ACLS (Advanced Cardiac Life Support) Certification Exam Q&A with Explanations

Updated using the latest guidelines and research

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& Joseph C. Kunz, Jr.

Foreword by Dr. Peter Woods, DO
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Foreword by Dr. Peter “Tucker” Woods, DO

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Long Island, New York
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Foreword

“Charging……I am going to shock on three. One, I’m clear… Two, you’re clear…Three, we’re all clear.” I will never forget the first time I had to grab the defibrillator paddles and utter those words during my first cardiac arrest.

There is nothing more intense or intimidating, for a newly trained provider, than delivering a jolt of electricity to a patient’s body during resuscitation, But this action, and all the other actions of Advanced Cardiac Life Support (ACLS), can make the difference between life and death. That is the goal of ACLS - to save a life!

This new book by educators Michele and Joseph Kunz will not only help ensure that you succeed in your ACLS certification, but more importantly it will help prepare you for real-life…..your first “code”. (In fact there is even a section in this book entitled 10 Hot Tips for Surviving Your First Code.)

In terms of learning and preparing for your ACLS exam, there is no “one size fits all” approach. Different people learn in different ways. Some learn by visual cues, some by watching videos, some by practicing question after question, some by using flash cards, etc. What impressed me most about this book is that there is something for everyone - no matter what your method of learning is. Michele and Joe have developed tool after tool to ensure that you become masters of the material - over 100 practice questions, YouTube videos, their famous Zombie Notes Study Charts, use of flash cards, numerous tips, etc.

While it can be daunting taking an ACLS examination, this book will take you from beginning to end by keeping things simple - removing the intimidation, the anxiety, and the complexity. Michele and Joe have years of teaching experience in preparing students for these examinations and their formula of keeping it simple and using a straightforward approach works very well. When you read this book, you are bound to have an “aha moment” where you suddenly get it - removing the confusion of an ACLS process you were first worried about or had trouble understanding. The authors have a knack of explaining
complex processes in an easy-to-understand method. What is refreshing too is that they do this in a way that is fun and functional - and without any fluff. Michele even makes herself available at all times for email questions regarding the book - demonstrating the extra mile they will go for their students becoming certified in ACLS.

This book is absolutely perfect for someone who is taking his or her ACLS examination for the first time - it will become your “companion” during the whole examination preparation process. Additionally, it is a great guide for those taking their re-certification. I think you will find it helpful too if you just want to refresh your knowledge.

The Kunz’s have created an easy-to-understand book that is filled with practical and useful information. After reading their book and applying their tips and techniques, you will be more confident during your examination, and you will definitely pass it on your first attempt! More importantly, you will be able to apply this knowledge and effectively treat life-threatening conditions outside of the classroom. Are we all clear?

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How This Book Will Help You

• This book will help you pass the ACLS certification exam on your first attempt.

• We have created a video for every topic and article in this book, all available on YouTube.com/MicheleKunz.

• Lots of practical and usable information and advice about the ACLS class and exam.

• 101 practice questions that cover every possible medical and nursing scenario and topic on the ACLS certification exam.

• No confusing wrong answers to clutter your brain.

• Contains all the essential information for ACLS exam success.

• This book, together with Michele’s YouTube videos, will greatly reduce your test-taking anxiety.

• All information in this book has been updated to the current guidelines.

• Michele is always available for your email questions about this book, or any aspect of nursing or hospital work.

• Hot tips for surviving your first code.

• Hot tips to help you memorize lots of new information.

• Learn all of the biggest myths about the AED.
Who This Book Is Meant For

All licensed healthcare providers and emergency responders such as:

• Physicians (MD’s, DO’s, DPM’s)
• Nurses
• Paramedics
• Emergency Medical Technicians
• Physician’s Assistants
• Nurse Practitioners
• Residents and Fellows
• Medical and Nursing Students
• Medical and Nursing Assistants
• Dentists
• For all licensed healthcare professionals
Introduction

Our new book that you now hold in your hands, *ACLS Certification Exam Q&A With Explanations* will certainly help you pass any Advanced Life Support Certification Course. As you look through the book, you will quickly see that this book’s format is different from all other review and test preparation books.

This book is specifically geared toward healthcare students and new healthcare professionals that are preparing to take the ACLS certification exam for the first time. This book will also give the seasoned healthcare professional lots of great review information as well as a way to update themselves on the latest research and guidelines.

Whichever certifying agency’s program you are taking, either in a classroom or on the internet, this book will help you succeed in this course. In this book we give you all the essential information that you will need to successfully pass the certification course and exam on your first attempt.

Joe and I have been teaching this course to healthcare professionals and students since 1984. We know what works and what doesn’t when it comes to helping our students be successful. Back then we had to develop almost all of the study materials for our students by ourselves because very little existed at the time. The *Zombie Notes Study Charts* were some of the first study aids we developed to help our students learn a large amount of information very quickly. We know that this format works very well because hundreds of thousands of healthcare professionals and students, in hospitals and colleges all over the world, have used this handy, no-nonsense chart to help them successfully pass the BLS certification exams.

Therefore, in order for you to be successful on the certification exam, and on the job, we expect you to memorize every bit of information contained within the *Zombie Notes StudyCharts* and within this book. It is essential that you know this information by heart and can recall it at a moment’s notice. This information is not only essential for the exam, but for your career, and the survival of your patients, as well.
You will find that the key to passing the certification exam and course lies in applying your knowledge through questions and answers, not rote memory alone. Memorization is simply the first step to learning and committing the information to your long-term memory. You will find that studying our book, and our Zombie Notes Study Charts, and watching our YouTube videos, all combine to make a very powerful study system, and a very productive and quick way to prepare yourself for success on the exam.

Therefore, in this book, we have created 101 practice questions that are designed to simulate actual exam conditions. The subject of ACLS covers a lot of material. It is an interesting topic, and a working knowledge of the material is essential to do your job as a healthcare professional properly. In addition, we have tried to make studying for this exam as painless and as easy as possible. We have included all the essential information necessary for you to be successful on this exam. We have also included additional material to make studying this topic more fun and less painful.

We welcome your comments and suggestions. If you would like to offer a testimonial about how this book has helped you be successful, you will find more information about this at the end of the book.

We look forward to hearing from you. Good luck.

Joe & Michele Kunz
Long Island, New York
Part 1: About ACLS
Notes
What is the ACLS Certification Course All About?

1. Information About the Certification Class

The Advanced Cardiac Life Support programs are geared toward health professionals who work with victims and patients that may suddenly become acutely ill. The health professional may be dealing with the crisis as it starts or continues the care as the patient progresses or continues to need advanced care. The course prepares one for dealing with the patient in medical crisis and working with a highly credentialed team of life savers.

The participant is expected to come with knowledge and experience to the class. If this is limited there is ample study and reference materials, including study guides and youtube videos linked from Michelekunz.com. Preparation is key in the passing of ACLS and having a comfort level with the topics.

In the course there is a review of EKGs, medications, airway and circulation devices; defibrillators, monitors, pacemakers, AEDs, Intraosseous (IO) needle placement, laryngeal mask airways (LMAs), intubation equipment and confirmation devices, simulation manikins, individual and team practice sessions, BLS, AHA guidelines and various recomendations, written and practical exams.

The certification course requires preparation and time. If one is unsuccessful they will be rescheduled to retake the course at another time.

2. Information About the Written Exam

The written exam is multiple choice. It covers all the topics discussed and practiced in the certification program. There is time allotted for remediation and review of the exam questions whenever necessary. To prepare for the written test it is necessary to take the pretest. Bring any questions you have to class, or e-mail me any time at MKunz@MicheleKunz.com/.
3. Information About the Skills Station (Mega Code) Exam

The skills station enables the team to work together in the resuscitation of a patient. It also allows the team members of the class to participate in skills that their licensure or job description doesn’t usually allow. Skills include ventilation, intubation, IO insertion, cardioversion, medication administration, etc. This helps the individuals on the team understand what the other team members are required to do, in priority and done properly.

