, or even dying.

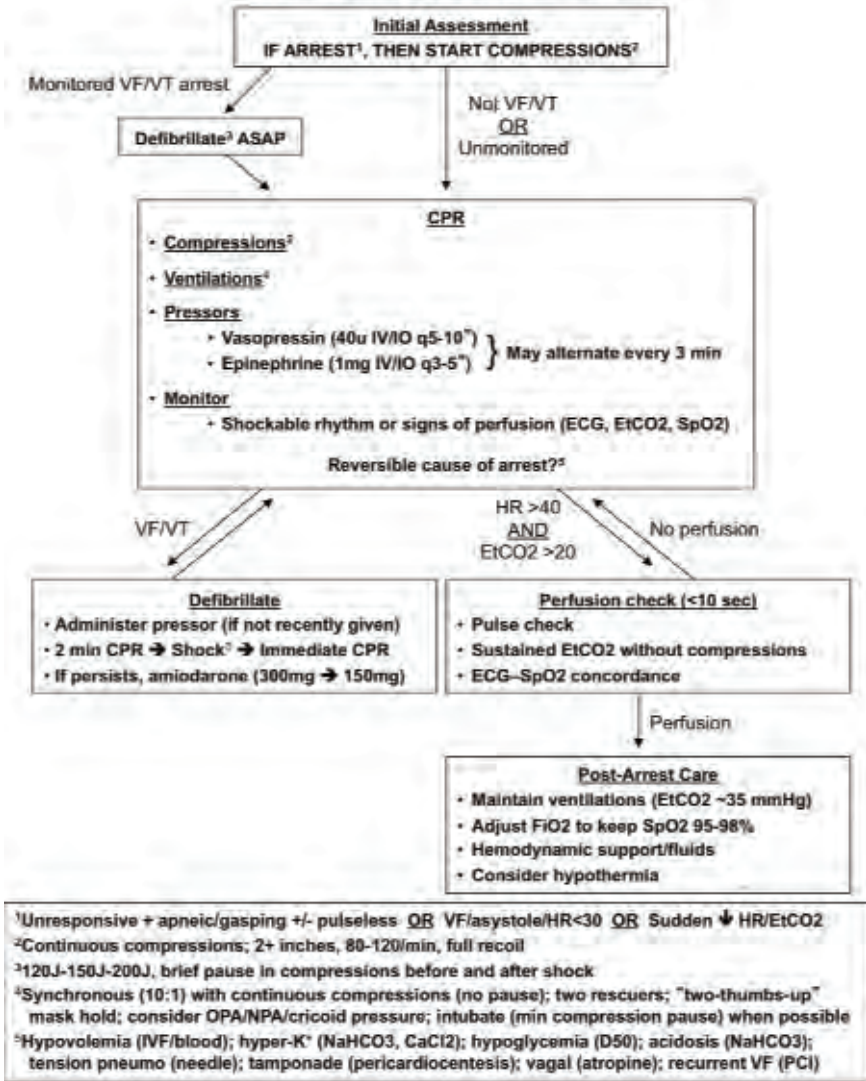
Figure 1



ART integrates this entire spectrum into the training, as shown in Figure 1. Rapid response is integrated with critical care, advanced airway resuscitation training (AART) is provided for certain providers, and cardiac arrest is addressed in both ART and BART (Basic Resuscitation Training). Providers who interface with children also receive Pediatric Advanced Resuscitation Training (PART). Training for specific groups include Respiratory Advanced Training (RAT) and Pharmacy ART (PhART).

Figure 2 shows the 2011 resuscitation algorithm used in UCSD ART training. The algorithm is more conceptual than the AHA/ILCOR algorithms and is hierarchical with regard to the core tasks. This seems to help code leaders focus on broad concepts, while other providers can address very specific tasks. The first box poses the question, “Is the patient dead?” If so, the team initiates compressions and moves onto “CPR Island.” The patient is “safe” on CPR Island, as long as compressions are performed. There are only two indications to “move off CPR Island” and interrupt compressions. One is to administer a shock once ventricular fibrillation is identified and the heart primed, with only a few seconds pause and an immediate return to CPR Island and compressions. The second is to confirm return of spontaneous

2011 ART ARREST ALGORITHM



circulation (ROSC) once reperfusion is suspected, with a return to CPR Island and compressions if ROSC cannot be confirmed within 10 seconds. While on CPR Island, the rescuer has four main tasks: compressions, ventilations, pressors, and monitor (to identify either ventricular fibrillation or evidence of reperfusion i.e., a rise in heart rate and a rise in end-tidal CO₂). This mantra “compressions, ventilations, pressor, monitor” is repeated throughout the code. In addition, considering a reversible cause of the arrest is worthwhile at some point during the arrest to reverse the original conditions that led to the arrest.

The algorithm and training are constructed around a single core principle: the prevention of interruptions in compressions at all costs. The simple concept that compressions should be performed from the moment of arrest until ROSC is assured is emphasized to students from the beginning. The term *codus interruptus* was coined to represent all of the things that interrupt compressions during a code, with a potential solution identified for each. Initiating compressions may be the most challenging step, particularly in non-critical-care areas. Therefore, we devised an easier way to assess the patient to determine whether compressions should be started. Rhythm analysis and pulse checks present another challenge, as stopping compressions for 10 seconds or longer every two minutes can substantially inhibit compression times. To decrease pauses for rhythm analysis and pulse check, providers were taught how to utilize ECG signal processing technology that helps filter out CPR artifact from the ECG. In addition, the rhythm analysis was reduced to a determination of shockability and an approximate rate (above or below 40/min) for organized rhythms. The combination of this simplified algorithm along with ECG signal processing technology results in minimal chest compression interruptions. The shock sequence was also addressed during training to minimize pre- and post-shock pauses. For airway physicians (anesthesiology and emergency medicine), intubation with minimal compression pauses was emphasized. To avoid delays for vascular access, intraosseous line placement was added to the scope of practice for code nurses. Finally, medication administration was simplified to emphasize the use of vasopressors at regular intervals as a mechanism to augment perfusion during compressions.