The team will participate in a realistic simulation of a deteriorating patient where the team will initiate basic and advanced airways. The simulation will lead to IV/IO and fluid resuscitation and changes in the patient’s EKG. Proper responses to the patient’s change will require synchronized cardioversion (defibrillation/shock), intubation, intubation confirmation, capnography, intraosseous insertion, CPR, unsynchronized cardioversion, trouble-shooting equipment failure, using the algorithms and and variations.

Each individual is responsible for understanding and performing in their assigned roles. The team will switch roles to ensure participation and team success.

Each participant is required to have good BCLS skills and to be able to demonstrate this at the time of the class. There is a review of BCLS and AED use during the ACLS lecture and testing sessions. ACLS programs does not recertify the BCLS requirements. BCLS is a separate course with infant and children choking and CPR skills as well.

The team will review their actions in a debriefing to ensure the best treatment was applied, and to consider team members and family emotions during and after the critical event.
10 Hot Tips for Passing the ACLS Exam

Here is a guide to help you improve your chances of passing the certification exam for ACLS – Advanced Cardiac Life Support. If you take the advice given here seriously, you will do very well on the exam. But you must allow yourself plenty of time to learn all of this material – especially if you are new to this.

1. **Study and memorize the Zombie Notes Study Charts**
   The *Zombie Notes Study Charts* focus on information from the literature, test questions and the real life everyday situations - information you need to provide safe care during an adult emergency or cardiac arrest. As you read the study guide, try to memorize the medications and their doses. You must memorize and understand the algorithms; the arrhythmias and in which situations treatments and medications may be required. Memorizing the algorithms, bradycardia – heart blocks and drug doses is the most difficult part. Repeating the information over and over, and even saying it aloud really helps with the memorization. Once the hard part is memorized, you can start using critical thinking in adjusting treatments based on patient symptoms. The *Zombie Notes* helps you study the need to know and it is easy to take with you to study in your spare time.

2. **Read and study the ECC Handbook**
   The *American Heart Association* textbook or the *ECC Handbook* may be distributed by your instructor. The AHA - ECC handbook is an excellent source for evidenced based treatment protocols for all age groups in emergency situations. It will assist the learner in identifying in priority the steps to take, meds to give, joules to use, essential equipment to have and post arrest recommendations to stabilize the patient. This will help you in the mega code setting to apply your knowledge and skills. The handbook is filled with information of topics around assessing and treatment of critical situations, shock states, airway management, treatments and pharmacological modalities.
3. Understand basic EKGs
ACLS course focuses on the patient’s heart rate and rhythm throughout the course. The treatments you select will be in response to your accurate choice of arrhythmia and if the patient is stable or unstable. Taking an EKG course is probably the most important preparation for ACLS class and testing. There are a variety of ways to take a course. A classroom setting, an easy to understand textbook, or an online program are great options. YOU MUST be able to recognize and treat the lethal arrhythmias in the patient: ventricular fibrillation, ventricular tachycardia (with or without a pulse), pulseless electrical activity (PEA), and asystole.

4. Watch YouTube videos on EKG and other ACLS topics
Any critically ill patient of any age may have their heart rate and rhythm affected. Trauma, age, medications, dehydration, heart failure, and heredity all play a part in a patient’s arrhythmia. It is the practitioner’s role to recognize potential cardiac changes and treat appropriately. Knowing the difference in synchronized and unsynchronized cardioversion (shock) is important. Other important rhythms to know are: bradycardia – 4 heart blocks; sinus tachycardia; supraventricular tachycardia (SVT).

5. Take ACLS practice tests over and over until you get every question correct
Practice tests can reinforce what you know and help you find the areas you need to focus your studies.

6. Take a BLS course and be sure you can perform high-quality-CPR at the ACLS class
The prerequisite to any Certification Course is the ability to perform BLS skills. The instructor may ask you for your card. During the ACLS course you will have to perform in practice and testing sessions. Some of the BLS skills will include: quick assessment for patient’s response and pulse (10 seconds); chest compressions for adults; ventilations using a bag-mask-valve (Ambu bag); the AED and application of AED pads.
7. Review all the ACLS medications and their doses
Oxygen, epinephrine, amiodarone, adenosine, atropine, and procainamide, etc., are used throughout the ACLS program. Oxygen, epinephrine, and amiodarone are the most frequently used drugs in an emergency. Lidocaine is no longer in the algorithms. The new drugs listed (or drugs back in the recommendations) are procainamide, sotolol, cardiac catheterization drugs, anticoagulants, platelet inhibitors, sedatives, and fibrinolytic agents.

8. Read about different diagnosis
Knowing the common diagnosis - dehydration, respiratory failure, septic and cardiogenic shock, trauma, etc. - and the common treatments will ready you for the practice scenarios and testing mega codes. There are algorithms and guidelines to follow for the different diagnosis. Many are the standard of care nationally and world-wide - as in MI and stroke. Treating shock and trauma involves many treatment protocols and medical disciplines to bring a patient to a stable condition. There are algorithms to assist the professionals in developing priorities around trauma: triage, transport, stroke and neurological assessments (Glasgow Coma Scale), wounds, fractures, paralysis, and burns. Shock priorities include fluid replacement, electrolyte balance, vasoconstrictors, and vasodilators.

9. Be prepared to work in a team setting and be able to participate verbally with hands-on participation
You may be assigned to a different role in the mega code. You may be practicing skills that your scope of practice does not allow in the work place. The skills allowed in the classroom, allows you to see how we can help each other in an emergency situation. Feel free to speak up when the instructor allows team-work. Also be prepared to run a mega code as the team leader as well.

10. Participate in class, and ask and answer lots of questions
Speaking up and asking many questions helps you understand and will facilitate your classrooms ask more detailed questions as well.
10 Hot Tips for Memorizing Information

Memorization is the fixing of information to your memory through sheer repetition. It is a necessary first step in learning. Memorization of essential terms and concepts of a difficult or new topic will provide a foundation for a deeper understanding that will follow with additional study. Michele and I teach thousands of healthcare professionals each year. Everyone of them are expected to be able to quickly recall hundreds of essential dosages, formulas, and rules – all while under stress. Memorization, along with schooling, on-the-job training, conferences, and mandatory certifications, is an essential part of being a successful healthcare professional. Here is a list of our favorite ways to memorize a topic and its essential facts. Watch our YouTube video on this topic at YouTube.com/MicheleKunz.

**Tip 1: Break The Material Down Into Smaller Parts**
Smaller bits of information will be much easier for your brain to hold onto. Make several lists. Work on memorizing these lists. Memorize a few facts, and then memorize a few more.

**Tip 2: Study In Short Periods Over A Long Period Of Time**
Short burst of study, fifteen or thirty minutes at a time, are much better and more productive than sitting there and studying for sixty or ninety minutes. Whenever you are sitting somewhere, doctor’s waiting room for example, take out your study cards and read them. These short busts of study periods can be very productive. Constantly doing this over many months is the surest way to get the information into your long-term memory.

**Tip 3: Review The Material Frequently**
To get the new information from your short-term memory into your long-term memory you must review the material frequently. The more difficult the topic, and the less previous knowledge you have for a topic, the more frequently you must review the material. Some nights you will do a full study session of a subject. On the other nights you can do a quick review. But always try to touch upon that particular subject at least once every twenty-four hours.
Tip 4: Do Not Cram
Cramming is usually useless. Learning a new or difficult topic takes time. Days, weeks, months, and years, not minutes. It takes a lot of time to process information properly.

Tip 5: Use Mnemonics Devices And Catchy Puns And Phrases
Mnemonics are a great memory device to help your memorize difficult information. Here is one I created to remember the stages of shock: “Not His lucky CHARMS”. Neurogenic, Hemmorhagic, Cardiogenic, Hypovolemic, Anaphylactic, Respiratory, Metabolic, Septic.

Tip 6: Teach The Information To Another Person
This is probably one of the surest ways to force yourself to thoroughly learn a topic. Get a family member or friend to sit and let you explain a topic to them. Have them ask you questions and put you on the spot for an answer that is understandable. Don’t just talk at the person. Really try to help them understand the subject. Forcing yourself to explain the topic to another person will force your brain to put the topic into a format that your brain is comfortable with. This will get you past simple memorization, and you will start to really learn a subject.

Tip 7: Use Various Study Materials
This simply means using different study materials, such as flash-cards, videos, study guides, etc. One night you might use the flash-cards and videos. The next night use the textbook and your notes. Another night use the flash-cards and a study guide, and so on.

Tip 8: Leave The Radio/TV Off
You must minimize outside distractions. You must study the material as intensely as possible, with all of your concentration abilities, for short busts of time. Your brain can easily handle two or three tasks at the same time. But when studying, especially a new subject, is not the time to distracted by other things.
Tip 9: Use A Study Chart/Cards
Make your own study chart or flash cards. This is a great way to help you recognize what information that you are having difficulty with.

Tip 10: Study With A Friend
This will certainly make studying a difficult subject much more fun. It will also be a great way to test each other. It is also a way to make sure that you will study instead of watching television.
10 Hot Tips for Surviving Your First Code

Here is a guide to help you, the healthcare professional, start to become a productive participant in an in-hospital emergency (code blue). Watch our YouTube video on this topic at YouTube.com/MicheleKunz.

**Tip 1: Call For Help Prior To A Cardiopulmonary Arrest Occurs**
Yell down the hall for help, pick up the nearest phone, push the code button, and call the Rapid Response Team (RRT) or Medical Emergency Team (MET). Get help from your peers nearby as well as any code team or EMS that is on their way to help you. Call the team if you notice even subtle differences in the patient and their vital signs (including intractable pain). The RRT is to identify patient changes, call a team, and prevent clinical deterioration.

**Tip 2: Know The Emergency Number To Call**
Post a sign with the number to call in an emergency and the name of your location and address if one would need to call EMS (911). In the hospital there may be a code number, a code button, intercom, RRT number, family RRT number. These numbers need to be memorized as well as clearly posted. When notifying the operator to page the team, be very clear with the location of the emergency, what type of emergency (cardiopulmonary arrest, stroke code, Rapid Response Team, security code, etc.).

**Tip 3: Stay Calm**
When you know help is already on the way, you should be able to stay calm. Once you have called for help, the team and the equipment will be on the way. Getting yourself prepared for the worst emergency situation is also a great way to prepare your self. Decide what the worst thing that could happen to your patient could be, and decide what equipment you will most likely need. For example, if your patient is having trouble breathing, have an airway and bag-mask already in the room. If the IV is not running well, restart before an emergency occurs.
Tip 4: Know How To Use Your Emergency Equipment
Before the emergency happens, you and your peers need to know where the emergency equipment is stored and how to use it properly. Know how to prepare the oxygen, suction and intubation equipment. Know what medications are in the code cart and what they are used for. This will help with your confidence in anticipating the patient’s (and team) needs.

Tip 5: Debriefing
Review the event afterwards to see what went well and what could have gone better. This includes the patient events and outcomes as well as how the team functioned together. Include the Pastoral Care or Social Work Department to help with emotional interventions for the family as well as meeting with staff members.

Tip 6: Take Notes And Document Events
Document all vital signs (V/S), treatments, and decisions, during the event, with an exact timeline as best as possible during the event. You should keep your notes, especially if there could be a liability issue associated with the emergency situation.

Tip 7: Certification And Review Courses
If you work in a procedural area of a hospital you probably should take a Basic Life Support (BLS) certification class. This class offers knowledge and skills regarding MI, stroke, chest compressions, Automatic External Defibrillator (AED), and airway adjuncts. Another great class to take is the Advanced Cardiac Life Support Course (ACLS). This certification class for health professionals is an intense course with cardiac arrhythmias, emergency treatments, medications and cardiopulmonary arrest as a priority topic. ACLS includes learning and testing stations, including a lengthy written exam.

Tip 8: Be Willing To Help Others
If there is an emergency in a patient area that you are not currently assigned to, you should be quick to offer assistance. In this type of situation you can learn and gain more experience. Assist, watch, listen, and learn.
Tip 9: Know Your Patient
It is important to have all the patient’s history, blood work with any test results, and any recent changes in the patient’s status. Review the patient’s chart, listen carefully to the hand-off/report at the beginning of your shift. Do this before your hectic day begins. When the medical team arrives to the patient emergency they will have lots of questions about the patient. They will expect answers from you. Knowing these answers for the team allows for appropriate treatments, and perhaps faster and better patient outcomes.

Tip 10: Post-Emergency or Code
The period after the code has ended is also a stressful time. It is great if the code is successful and the patient survives. However, the patient may now need a higher level of care, and need to be transferred to a critical care area. Time is needed to document the events and the patient outcomes. Of course, this is the time that everyone thinks the code is “over” and they all leave the room. You need to make sure that the practitioner stays with you and the patient, assisting you in ordering appropriate vasoactive infusions and medications while stabilizing the patient. If the patient does not survive the code, this is another time you don’t want to be alone. You want another nurse, technician, or assistant to help with cleanup and preparing the body for a family viewing or transport to the morgue. Remember how you felt during this situation and be there for your peers, when it is their emergency situation.
Top 10 AED Myths

There are many automatic external defibrillators (AED) available in medical facilities as well as public places. Most of the public know what an AED is - but have never had their hands on one or been trained on how to use one. And, because of this, many myths regarding AED use has developed. So, here is a list of the myths that Michele and I hear the most often from our healthcare students as well as the general public.

Myth 1: AEDs are difficult to use
No. After you have called the emergency response team (Code Blue or 911) and you have begun CPR on a victim who appears pulseless and breathless, ask a bystander to get the AED. When an AED is available, simply turn it on and follow the AEDs directions. The AEDs are easy to use and are highly accurate in determining if a defibrillator (shock) is needed. The AED talks and guides you through the correct and safe use of the pads. “Apply pads to patient’s bare chest and plug in the connector”. It is easier if one person can do the chest compressions while the other applies the AED pads. Anyone who has taken a CPR class learns about the AED and how to use it. Nothing difficult about it. If it is not working – just do chest compressions.

Myth 2: If I put the pads on wrong I will get sued
No. The AED pads have pictures on the pads that explain where to apply the pads. If the pads aren’t placed properly, the AED may ask you to correct their placement. If the AED cannot analyze or does not find a shockable rhythm, you will go back to high quality chest compressions. We don’t know of any lawsuits that have been brought against lay rescuers who attempt to provide CPR and use an AED. Generally speaking, our legal system provides nationwide Good Samaritan protection, exempting anyone who renders emergency treatment with a defibrillator in an effort to save someone’s life. Lawsuits are usually focused around health clubs or similar institutions that have certified CPR employees that did not have or use an AED at the time of a cardiac arrest.
Myth 3: It is too late to deliver a shock after 2 minutes of CPR
No, it is not too late. A rescuer must deliver, and continue to deliver, high quality CPR. When the AED does arrive and the pads are applied to the victim, the AED will determine if the victim is still in a shockable rhythm, and it will ask you to press the shock button. There is still a chance of survival.

Myth 4: AED’s pads are not interchangeable for different age groups
Wrong. The AED pads are made for the specific age groups – one size for adults, and another for children, and still another for infants. But, of course, the most common age group for AED usage is the older adult. Adult pads can be used on the child 1-8 years old, if the correct size is not available. Child pads can be used on infants. Infant/child combo pads are available for use as well. Do not use smaller pads on adults, because it will not provide enough joules (electrical power). In this case, continue applying chest compressions – high-quality CPR. What is not interchangeable – is the brand or manufacturer of the pads. Use the brand of pads that is made for the AED that you have.

Myth 5: The chest must be dry in order for the AED pads to work
Wrong. Obviously the chest should be as dry as possible for the strongest and safest delivery of a shock. If possible, quickly dry off the chest, but do not delay defibrillation if the AED suggests a shock is required.

Myth 6: Do not use the AED if the victim has a pacemaker/defibrillator or is in contact with a metal surface
Wrong. If there is an apparent device under the skin where the pads would be placed, simply place the pads in another spot at least 2 inches away from the device. If you think the victim is being shocked by their own internal defibrillator, stand clear. Be prepared to start CPR and apply the AED pads as well. Call 911 as soon as possible. It has been proven that moving patients off of metal surfaces is unnecessary because there is very little risk to the CPR provider.
Myth 7: AEDs malfunction and don’t give enough joules
Wrong. The number of AED malfunctions is very small compared to the number of the times AEDs are used without a problem. AEDs recognize shockable arrhythmias and can deliver 360 joules, based on the model. Data shows approximately 350,000 deaths annually due to sudden cardiac arrest (SCA) and that many of these lives could possibly be saved with the quick and proper use of an AED.