Figure 3: Pressors

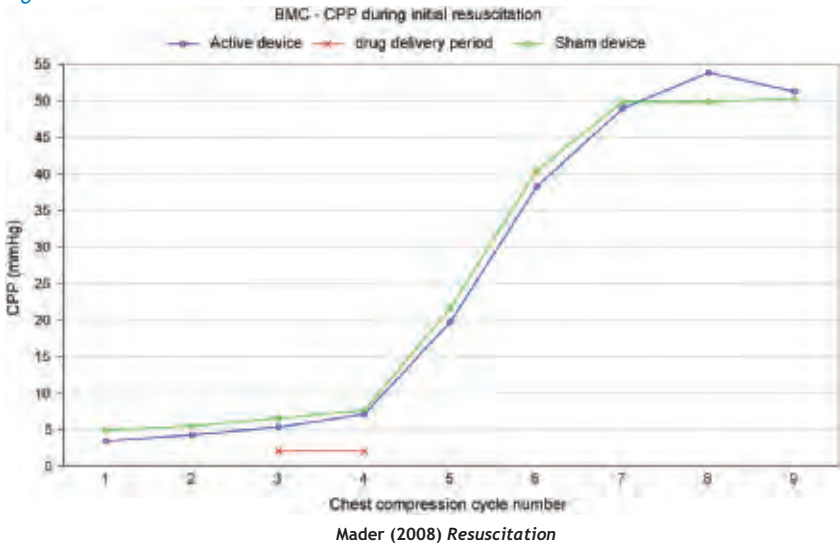
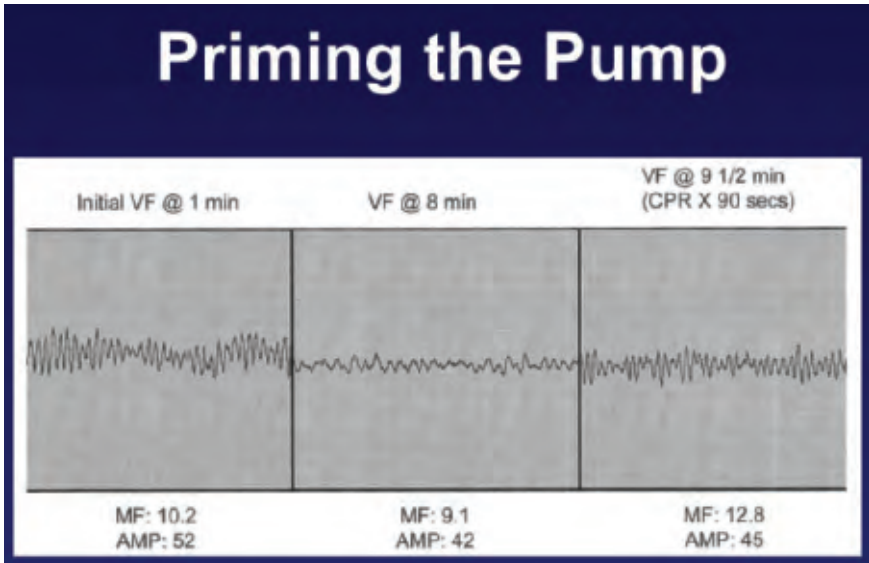


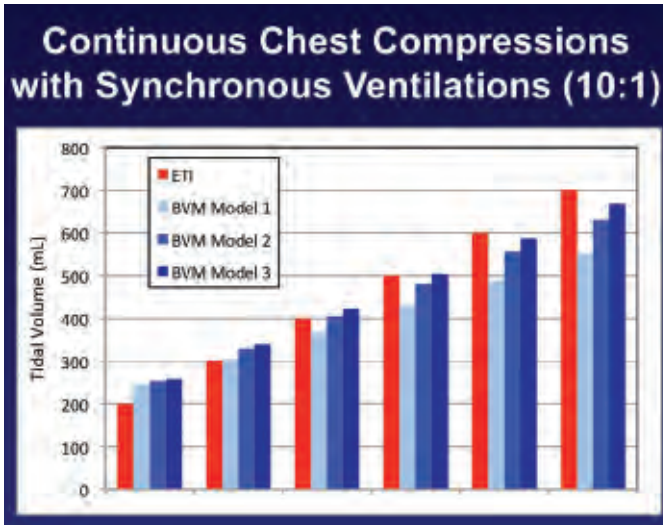
Figure 3 demonstrates how vasopressors affect coronary perfusion pressure using an animal model. The ART program emphasizes vasopressin to a greater degree than the AHA/ILCOR guidelines. This is primarily due to the ability of vasopressin, but not epinephrine, to maintain potency in an acidotic environment, which is the norm for inpatient arrests (e.g., asphyxia, sepsis, hemorrhage).

Figure 4



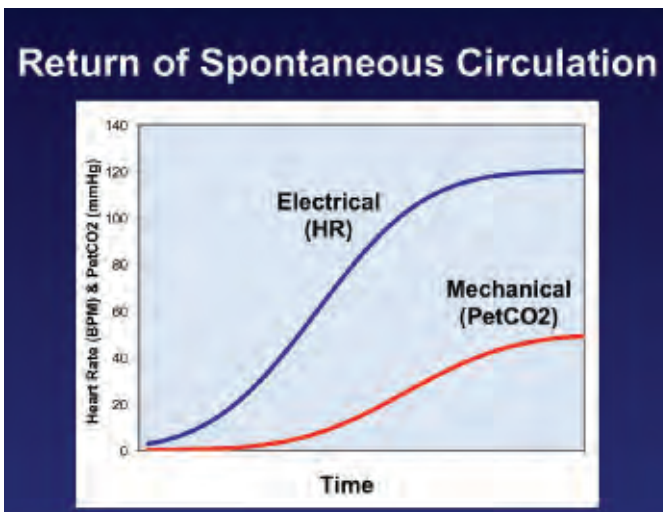
The use of vasopressors to “prime the heart” has even been applied to shockable rhythms. While “shockability” is known to deteriorate over time, the combination of compressions and the administration of a vasopressor agent appears to reverse this deterioration and restore the energy characteristics that predict shock success (Figure 4).

Figure 5



To reduce pauses in compressions for ventilation, the ART model advocates continuous compressions with synchronous ventilations at a 10:1 ratio. Adequate ventilation appears to be possible due to the timing of ventilations with chest recoil, which enhances tidal volumes and preferentially diverts air into the lungs rather than the stomach. Pre-hospital data demonstrate that tidal volumes with an unprotected airway (i.e., bag-valve-mask) are similar to those achieved following intubation (Figure 5).

Figure 6



One of the most important changes with implementation of the ART algorithm is a model of reperfusion in which electrical recovery, which is best indicated by a rise in heart rate, precedes mechanical recovery, which is best indicated by a rise in end-tidal CO₂ (Figure 6). We performed a receiver-operator curve analysis that demonstrated that the heart rate must be at least 40/min AND the end-tidal CO₂ must be at least 20 mm Hg to expect any chance of reperfusion.

Figure 7



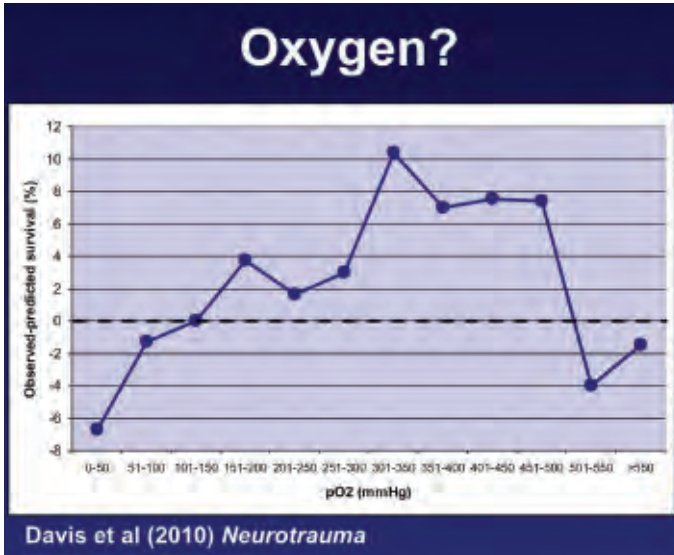
Once ROSC is suspected, a very rapid perfusion check is performed. This includes traditional pulse checks, observation of the end-tidal CO₂ pattern (sustained above 20 mm Hg with reperfusion, a rapid decline with persistent arrest), and assessment of concordance between the pulse oximetry waveform and the electrocardiogram (Figure 7).

Figure 8



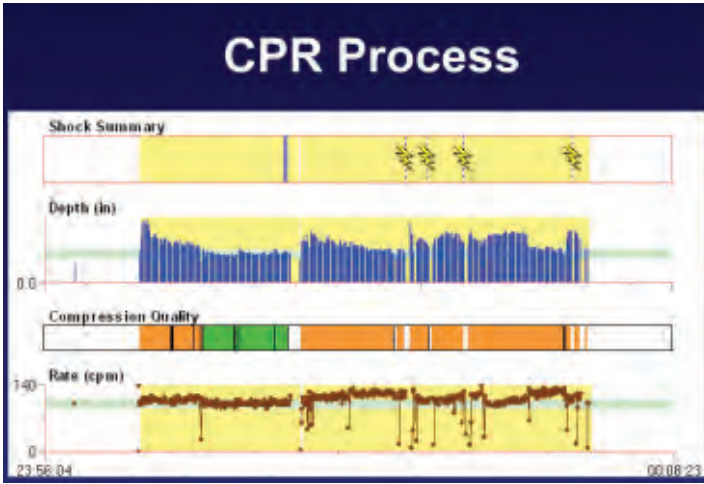
This last point is particularly important since the high-fidelity pulse oximeters available today are oriented toward sensitivity rather than specificity and may generate SpO₂ values in the absence of a pulse. Figure 8 shows a probe placed on a facemask rather than a patient's finger, with SpO₂ value of 72%. Note, however, that there is no organized SpO₂ waveform, or plethysmograph, suggesting that the reading is spurious.

Figure 9



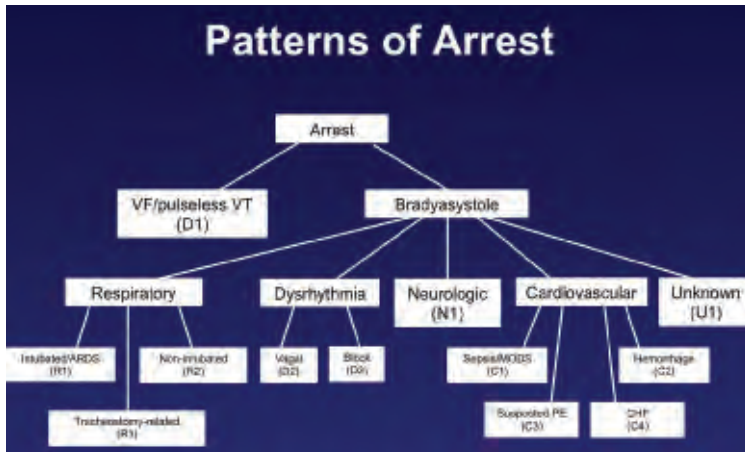
The concept that excessive oxygen following ischemia-reperfusion has entered guidelines for treatment of stroke, neonatal asphyxia, and now following cardiac arrest. Figure 9 demonstrates this concept in head-injured patients, with extremely low and high arrival pO₂ values associated with worse outcomes. The ART algorithm advocates for rapid titration of oxygen following ROSC to achieve normal SpO₂ values.

Figure 10



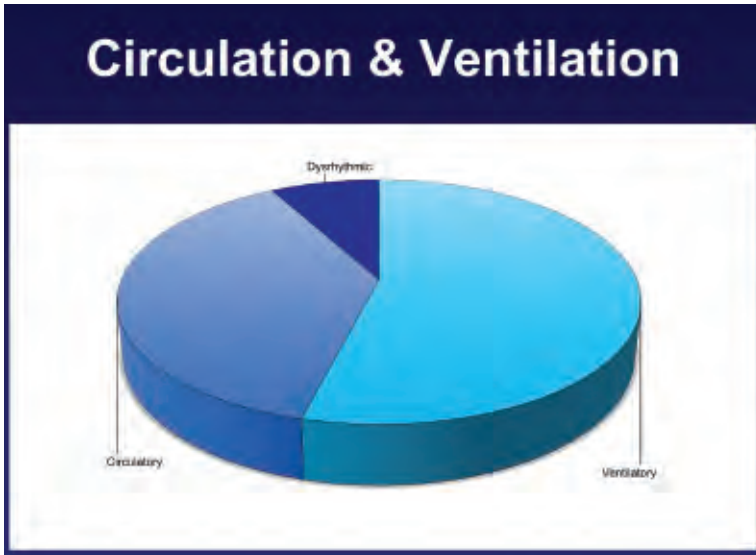
CPR process measures were integrated into performance improvement efforts. A variety of parameters are included in the debriefing on individual cases as well as summary data for the entire institution (Figure 10). Each arrest is subcategorized based on the grid in Figure 11, with a specific series of actions and training efforts prescribed in response to each.