Myth 8: Home AEDs do not save lives
Approximately 80% of the deaths occur in the home, so it makes sense to have an AED in the home. However, family members often do not remember where the AED is located within their own home or within their parent’s home. Family members are also afraid to use it once they find the AED. They typically fear that they will use it incorrectly and harm their loved one. If the AED is used quickly and correctly, it can save a life. We must remember that AEDs are very often used successfully in major public locations like shopping malls, airports, and casinos.

Myth 9: I need to be a healthcare professional to use the AED
Wrong. Certainly, if you are a health professional and use emergency equipment every day you would probably be comfortable using an AED - applying the pads and actually shocking someone. But the AED is so simple and straightforward to use that anyone in the general public can use successfully – even without taking a CPR certification class. But there are classes for the general public that include AED training.

Myth 10: There are no resources for the lifesaver in the community
Wrong. There are plenty of life-saver and CPR classes in schools, libraries, community centers, and hospitals throughout America. There are also plenty of very good free videos on YouTube. The American Heart Association (AHA) sells a video with an inexpensive blow-up manikin to help a family practice their CPR skills. There are also applications for smart-phones that can help you call 911, as well as guide you through the steps of CPR. There are also applications that alert CPR providers of emergency cardiac arrest calls that are close to their location.
Top 10 CPR Myths

Michele and I have been teaching CPR to healthcare professionals and students since 1984. We have seen the development, improvement, and wide-spread acceptance of CPR education over these years. Despite these advances, we still hear many myths about CPR every time we teach a class. As healthcare professionals and students, we must not allow old information, nor the public’s misperceptions and fears about CPR, nor Hollywood’s unrealistic depiction of CPR, to affect our duty to provide high-quality CPR to our patients and to the public. Therefore, in order to help dispel these myths, Michele and I have created this list of the most common CPR myths that we hear the most often from the healthcare professionals and students that we teach every day.

Myth 1: CPR must include mouth-to-mouth breathing
Wrong. Health professionals or first responders will initiate chest compressions immediately. The breaths should be done preferably with a bag mask, mouth to mask or mouth to mouth with a barrier device. If you do not know the patient, and do not feel comfortable putting your mouth on theirs, or do not have a CPR face-mask, just perform continuous chest compressions without ventilations until emergency services arrives. The American Heart Association has revised its recommendations and encouraged lay bystander rescuers to use “hands-only” CPR as an alternative to CPR with exchange of breaths.

Myth 2: CPR always works
Wrong. Unfortunately, this is not true, and is a very common belief that has been perpetuated by Hollywood. The actual adult survival rate from out-of-hospital cardiac arrest is about 2% - 15%. Survival rates can increase up to 30% if an AED is used to deliver a shock. However, if the victim’s heart stops and no one starts CPR immediately - then the victim’s chance of survival is zero.

Myth 3: I could get sued if I administer CPR in the wrong way or make a mistake
Wrong. We have not read of any successful lawsuits that have been brought against lay rescuers or healthcare professionals who attempt to provide CPR. Generally speaking, our legal system provides nationwide Good Samaritan protection, exempting anyone who renders emergency treatment with CPR in an effort to save someone’s life. This includes
lay rescuers and healthcare professionals. Lawsuits are usually focused around health clubs or similar institutions that have certified CPR employees that did not have or use an AED at the time of a cardiac arrest. Generally, as long as lay rescuers and healthcare professionals do not waver too far from standard CPR procedure, they will most likely be protected.

**Myth 4: We can become proficient in CPR with an on-line class**
Wrong. While it is true that you can learn the steps of CPR from an on-line class, you most likely would not be able to perform high-quality CPR on a real patient after taking a computer based CPR class. Hands-on practice, with the guidance of a certified instructor, is the key to developing muscle memory and proper techniques.

**Myth 5: We can save a sudden cardiac arrest victim with CPR alone**
Wrong. An AED/defibrillator can deliver shocks that will return the fibrillating heart to its normal rhythm. In most cases, CPR alone cannot revive a sudden cardiac arrest victim. CPR can delay death until a defibrillator delivers a lifesaving shock.

**Myth 6: A patient should cough while having a heart attack to prevent the heart attack from getting worse**
Wrong. This myth is what is known as ‘Cough CPR’. Cough CPR was thought to speed up a very slow heart rate (bradycardia) and keep the patient conscious till emergency services arrived. It is probably a misinterpretation of the vagal maneuver. The vagal maneuver is used to help a patient stimulate the vagus nerve to slow down a fast heart rate.

**Myth 7: Cardiac arrest is the same as a heart attack**
Wrong. They are different conditions and are treated differently. Cardiac arrest is caused by an arrhythmia, dysrhythmia, electrolyte imbalance and trauma, which can lead to cardiac standstill, where the heart is not moving (asystole) or is fibrillating. A heart attack is a myocardial infarction, caused by a blocked coronary artery. Therefore, the term ‘cardiac arrest’ is not synonymous with ‘heart attack’. A patient experiencing a heart attack may experience chest pain, nausea, vomiting, and become diaphoretic. However, a heart attack may ultimately lead to cardiac arrest depending on the severity of the blockage in the heart.
**Myth 8: Someone with more experience than me should help the victim. So I shouldn’t help**
Wrong. The key to surviving cardiac arrest is the immediate response of someone trained in CPR. A patient who collapses and does not immediately receive chest compressions has little or no chance of survival. If you know how to do chest compressions properly you should help immediately. Call for EMS initially then start chest compressions on the lower half of the breastbown.

**Myth 9: CPR can do more harm than good**
Wrong. When you are performing CPR it is on someone who has no heartbeat. Proper chest compressions, to be effective, must be fast and very hard. It is true that you may possibly break some of the victim’s ribs while performing CPR. Once a victim is resuscitated injuries can be treated. Damaged ribs are worth the risk and much better than letting the victim die without attempting to give CPR.

**Myth 10: CPR will always re-start the victim’s heart if they are in asystole**
Wrong. CPR alone will not always re-start a heart that is not beating. The purpose of administering CPR is to push oxygenated blood to the victim’s heart and vital organs. Continuing high-quality CPR increases your chance of survival with a defibrillation when indicated. Emergency medications such as epinephrine and vasopressin may assist in getting the blood flow back into the heart and other vital organs (kidneys and brain).
Popular Code Drugs and Emergency Medications

There are about five code drugs that you need to know as a health professional. If you work in the hospital, procedure area, or a member of an emergency response team, these are the drugs that you have to have readily available and know when to use, how much to give, and how to give.

1. Epinephrine: is usually considered the first line medication in cardiac arrest. Epinephrine (adrenalin) is a hormone-neurotransmitter, that caused stimulation and increase in heart rate and vasoconstriction. It is readily available in the code cart in a 1 mg - 10ml syringe. The dose of Epinephrine is 1 mg. every 3-5 minutes, with no maximum dose. It is used in cardiac arrest as an IV push medication. It can also be used as an infusion in an unstable patient that needs their heart rate and blood pressure increased.

2. Vasopressin: also known as antidiuretic hormone (ADH), which given at a higher dose, causes vasoconstriction. It has a longer half-life than epinephrine. It is recommended to give once at the dose of 40 units IVP either replacing the first or second epinephrine given during cardiac arrest. It is recommended to give it as a one-time dose.

3. Amiodarone: this is a popular antiarrhythmic medication. During cardiac arrest after the epinephrine (or vasopressin) it is first line antiarrhythmic recommended. The dose during cardiac arrest is 300mg. IVP. This can be repeated one at 150mg. IVP. When the patient has a fast atrial or ventricular tachycardia, with a pulse, amiodarone is given slowly, over 10 minutes, due to the hypotensive side effects. The dose is 150mg. in 100ml, over 10 minutes.