Figure 11



For example, resuscitative efforts have been demonstrated to be ineffective with septic arrests. Thus, their occurrence suggests a missed opportunity for early detection as well as a failure to discuss end-of-life issues with the family. On the other hand, a non-intubated respiratory arrest may be related to narcotic administration or inadequate monitoring of a patient with sleep apnea but appears to be much more resuscitable. The location of a ventricular fibrillation arrest (on telemetry in a cardiac unit) is important to ensure early detection and rapid defibrillation.

Figure 12



This classification system reveals a predominance of ventilatory arrests over dysrhythmic arrests in the hospital (Figure 12). The inpatient patterns of arrest appear to be amenable to rapid response programs, with the pattern of responses matching those for inpatient arrest (Figure 13).

Figure 13

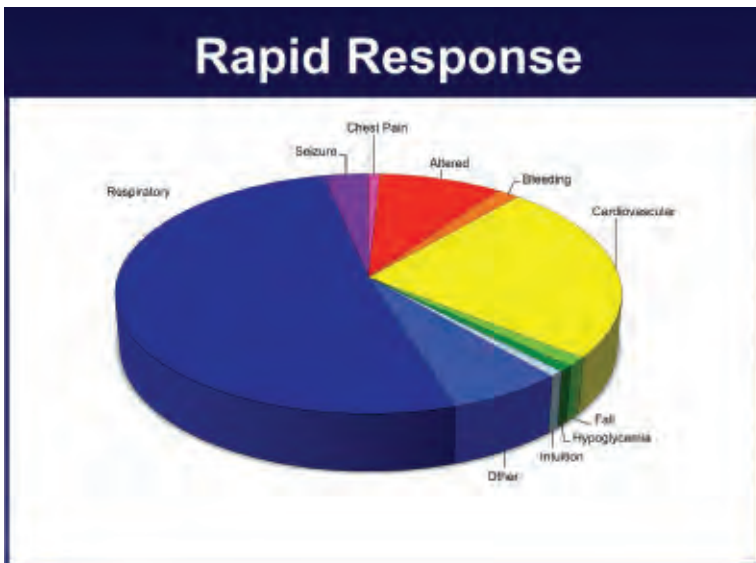
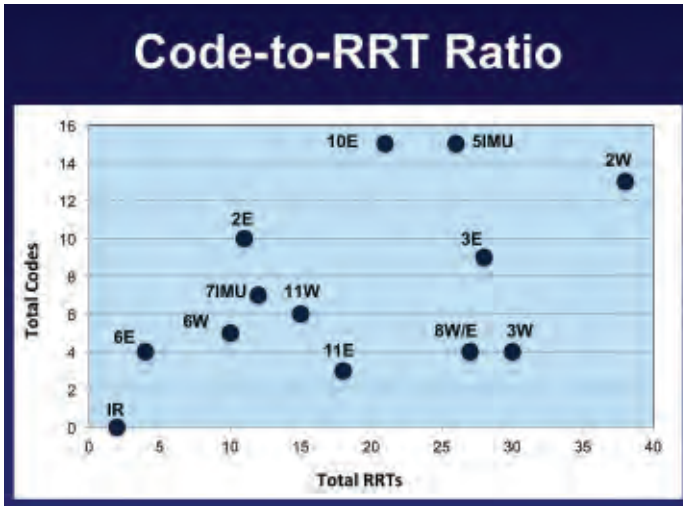


Figure 14



The rate of codes versus rapid-response calls can be graphed unit-by-unit in order to identify those that would benefit from additional education (Figure 14). These data also indicate that the rapid response program is a valid strategy to prevent hospital arrests.

Software Improvements

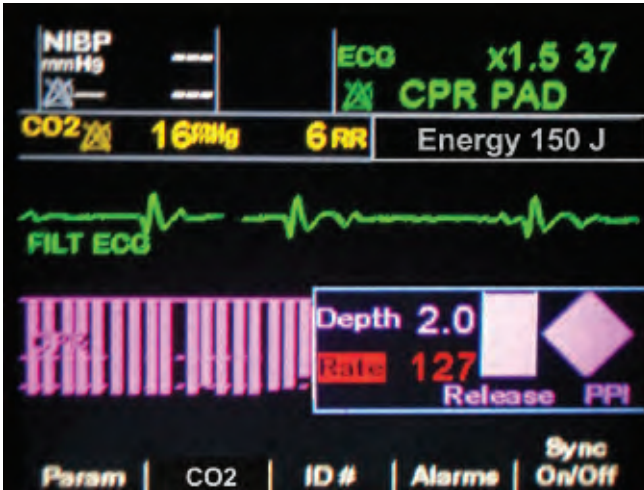
More recently, defibrillator screen displays that were used were simplified in accordance with the ART algorithm. While compressions are being performed, a CPR dashboard with the filtered ECG and continuous end-tidal CO₂ values are displayed automatically, as with this patient in ventricular fibrillation (Figure 15).

Figure 15



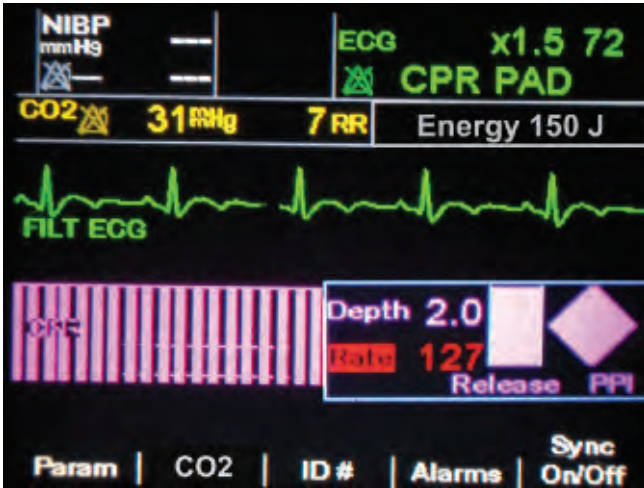
Following defibrillation, the rhythm becomes organized but is likely not perfusing due to the slow rate and low end-tidal CO₂ values (Figure 16).

Figure 16



As CPR compressions continue, the heart rate should increase to at least 40 and the end-tidal values should increase to at least 20 mm Hg. When higher vital signs are achieved, the CPR team would proceed with a perfusion check (our new CPR model is moving away from the term “pulse check”) (Figure 17).

Figure 17



As soon as compressions are stopped, the unit immediately toggles, without manual intervention, to the screen shown in Figure 18, where the display shows agreement between the pulse oximetry waveform and the electrocardiogram.

Figure 18



It is clear that these training approaches have limited the hands-off time and helped to increase positive outcomes.

OUTCOMES

The pilot program was conducted in two UCSD hospitals with a total of approximately 500 beds. The new CPR guidelines were implemented in 2005, before the new ACLS materials were available. All in-patient arrests were included in the analysis. Patients with a do-not-attempt-resuscitation order and arrests in the emergency department or operating room were excluded. The primary comparison was between the two years prior and two years following ART implementation. The primary outcome measures included survival to discharge as well as good neurologic outcome defined by the CPC score. Multiple logistic regression was used to adjust for various covariates: time of day, age and gender of the patient, whether the code occurred in the ICU, and the presence of a shockable rhythm. The incidence of arrest (per 1,000 patient discharges) was used to quantify rapid response team effectiveness.

During the four years of the study, 334 arrests were observed. Overall, there was an improvement in survival rate from 20.8% to 35.8% (P value = 0.002). In terms of good neurologic outcome, the rate more than doubled, from 10.4% to 21.2% (P = 0.005). In addition, a decreased incidence of arrests outside the ICU was observed. An increasing survival rate and a decreasing incidence of arrests resulted in a decrease in arrest-related deaths and a 20% decrease in overall hospital mortality. Such a dramatic effect on overall hospital outcomes has not been documented previously, and the fact that this was achieved with a 35% cost savings over traditional life support training makes the program even more remarkable. Figures 19 and 20 display the outcomes graphically.

Figure 19

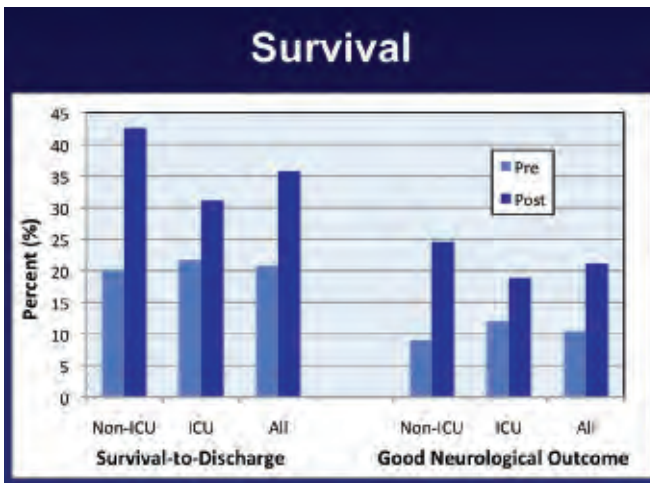
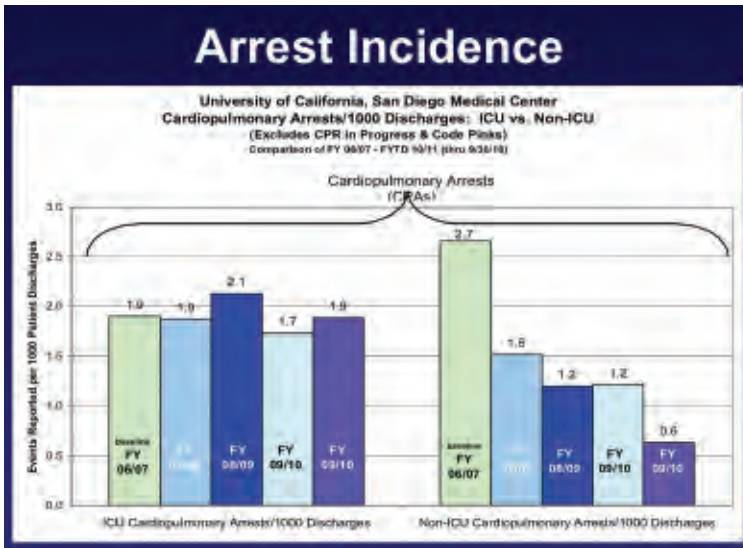


Figure 20



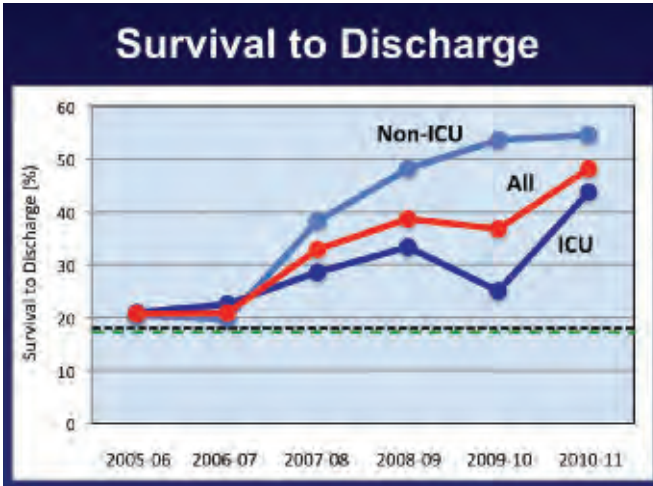
During each year following ART implementation, an increase in survival was observed. The twofold improvement in outcomes is supported by regression models, regardless of whether survival-to-discharge or good neurologic outcome is used.

Figure 21



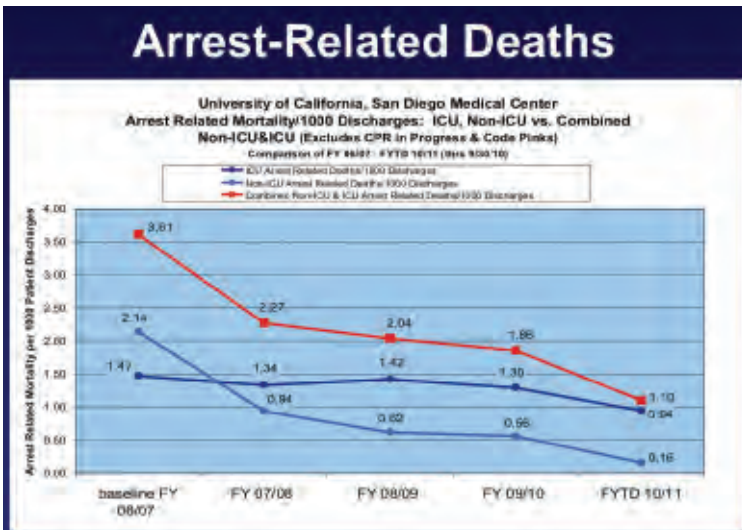
Recent data demonstrate a decreasing incidence of non-ICU arrests without an increase in the ICU arrest rate, both supporting a true positive effect of the rapid response teams (Figure 21).