4. Atropine: is not considered a code drug anymore. It is used for symptomatic and unstable bradycardia patients when the heart rate is below 50. The dose of atropine is 0.5mg IVP every 3-5 minutes with a maximum does of 3mg. It is available in 1mg prefilled (10ml) syringes in the code cart (use 5ml at a time).

In the heart blocks (2nd degree, type II and 3rd degree) atropine may be ineffective. Dopamine infusion and transcutaneous pacemaker are the next recommended treatments for unstable bradycardia.
5. **Adenosine**: is a fast acting drug used for supraventricular tachycardia and Wolff-Parkinson-White Syndrome. It causes dramatic side effects, when given IVP. Administer in the IV line as close to the heart as possible, and be sure to flush it in quickly with 10-20ml of normal saline. Expect to see flat line on the cardiac monitor when this medication works. It then causes temporary ischemic chest pain, and other related symptoms. The half-life and symptoms last only 6 seconds long. The initial dose of adenosine is 6mg., and then repeat, with a second dose of 12mg. IVP. This drug is used in SVT after the vagal maneuvers were unsuccessful. Synchronized cardioversion and amiodarone are given if initial treatment does not work to slow the heart rate down.
Cardiac and Vasoactive Medication Basics

Listed below are commonly used medications, used for medical conditions including hypertension and tachy-arrythmias. All health care providers should know these medications – actions, side effects, and the potential interactions they can have with other medications. The medications below are used on a daily basis in an oral preparation.

1. **Beta-Blockers:** or beta-adrenergic blocking agent are used to treat cardiac arrhythmias and protect form myocardial infarctions. B1 selective blocker medications slow down the heart rate and causes vasodilation which lowers the blood pressure. The most common of these beta-blockers are Atenolol (Tenormin), nebivolol (Bystolic), esmolol (Brevibloc), carvedilol (Coreg), Metoprolol (Lopressor Toprol), and bisoprolol (zbeta, Monocor), betapase (Sotolol).

In choosing the appropriate Beta-blockers, a prescriber can target specific Beta 1 or Beta 2. Beta 1 blocker is the most popular. Beta 2 adrenergic blockers act on smooth muscle, thus causing bronchoconstriction. This is not helpful in patients with asthma and COPD. This is why medications that cause Beta 2 to be blocked are not used on patients with pulmonary disease history.

2. **Calcium Channel Blocker:** is a popular drug to treat Atrial Fibrillation, and Atrial Flutter. This medication decreases the heart rate and causes vasodilation to reduce the blood pressure. As a negative Inotropic drug it reduces the force of myocardial contraction. As a negative chronotropic medication, it reduces the heart rate. Some of the popular calcium channel blockers used to treat hypertension and arrhythmias today are: diltiazem (Cardiazem), verapamil (Calan), amlodipine (Norvasc), nifedipine (Procardia), and nicardipine (Cardene).

3. **ACE Inhibitors:** angiotensive converting enzyme inhibitor. These medications inhibits the angiotensin I to convert to angiotensin II via the renin system enzyme which usually causes blood vessels to constrict, thus vasodilation results with reduction in blood pressure. Popular names are enalapril (Vasotec), captopril (Capoten), lisinopril (Prinivil, Zestril), quinapril (Accupril). They are often prescribed for hypertension, congestive heart failure,
and to improve survival from a heart attack. Always teach your patients about angioedema. A cough is usually and swelling of the lips and or airway are signs of angioedema. This is an allergic reaction, which can be mild, but can lead to serious and fatal outcomes if not treated. The ACE inhibitor will be changed to an ARB or other antihypertensive medication. A reaction like this usually occurs within a few days or weeks of starting therapy, but may not appear for months or years later. There is a higher risk of angioedema swelling in the African American population taking this drug.

4. ACE Receptor Inhibitors (ARBs): These medications are used to treat hypertension and congestive heart failure, and are rarely associated with the persistent cough/angioedema caused by ACE Inhibitors. Popular ARBS are: losartan (Cozaar), valsartan (Diovan), irbesartan (Avapro).

Many of these medications are combined with a diuretic (hydrochlorothiazide) to treat hypertension and congestive heart failure.
Arrhythmia Basics For Healthcare Professionals

Arrhythmias are usually caused by stimulation or irritability of the heart muscle. It can be simply a fast or slow heart rate, or a dangerous irregular rhythm caused by ectopic foci. When there are irritable spots or foci in any area of the heart muscle it can cause disruption of the normal electrical cycle. These extra beats do conduct through parts or down through to the ventricles. This disturbance can be considered normal, but can also put a person at risk for chaotic arrhythmias that can give one pressure, discomfort, and lead to unstable, hopefully treatable arrhythmias. All health professionals need to recognize the signs and symptoms of arrhythmias and be ready to call a team that can provide life-saving measures; such as medications, chest compressions and defibrillation. The three most common arrhythmias originate from the Atrium, AV Node and Ventricles.

A. Arrhythmias that Originate in the Atria

1. **Sinus Tachycardia:** The sinus node sends out electrical signals faster than usual. Anxiety, pain, asthma medications and dehydration are common causes of a fast heart rate (above 100bpm).

2. **Sinus Bradycardia:** The sinus node sends out electrical signals slower (less than 60) than usual. It can be in normal in athletic and older healthy individuals. Medications are often given to people to keep their heart rate from speeding up. After a myocardial infarction, the electrical conduction patterns may be damaged and lead to other slow dangerous rhythms called heart blocks.

3. **Premature Atrial Contraction (PACs):** Premature atrial contractions are the most common cause of irregular heart rates. Menopausal woman often experience PACs. Treatment includes the reduction of stimulants like coffee and chocolate. Medications like Beta-blockers are often effective.
4. **Atrial Fibrillation**: In atrial fibrillation, the electrical activity originates from numerous abnormal electrical foci in the atrium, causing the atria to fibrillate or quiver. Blood does not get efficiently pumped out of the atrium to the ventricles, leaving less blood in your ventricles to circulate throughout the body. This can cause complications such as clots forming in the atria, which can lead to strokes and TIAs (transient ischemic attacks). The treatment for atrial fibrillation is medications, and or a procedure called ablation therapy to eliminate the extra conduction patterns in the heart tissue.

5. **Atrial flutter**: Atrial flutter is one irritable foci firing rapidly in the atrium causing the heart to quiver as in atrial fibrillation. The treatment is medications, synchronized cardioversion (shock), and or a procedure called ablation therapy to eliminate the extra conduction patterns in the heart tissue.

6. **Supraventricular tachycardia (SVT)**: This is a very fast heart rate originating in the upper part of the heart muscle. The heart rate is over 150 beats per minute. This can cause many symptoms including low blood pressure (hypotension) and dizziness. Medications are used to slow the heart rate down. If medications are unsuccessful, synchronized cardioversion is a procedure where the heart is shocked. This causes the heart to stop and restart itself back into a regular rhythm.

7. **Wolff-Parkinson-White Syndrome**: This is a rare rapid arrhythmia. There are extra pathways between the atrium and the ventricles (Bundle of Kent) where the electricity is conducted rapidly through the heart. Treatment includes medication and or ablation therapy.

8. **Sick Sinus Syndrome**: This sinus arrhythmia occurs in older people, causing the heart rate to go from very slow to very fast. This can cause instability. Often this person will need a permanent pacemaker to keep the heart rate regular.
B. Arrhythmias Originating in the AV Node

1. Junctional (Nodal) Rhythm: The Atrioventricular (AV) node becomes the pacemaker when the sinus node is not functioning (after anesthesia or a myocardial infarction) or the AV node can be a irritable foci. These beats go through the normal electrical conduction patterns, so cardiac output is usually adequate. When the AV node fires, it also sends the electricity up to the atrium through existing conduction patterns, causing the atrium to depolarize. These P waves will be upside down.

C. Arrhythmias Originating in the Ventricles

1. Premature Ventricular Contraction (PVC): These extra beats are from irritable foci in the ventricle. It sends the beat through the ventricles disrupting the regular heart rhythm. These may cause an irregular rhythm, but if this extra beat occurs at the same time the heart is resting (on the T wave in the electrical cycle) it can result in a life-threatening arrhythmia called ventricular fibrillation or ventricular tachycardia. The heart does not pump efficiently and CPR will be needed. This is often called sudden death, where the AED (automatic external defibrillator) will be useful.

2. Ventricular Fibrillation: or sudden death is when the heart fibrillates and there isn’t any normal pumping. Chest compressions are started and the patient will need defibrillation, which can save their life. Patients who survive this should have a defibrillator (ICD) implanted.

3. Ventricular Tachycardia: if there is a pulse, the treatment is medication and immediate cardioversion. This individual will need and an ICD (Implanted Cardioverter Defibrillator) to prevent future cardiac arrests. In Ventricular Tachycardia (V-Tach) the patient may have a pulse, and require medications and synchronized cardioversion, but if they lose their pulse, this is considered a deadly arrhythmia, and CPR must be started. Unsynchronized cardioversion (defibrillation) is needed immediately.
4. **Torsade’s dePointes**: is a rare rapid ventricular rhythm caused by hypomagnesemia and hypokalemia (electrolyte imbalances), and certain medications. It is a form of Ventricular Tachycardia and can be deadly as well, if the patient loses their pulse. Magnesium and cardioversion treatments are needed immediately.
Notes
Part 2:
The Questions
Notes
Certification Exam Practice Questions for ACLS

1. When a victim has an advanced airway inserted (intubated) what is the recommended method for performing high-quality CPR?
   a. 30:2 compressions to ventilations ratio
   b. 15:2 compressions to ventilations ratio
   c. 5:1 compressions to ventilations ratio
   d. Continuous chest compressions with 8-10 ventilations per minute

2. While you are taking your patient’s blood pressure, the patient gasps and loses consciousness. After calling for help and determining that the patient is not breathing, you cannot palpate the pulse within 10 seconds. What is your next action?
   a. Begin chest compressions
   b. Run down the hall to get the code cart
   c. Give a precordial thump
   d. Turn the patient on their side

3. What is the advantage of using quantitative waveform capnography?
   a. Measure the pulse oximetry levels
   b. Measures oxygen levels via the nasal cannula
   c. Allows for monitoring of CPR quality and measures expired carbon dioxide
   d. Determines the amount of sodium bicarbonate that will be needed
4. The Emergency Department (ED) team is attempting to resuscitate a victim who was brought into the ED in Ventricular Fibrillation (V-Fib) with CPR in progress. The ED delivered 4 shocks, 3 doses of epinephrine, amiodarone 300 mg., 2 liters of normal saline, and the victim converted to asystole, which persists despite high-quality CPR. What is your next consideration?
   a. Discuss with the team, terminating the resuscitative efforts
   b. Look for the DNR order
   c. 1 mg of atropine
   d. 20 units of vasopressin IVP

5. The team is treating a cardiac arrest victim. The patient is intubated, a peripheral IV is re-inserted and continuous chest compressions are performed. Minutes later you reassess the waveform on the capnography screen and a PETCO2 level of 6 mm Hg is displayed. What does a PETCO2 of less than 10 mm Hg signify to the team?
   a. The patient meets the criteria for termination of efforts
   b. The endotracheal tube is in too deep
   c. Chest compressions may not be effective
   d. The team is ventilating the patient too often (hyperventilation)

6. Prior to delivering a defibrillation (shock) to a patient you must first?
   a. Check for a pulse before and after the shock
   b. Place a non-rebreather on the victims face
   c. Be sure oxygen is clear from patient’s chest during the shock
   d. Stop the compressions 30 seconds prior to the “all clear” warning
7. What is the depth of compressions for adults in cardiac arrest?
   a. 0.5 inch to 1 inch
   b. 2 inches
   c. 3 inches
   d. Only ventilations are recommended

8. How can the team minimize any interruptions during CPR to less than 10 sec?
   a. Deliver IV medications only when an intraosseous is inserted
   b. Have someone count out-loud
   c. Continue CPR while charging the defibrillator, and resume immediately after the shock
   d. Perform pulse checks immediately before and after defibrillation

9. What action besides starting chest compressions is extremely important when performing Basic Life Support?
   a. Obtaining the blood sugar result
   b. Early defibrillation with an AED
   c. Hypothermia protocol
   d. Epinephrine administration

10. A patient remains in ventricular fibrillation. CPR is continued, epinephrine 1mg IV push given. What is the next treatment recommended?
    a. Sotalol 200 mg IV slowly
    b. Vasopressin 20 units IV push
    c. Amiodarone 300 mg IV push
    d. Procainamide 20 mg/kg per minute
101. Ms. V is brought in by her family to the emergency department for complaints of chest pain. You are the team leader and request the team to make a “movie” (monitor, oxygen, vital signs, start an IV, and get a 12 lead EKG. Her 12 lead EKG reveals ST elevation in the anterior chest leads. Nitroglycerin is ordered to vasodilate and relieve her chest pain. Nitroglycerin can lower the blood pressure in patient. What is the minimum systolic blood pressure to safely administer sublingual Nitroglycerin?

a. 160 systolic
b. 130 systolic
c. 90 systolic
d. 70 systolic
Notes
Part 3: The Answers and Explanations
Answers and Explanations for the ACLS Questions

1. When a victim has and advanced airway inserted (intubated) what is the recommended method for performing high-quality CPR?
d. Continuous chest compressions with 8-10 ventilations per minute is the recommendation for ventilation is all age groups of victims with advanced airways. Initially we usually hyperventilate for 15-30 seconds to reverse respiratory acidosis, but we must slow down to prevent respiratory alkalosis to one breath every 6-8 seconds.

2. While you are taking your patient’s blood pressure, the patient gasps and loses consciousness. After calling for help and determining that the patient is not breathing, you cannot palpate the pulse within 10 seconds. What is your next action?
a. Begin chest compressions. Any doubt of breathing or pulse the rescuer must begin chest compressions without interruptions longer than 10 seconds.

3. What is the advantage of using quantitative waveform capnography?
c. Quantitative waveform capnography allows for monitoring of CPR quality and measures expired carbon dioxide. If the PETCO2 is less than 10 – the rescuer must compress harder. The monitoring of CO2 (35-40 mm Hg) also indicates that there perfusion to the lungs.

4. The Emergency Department (ED) team is attempting to resuscitate a victim who was brought into the ED in Ventricular Fibrillation (V-Fib) with CPR in progress. The ED delivered 4 shocks, 3 doses of epinephrine, amiodarone 300 mg., 2 liters of normal saline, and the victim converted to asystole, which persists despite high-quality CPR. What is your next consideration?
a. When the victim was in V-Fib there was a good chance of survival. Now that the victim is in sustained asystole the team should consider the reversible causes of cardiac arrest and then termination of efforts.
5. The team is treating a cardiac arrest victim. The patient is intubated, a peripheral IV is re-inserted and continuous chest compressions are performed. Minutes later you reassess the waveform on the capnography screen and a PETCO2 level of 6 mm Hg is displayed. What does a PETCO2 of less than 10 mm Hg signify to the team?

c. Chest compressions may not be effective if the PETCO2 is less than 10 mm Hg, especially in victims who had chest compressions started immediately.

6. Prior to delivering a defibrillation (shock) to a patient you must first?

c. Be sure oxygen is clear from patient’s chest during the shock. Risks of sparks are minimal using the defibrillator pads, but oxygen flowing increases the risk of fire. Pulse checks are not recommended as they will delay the continuation of chest compressions.

7. What is the depth of compressions for adults in cardiac arrest?

b. Two (2) inches is the correct depth of compressions for adult and children requiring CPR. The ratio is 30 compressions to 2 breaths (30:2) in adult CPR.

8. How can the team minimize any interruptions during CPR to less than 10 sec?

c. Continue CPR while charging the defibrillator, and resume immediately after the shock, is the most efficient way to reduce delays and get immediately back to the chest compressions.