Figure 22



The positive trend in the increase in survival rates has continued into the first quarter of 2011 (Figure 22). Benchmark survival outcomes are indicated by the dashed lines (16% to 18%).

Figure 23



The increasing survival and decreasing incidence of arrests results in a dramatic drop in arrest-related deaths – a new metric that considers both the incidence and the survivability of codes. The overall incidence of arrest-related deaths has decreased to about 25% of baseline.

CPR Quality

Figure 24 lists measures of CPR quality, which have been outstanding following ART training. There were no baseline CPR data, as the new defibrillators measuring CPR process data were implemented as part of the “resuscitation bundle” that defines the ART program. Chest compression fraction was above 90% and compression depths over 2.5 inches, although part of this may be due to the mattress. The data also show very short pre- and post-shock pauses and very short pauses for perfusion checks.

Figure 24

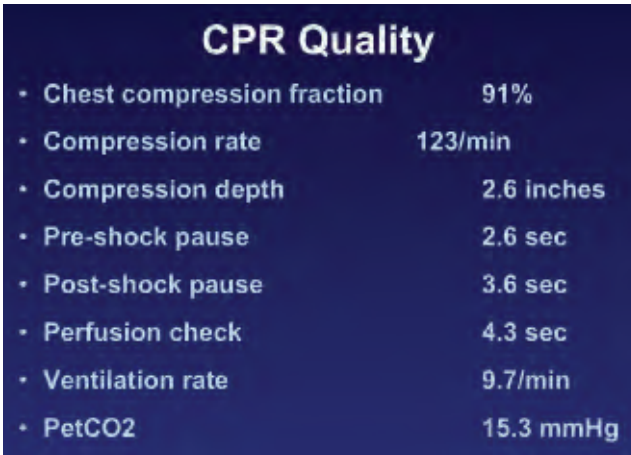


Figure 25 demonstrate the rates of “bystander CPR”, defined by the initiation of compressions prior to code team arrival. The incidence of CPR being performed upon arrival of the code team has risen as a result of the training.

Figure 25

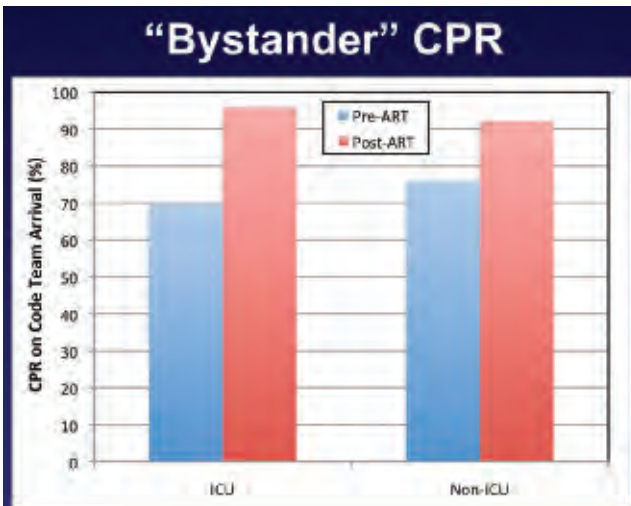


Figure 26

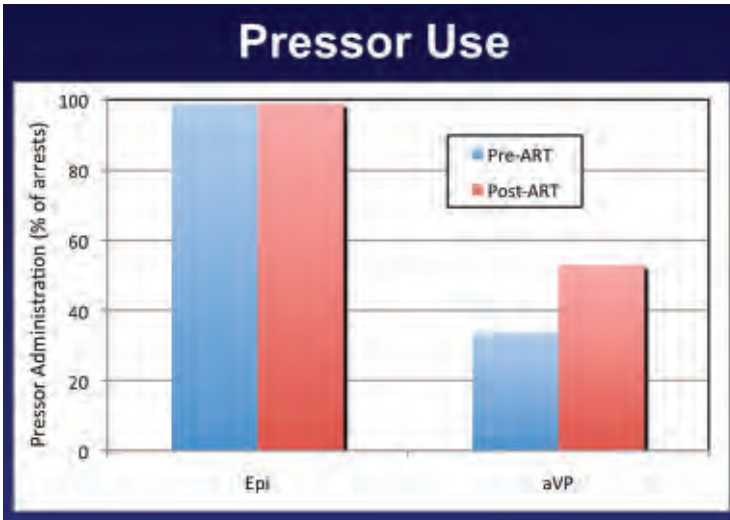
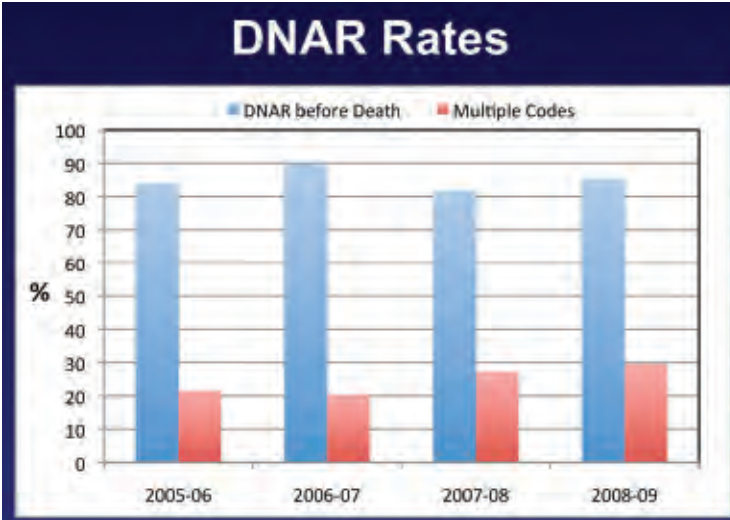


Figure 26 shows that the use of vasopressin has also increased in response to ART training.

Figure 27



While it is possible that the improved outcomes reflect a change in practice with regard to Do Not Attempt Resuscitation designation. However, our data do not suggest that there was any change in this practice during the study period.