9. What action besides starting chest compressions is extremely important when performing Basic Life Support?

b. Early defibrillation with an AED is the only chance for survival for a victim in a shockable rhythm. Getting blood sugar results, hypothermia protocol and medicated infusions is initiated after resuscitation occurs.
101. Ms. V is brought in by her family to the emergency department for complaints of chest pain. You are the team leader and request the team to make a “movie” (monitor, oxygen, vital signs, start an IV, and get a 12 lead EKG. Her 12 lead EKG reveals ST elevation in the anterior chest leads. Nitroglycerin is ordered to vasodilate and relieve her chest pain. Nitroglycerin can lower the blood pressure in patient. What is the minimum systolic blood pressure to safely administer sublingual Nitroglycerin?

c. 90 systolic is the minimum systolic blood pressure. Blood pressures lower than 90 systolic can cause instability.
Part 4:
The Appendix
Notes
Glossary

**Amiodarone (Cordarone):** antiarrhythmic agent used for various types of cardiac dysrhythmias, both ventricular and atrial.

**Anaphylaxis:** a serious allergic reaction that is rapid in onset and may cause death. It typically causes a number of symptoms including an itchy rash, throat swelling, and low blood pressure.

**Angina:** chest pain due to ischemia of the heart muscle, generally due to obstruction or spasm of the coronary arteries. The main cause of angina pectoris is coronary artery disease, due to atherosclerosis of the arteries feeding the heart.

**Antiarrhythmic Agents:** a group of pharmaceuticals that are used to suppress abnormal rhythms of the heart (cardiac arrhythmias), such as atrial fibrillation, atrial flutter, ventricular tachycardia, and ventricular fibrillation.

**Asystole:** also known as flatline, is a state of no cardiac electrical activity, no contractions of the myocardium, and no cardiac output or blood flow. Prolonged asystole is an indicator for a medical practitioner to certify clinical or legal death.

**Atrial Fibrillation (A-fib):** the most common cardiac arrhythmia (heart rhythm disorder) caused by one irritable foci in the atrium. It may cause no symptoms, but it is often associated with palpitations, fainting, chest pain, congestive heart failure and stroke.

**Atrial Flutter:** caused by multiple irritable foci in the atrium. An abnormal heart rhythm usually associated with a fast heart rate or tachycardia (beats over 100 per minute).

**Atropine:** dilates the pupils, increases heart rate, and reduces salivation and other secretions. Used in unstable bradycardia.

**Beta-Adrenergic Blockers:** interfere with the binding to the receptor of epinephrine and other stress hormones, and weaken the effects of stress hormones. Used for the management of cardiac arrhythmias, protecting the heart from a heart attack (myocardial infarction), arrhythmias and hypertension.
**Bi-phasic**: a type of defibrillation waveform where a shock is delivered to the heart via two vectors.

**Bigeminy**: an arrhythmia in which abnormal heart beats occur every other beat.

**Bolus**: the administration of a drug, medication, or other substance in the form of a single, large dose, over a short period of time.

**Bradycardia**: is the resting heart rate of under 50 beats per minute (BPM), although it is seldom symptomatic, it is treated with atropine, pacemaker and positive chronotropic drugs.

**Calcium Channel Blockers**: a chemical that disrupts the movement of calcium through calcium channels. Used as antihypertensive drugs, (decrease blood pressure).

**Capnography (PETCO2)**: is the monitoring of the concentration or partial pressure of carbon dioxide in the respiratory gases. Used to monitor ventilation in the Operating Room and patients that are sedated for procedures. Can also determine if chest compressions are effective.

**Cardiac Tamponade (pericardial tamponade/effusion)**: a serious condition in which fluid accumulates around the heart.

**Cardiogenic Shock**: is based upon an inadequate circulation of blood due to primary failure of the ventricles of the heart to function effectively.

**Cincinnati Prehospital Stroke Scale**: a 3-step assessment used to diagnose the presence of a stroke in a patient. (Slurred speech, facial drooping, arm weakness or drift.)

**Depolarization**: a positive-going change in a cell’s membrane potential, making it more positive, or less negative.

**Dopamine**: Increasing infusion rate, increase the blood pressure and heart rate.

**Endotracheal Tube**: a specific type of tracheal tube that is inserted through the mouth (orotracheal) or nose (nasotracheal).
Epinephrine: adrenaline; hormone; regulates heart rate and causes vasoconstriction; is used as a drug to treat cardiac arrest and other cardiac dysrhythmias resulting in diminished or absent cardiac output. Also used to treat severe allergic reactions.

Glasgow Coma Scale (GCS): a neurological scale that gives a way of recording the conscious state of a person.

Heart Block: interruptions in electrical conduction through the heart due to ischemic or diseased cardiac tissue.

Hyperkalemia: elevated potassium.

Hypoglycemia: extremely low blood sugar/glucose.

Hypokalemia: low potassium; elevated blood pressure.

Hypothermia: low body temperature.

Hypothermia: chilling of the unconscious, resuscitated, post cardiac arrest victim’s body for 24 hours, to decrease neurological damage.

Hypovolemia: decreased blood volume.

Hypoxia: a pathological condition in which the body or a region of the body is deprived of an adequate oxygen supply.

Infusion Therapy: involves the administration of medication through a needle or catheter.

Intraosseous Infusion (IO): use of a drill or hand held needle to access the bone marrow of the tibia or humerus. IV fluids, blood and drugs can be delivered into the central circulation.

Ischemia: a restriction in blood supply to tissues, causing a shortage of oxygen and glucose needed for cellular metabolism.

Joules: a unit of energy; ie. 200 J.

Junctional/Nodal Rhythm: an abnormal heart rhythm resulting from impulses coming from the area of the atrioventricular node, the “junction” between atria and ventricles.
LMA (Laryngeal Mask Airway): a mask used in anesthesia and emergency medicine, for a short term intubation/airway.

MERCI Procedure (Mechanical Embolus Removal in Cerebral Ischemia): used to remove blood clots from the brain of people suffering strokes. The device is a tiny corkscrew sent to the brain through a femoral artery catheter to remove the clot.

Mobitz/Wenkebach: type of heartblock causing bradycardia.

MONA: mnemonic for Morphine, Oxygen, Nitrates, and Aspirin, which are drugs used initially in acute coronary syndromes.

MOVIE: mnemonic for Monitor, Oxygen, Vitals Signs, IV, and 12-lead EKG.

Nasal Cannula: a device used to deliver supplemental oxygen via the nostrils.

Norepinephrine / Levophed: a medication similar to epinephrine, acts to constrict blood vessels (increase B/P and HR) and dilate bronchi, in medical emergencies.


Percutaneous Coronary Intervention (PCI): coronary angioplasty is a procedure used to treat the stenotic (narrowed) coronary arteries of the heart found in coronary heart disease.

PEA (Pulseless Electrical Activity): (electromechanical dissociation): refers to a cardiac arrest situation in which a heart rhythm is observed on the electrocardiogram, but no cardiac output or pulse is produced.

PR Interval: in the electrocardiogram, the time elapsing between the beginning of the P wave and the beginning of the next QRS complex; and is normally 0.12 - 0.20 sec; up to 5 small boxes on the rhythm strip.

Quadrigeminy: a form of cardiac arrhythmia in which every fourth beat is a Premature Ventricular Contraction.

Q Waves: a sign of previous myocardial infarction. They may be found in the 12 lead EKG.

QRS wave: Ventricular depolarization. Normally measures 0.06 - 0.20 seconds.
**ST elevation**: in a 12 lead EKG, if the ST segments are abnormally high above the isoelectric line, an acute MI is suspected.

**Rigor Mortis**: one of the recognizable signs of death, caused by chemical changes in the muscles after death, causing the limbs of the corpse to become stiff and difficult to move or manipulate.

**Renal Replacement Therapy**: a term used to encompass life-supporting treatments for renal failure.

**STEMI**: ST Elevated Myocardial Infarction (EKG).

**Supraventricular Tachycardia (SVT)**: rapid heart rhythm, above 150 bpm originating at or above the atrioventricular node.

**Synchronized Cardioversion**: an electrical shock using the defibrillator, to slow down unstable patient’s fast heart rate (tachycardia) or ventricular dysrhythmias.

**Tachycardia**: a heart rate that exceeds the normal range. Usually over 100bpm.

**Transcutaneous Pacemaker (TCP)**: a pacemaker that speeds up a patient’s heart through two pads that are applied to the bare chest and back. Energy passes through the skin and chest wall, stimulating the heart muscle.

**Tension-pneumo**: the progressive build-up of air within the pleural space, usually due to a lung laceration which allows air to escape into the pleural space but not to escape. Pressure builds up, and can cause cardiac compression and arrest. The emergency treatment is a needle aspiration or chest tube to remove the air or blood.