CONCLUSION

In conclusion, the ART program is a novel strategy for resuscitation oversight within an institution or agency that employs a novel treatment algorithm, adaptive and flexible training with regard to content and format, integration of new equipment with both treatment algorithms and training, and aggressive performance improvement that feeds directly back into training. The ART program has demonstrated improved outcomes from cardiac arrest by increasing both survival as well as the rate of good neurological outcomes in an inpatient population while decreasing the overall incidence of arrests through surveillance and a rapid response team. It is hoped that the ART concepts can be employed in other institutions and agencies with equal success.

POST-TEST

Complete this test and activity evaluation online at www.medcomrn.com/zoll. You will receive your certificate immediately upon successful completion of the test and evaluation.

Note: There is only one correct answer to multiple choice questions unless otherwise noted. A score of 80% or more is required to pass.

1. Which factor has received increased attention during CPR in current (2010) guidelines?
 - a. *Frequency of ventilations*
 - b. *Checks for a pulse*
 - c. *Compression depth*
 - d. *Uninterrupted compressions*

2. The new CPR guidelines immediately led to a large increase in positive outcomes after in-hospital arrests.
 - a. *TRUE*
 - b. *FALSE*

3. The true challenge of increasing CPR outcomes now lies in _____.
 - a. *Allowing only specialists to do CPR*
 - b. *Preventing cardiac arrest in the first place*
 - c. *Implementation and training issues*
 - d. *Frequent breaks from compression for pulse checks*

4. The traditional training model for CPR in the United States incorporates _____.
 - a. *Flexible training models*
 - b. *Frequent refresher training*
 - c. *A specific and rigidly followed content*
 - d. *Practice on living volunteers*

5. People teaching CPR in the U.S. may NOT have clinical experience.
 - a. *TRUE*
 - b. *FALSE*

6. The new training model used in the pilot project incorporated _____.
 - a. *Amateur trainers*
 - b. *Performance improvement data*
 - c. *Very rigid content requirements*
 - d. *Identical training for all participants.*

7. In the pilot training program, the training was linked to competency assessment.
- TRUE*
 - FALSE*
8. The three goals of the program were to prevent the preventable, to resuscitate the resuscitatable, and _____.
- To make CPR exciting*
 - To train everyone in the nearby community*
 - To recognize the futile.*
 - To raise heart awareness*
9. In the model called adaptive training, each healthcare provider _____.
- Learns an identical set of skills*
 - Decides for himself or herself the most important skills*
 - Takes the same role in training that he or she does in the institution*
 - Tries out in turn, all the healthcare roles in the institution*
10. In this pilot program, ART stands for _____.
- Automated Resuscitation Training*
 - Advanced Respiratory Training*
 - Advanced Repeat Training*
 - Advanced Resuscitation Training*
11. In the algorithm used in ART training, what was called "the CPR Island" is a stage in the procedure where the provider stops compressions to defibrillate or check for perfusion.
- TRUE*
 - FALSE*
12. As in-hospital CPR continues, there are five basic tasks: give compressions, ventilate, use vaspressors, look for a reversible cause of the arrest, and _____.
- Watch the monitor for signs of fibrillation or reperfusion*
 - Stop compressions frequently to check a pulse*
 - Rotate the tasks among attending team members*
 - Keep checking that the airway is clear*
13. In the pilot training, the term "codus interruptus" was used to mean _____.
- Interruptions in chest compressions that could be prevented*
 - Interruptions in chest compressions that could not be prevented*
 - Interruptions in ventilations*
 - Stopping CPR for vascular access*

14. To help prevent interruptions in compression, ventilations were delivered _____.
- a. *Exactly during a compression*
 - b. *Between compressions, during recoil of the chest*
 - c. *At the depth of compression before recoil*
 - d. *At any convenient time in the procedure*
15. Mechanical recovery of the heart is best indicated by _____.
- a. *A change in heart rate*
 - b. *Fibrillation*
 - c. *Stopping to check the pulse*
 - d. *A rise in end-tidal CO₂*
16. According to the algorithm used, to stop to check for perfusion, you need a heart rate of at least 40 bpm and an end-tidal level of at least 20 mm Hg.
- a. *TRUE*
 - b. *FALSE*
17. Data showed that the preponderant form of arrests in the hospital were _____.
- a. *Septic arrests*
 - b. *Arrests of unknown origin*
 - c. *Ventilatory arrests*
 - d. *Dysrhythmic arrests*
18. The new CPR model is moving away from the term pulse check to _____.
- a. *Fibrillation check*
 - b. *Ventilation check*
 - c. *ROSC*
 - d. *Perfusion check*
19. Outcome data for the pilot program showed a change in survival-to-discharge from 20.8% to _____.
- a. *23.2%*
 - b. *30.8%*
 - c. *35.8%*
 - d. *44.1%*
20. Outcome data for the pilot program showed a change in positive neurological outcome from 10.4% to _____.
- a. *12.2%*
 - b. *21.2%*
 - c. *26.2%*
 - d. *35.8%*

TEST ANSWER FORM

Complete this test and activity evaluation online at www.medcomrn.com/zoll. You will receive your certificate immediately upon successful completion of the test and evaluation.

Name _____ Date _____

License # _____ SS# _____

Address _____

City _____ State _____ Zip _____

Circle the correct answer

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. a b c d
6. a b c d
7. a b c d
8. a b c d
9. a b c d
10. a b c d
11. a b c d
12. a b c d
13. a b c d
14. a b c d
15. a b c d
16. a b c d
17. a b c d
18. a b c d
19. a b c d
20. a b c d

ACCESS COURSE ONLINE

This course is available online at www.medcomrn.com/zoll. Internet connection and current web browser (Internet Explorer, Safari, Firefox, etc.) are required.

SUGGESTED READING

American Academy of Orthopaedic Surgeons, and S.J. Rahm,
Health Care Provider CPR, 4th Ed., Jones & Bartlett: Sudbury, MA, 2011.

American Heart Association, *BLS for Healthcare Providers*,
American Heart Association: Dallas, TX, 2011.

American Heart Association, *Advanced Cardiovascular Life Support Provider Manual*, American Heart Association: Dallas, TX, 2006.

American Heart Association, *Highlights of the 2010 American Heart Association Guidelines for CPR and ECC*, American Heart Association: Dallas, TX, 2010.

CONTINUING MEDICAL EDUCATION ACTIVITY EVALUATION FORM

Name/Address of Participant (please print)	Educational Activity	Date
	A New Algorithm for CPR Training Strengthening the Chain of Survival	

Please circle scores which best express your reactions to this activity

1. Overall program organization	Disorganized	1 2 3 4 5	Very Organized
2. Level of information	Poor	1 2 3 4 5	Excellent
3. Extent of new information, skills, knowledge	Not At All	1 2 3 4 5	Great Extent
4. Usefulness of information in your practice	No Use	1 2 3 4 5	Great Use
5. Extent to which you will change your current practices based on information from this program. (Please describe in the comments section below).	No Change	1 2 3 4 5	Significant Change
6. General teaching effectiveness of the presenter	Ineffective	1 2 3 4 5	Very Effective
7. Extent to which this program fulfilled its stated educational objectives. Please rate each objective individually:	Not At All	1 2 3 4 5	Great Extent
8. Rate the balance, objectivity and scientific rigor of the course.	Poor	1 2 3 4 5	Excellent
9. Did you perceive any commercial bias in the course? If yes, please describe in comments section below.	Yes		No
10. Do you perceive any barriers to implementing this information into clinical practice? If yes, please describe in the comments section below.	Yes		No

Check Appropriate Box:

- Staff M.D.
 Non Staff M.D.
 Resident
 Fellow
 Other _____

Comments:

Suggestions for Future Programs:

Signature: _____

***Form must be signed to receive CME credit.**

NURSING EDUCATIONAL ACTIVITY EVALUATION

Please print and complete both sides of this form.

Name _____ (Last) _____ (First) _____ (M.I.) _____ Credentials _____

License # _____ Licensing State _____

Home Address _____

City _____ State _____

Zip _____

Full Facility Name _____
(WHERE COURSE WAS COMPLETED)

Facility Address _____

City _____ State _____ Zip _____

Facility Phone # _____ Ext# _____

Course #: **341000** Course Title: **A New Algorithm for CPR Training Strengthening the Chain of Survival**

Contact hour(s) **1**

Time needed to complete total program:
 _____ hours _____ minutes Date: _____

Note: Times are to be shown in hours and 15 minute increments.

Was this program offered through an instructor or taken independently as home study?

Through Instructor Independently

I have reviewed the activity content and completed the Post Test. Please circle the response that best describes your ability to:

	Strongly Agree	2	3	4	Strongly Disagree	Does Not Apply
• Discuss the shortcomings of traditional CPR training.	1	2	3	4	5	0
• Discuss the importance of avoiding pauses in chest compressions during CPR.	1	2	3	4	5	0
• State the aspects of innovative CPR training that have been shown to lead to more positive outcomes.	1	2	3	4	5	0

Please give us your reactions to the program by circling the response that best describes your feelings:

	Strongly Agree		Strongly Disagree			Does Not Apply
1. Relationship of objectives to overall purpose/ goal(s) of activity.	1	2	3	4	5	0
2. The material was effectively organized.	1	2	3	4	5	0
3. The language was clear, understandable, and at an appropriate level.	1	2	3	4	5	0
4. The program is an effective educational presentation.	1	2	3	4	5	0
5. The information included will benefit my practice.	1	2	3	4	5	0
6. The material presented was new to me.	1	2	3	4	5	0
7. This is a helpful and convenient way to earn CE credit.	1	2	3	4	5	0
8. Rate the balance, objectivity and scientific rigor of the course.	Excellent					Poor
	1	2	3	4	5	
9. Did you perceive any commercial bias in the course? If yes, please describe in comments section below.	Yes			No		
10. Do you perceive any barriers to implementing this information into clinical practice? If yes, please describe in the comments section below.	Yes			No		

Comments: _____

Thank you for taking the time to complete this form.

To receive Continuing Education credit for the course, turn in your completed Test Answer Form and Educational Activity Evaluation to your Instructor. If you are taking the course on a home study basis through Medcom/Trainex, return the materials to: CE Coordinator, Medcom, Inc., 6060 Phyllis Drive, Cypress, CA 90630.

RESPIRATORY THERAPIST EDUCATIONAL ACTIVITY EVALUATION

Please print and complete both sides of this form.

Name _____ (Last) _____ (First) _____ (M.I.) _____ Credentials _____

AARC Member # _____ Licensing State _____

Home Address _____

City _____ State _____

Zip _____

Full Facility Name _____
(WHERE COURSE WAS COMPLETED)

Facility Address _____

City _____ State _____ Zip _____

Facility Phone # _____ Ext# _____

Course #:341000 Course Title: A New Algorithm for CPR Training Strengthening the Chain of Survival

Contact hour(s) 1

Time needed to complete total program:
_____ hours _____ minutes Date: _____

Note: Times are to be shown in hours and 15 minute increments.

Was this program offered through an instructor or taken independently as home study?

Through Instructor Independently

I have reviewed the activity content and completed the Post Test. Please circle the response that best describes your ability to:

	Strongly Agree	2	3	Strongly Disagree	Does Not Apply
• Discuss the shortcomings of traditional CPR training.	1	2	3	4	5 0
• Discuss the importance of avoiding pauses in chest compressions during CPR.	1	2	3	4	5 0
• State the aspects of innovative CPR training that have been shown to lead to more positive outcomes.	1	2	3	4	5 0

Please give us your reactions to the program by circling the response that best describes your feelings:

	Strongly Agree					Strongly Disagree	Does Not Apply
1. Relationship of objectives to overall purpose/ goal(s) of activity.	1	2	3	4	5	0	
2. The material was effectively organized.	1	2	3	4	5	0	
3. The language was clear, understandable, and at an appropriate level.	1	2	3	4	5	0	
4. The program is an effective educational presentation.	1	2	3	4	5	0	
5. The information included will benefit my practice.	1	2	3	4	5	0	
6. The material presented was new to me.	1	2	3	4	5	0	
7. This is a helpful and convenient way to earn CE credit.	1	2	3	4	5	0	
8. Rate the balance, objectivity and scientific rigor of the course.	Excellent						Poor
	1	2	3	4	5		
9. Did you perceive any commercial bias in the course? If yes, please describe in comments section below.	Yes				No		
10. Do you perceive any barriers to implementing this information into clinical practice? If yes, please describe in the comments section below.	Yes				No		

Comments: _____

Thank you for taking the time to complete this form.

To receive Continuing Education credit for the course, turn in your completed Test Answer Form and Educational Activity Evaluation to your Instructor. If you are taking the course on a home study basis through Medcom/Trainex, return the materials to:

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The development of this activity was supported in part by an educational grant from ZOLL Medical Corporation.

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