**Transcutaneous**: refers to medications applied directly to the skin (transdermal creams or ointments), or in time-release forms (skin patches).

**Transvenous Pacemaker**: a pacemaker wire that is threaded through a central line into the ventrical to stimulate and speed up the heart rate. There is an external pacemaker box controlling the heart rate.

**Trigeminy**: a form of cardiac arrhythmia in which every third beat is a premature ventricular contraction.
**Vagal Maneuver / Valsalva Maneuver:** holding your breath and bearing down; is performed by the patient experiencing fast heart rates. This maneuver stimulates the vagus nerve, causing the heart rate to slow down. Often medications are needed as well.

**Vasopressin:** antidiuretic hormone; secreted by the posterior lobe of the pituitary gland that constricts blood vessels, raises blood pressure, and reduces excretion of urine. Adult dose is 40 units IV push, in cardiac arrest.

**Ventricular Fibrillation:** a condition in which there is chaotic movement of the ventricles in the heart, making them quiver rather than contract properly. Ventricular fibrillation is the most commonly identified arrhythmia in cardiac arrest patients. Automatic External defibrillators, are effective life saving devices outside the hospital setting for this arrhythmia.

**Ventricular Tachycardia (VT, V-Tach):** a fast heart rhythm, that originates in one of the ventricles of the heart, can be life threatening.
Bibliography


Kunz, Michele G. (2013). *Zombie Notes Study Charts: ACLS Vocabulary*. Dickson Keanaghan, LLC.

About the Authors

Michele G. Kunz, MSN, ANP, RN-BC

Michele is an AHA Certified Instructor and specializes in providing AHA Certification classes in ACLS, BLS, and PALS. Visit her website to see more about her classes, books, study guides, essays, and articles. Visit Michele’s YouTube page to see all of her free video lessons.

Michele has been a clinical nursing educator for over 29 years. During those years, she has helped many thousands of nurses improve their own job performance and increase their own job satisfaction. Michele considers herself to be a nurse’s nurse, because she is not hidden away in a classroom or office, but out on the floor everyday – interacting with hospital management, the nurses, the patients, and the physicians.

For many years Kunz was the Director of Nursing Education and Informatics at Long Island College Hospital in Brooklyn, NY. She was in the LICH Nursing Education Department for 25 years. Kunz developed the desire to teach nurses over 30 years ago when she was an ICU nurse at Staten Island Hospital (now called SI University Hospital). It was at SIH that Kunz realized that she could learn how to be a better nurse by teaching the other nurses. Kunz hasn’t stopped teaching since then.

Kunz is now the Director of Nursing Research and Resources at Mercy Medical Center in Rockville Centre, Long Island, NY.

She is also the Director of Education at Dickson Keanaghan, LLC, a company that she helped create, where Michele and Joe train and certify the medical staff of over 600 hospitals, medical offices, and surgi-centers on Long Island and New York City. If you would like to take one of her classes, or have her come to your office and train your staff, please visit her training website at MicheleKunz.com. Connect with Michele on LinkedIn at http://www.linkedin.com/in/nursingeducatormichelegkunz
When Joe and Michele met in 1984, Michele was working full-time in the Intensive Care Unit at Staten Island University Hospital, and teaching a few classes on the side. Joe was building his first start-up company on Long Island, and assisting Michele with the classes. By 1985 they realized that they wanted to take their growing business to the next level. So, the two of them took a part-time weekend job at a nursing service in Brooklyn where they taught certification classes to nurses and physicians. Michele taught the classes, and Joe learned all about managing the business, the classes, the students, the classroom, the other instructors, and the equipment.

Eventually the Kunz’s started to teach more classes on their own. They very quickly built a dedicated following of nurses and physicians throughout New York City and Long Island. They then started to grow the company very quickly and began training and certifying the medical staff at medical offices and then entire hospitals.

The Kunz’s business would not be as successful as it is without the both of them working together. Right from the beginning Joe brought all his business experience and entrepreneurial fortitude into the operation. Joe had been developing his business skills and work-ethic from a very young age. He has worked very hard at making the business professional, successful, and strong. Over these last 30 years, Michele has perfected the teaching part of our operation, and Joe has perfected the marketing, management, and financial side.

The Kunz’s business has been a wonderful 30+ year learning experience and journey. Despite the long days and hard work, they never want their journey to end. Each are looking forward to seeing how far they can take it. The more healthcare professionals and students that they help, the more successful they both feel. Joseph is an AHA Certified Instructor for BLS. Connect with Joe on LinkedIn at www.linkedin.com/in/josephckunzjr/
About Dickson Keanaghan

Our Medical Training Adventure Begins

We developed the Zombie Notes Study Charts in 1984, when we first started teaching certification classes in New York City. Back then, there were no practical or effective study guides for our students to use or buy. So we had to develop our own study material to help prepare our students for the class. We very quickly learned what works with our students and what doesn’t. Our classes and study guides very quickly developed a very large local audience in Manhattan and Brooklyn. The nurses and physicians in our classes would then call us to come to their offices and hospitals to train and certify their entire staff as well as individual departments. We train the medical staff at over 600 hospitals, surgi-centers, medical offices, walk-in medical offices, major drug stores, and military bases throughout Long Island, New York City, and Westchester. We also train and certify medical students, and students in the allied health professions, at several colleges and universities. Many continue to come from different parts of the country to take our classes.

Our Publishing Adventure Begins

As our students moved around the country, our study guides went with them. This national exposure created a demand for our study guides throughout the fifty states and the entire English speaking world. This demand was just the push we needed to start our own publishing company. As college nursing professors, students, and hospital education departments from around the country began calling us requesting to purchase our study guides, we began printing them at home and sending them out as fast as physically possible. But the demand became too great and too time consuming. So we then hired a professional printing company to print them for us in large quantities. Luckily, the internet came along, and then the new-media publishing revolution began. So we jumped in with both feet and with our eyes and ears wide open.
Dedication

We dedicate this book to healthcare professionals everywhere who have dedicated their life to helping those in need; and,

To healthcare students who do not yet realize the potential and importance of the career they have chosen; and,

To our students all over Long Island and New York City (and those that have spread out over the 50 states), and our readers, including the American military personnel, all over the world, that work every day at making their career a success and our world a much better place in which to live; and,

Finally, we dedicate this book to you all with our love, appreciation, and thanks for allowing us to be a part of your lives.

Legal Disclaimer

This book is presented solely for educational purposes for healthcare professionals and healthcare students. This book is not meant to be used by non-healthcare persons, nor should it be used to diagnose or treat any medical condition. For diagnosis or treatment of any medical problem, consult your own physician. The publisher and authors are not responsible for any specific health needs that may require medical supervision and are not liable for any damages or negative consequences from any treatment, action, application, or preparation, to any person reading or following the information in this book. Neither the American Heart Association (AHA), nor the American Red Cross (ARC), endorse this publication.

References are provided for informational purposes only and do not constitute endorsement of any websites or other sources. Readers should be aware that the websites and links listed in this book may change at any time, and without notice.
Acknowledgements

In preparing to write this acknowledgments section, a flood of memories came back to me of the many people that were part of my development as a nurse and nursing educator. I have been developing my skills as a nurse, and nurse educator, for over 30 years. And I still continue to develop my skills every day. I would like to tell you about some of the people that played an important part of my professional development.

My first CPR and first-aide course was at The College of Staten Island, in New York City, (then it was called Staten Island Community College), taught by Ira Sweet, in 1976. To this day I use his teaching techniques to motivate my students to be successful healthcare professionals. He inspired me, and everyone in the class, by including real-life on-the-job stories into his lecture.

When I became an ICU nurse at Staten Island Hospital, in New York City, in 1980, I had the opportunity to work with and learn from many highly skilled critical care nurses. The one that stood out the most was my nursing preceptor Laura Gasparis-Von Frolio. She was a very dynamic patient-advocate and a brilliant nurse. After taking a four-day AHA-BCLS Instructor Course at Beth Israel Medical Center, in New York City, in 1984, Gasparis and I began to teach classes to dental and medical offices and to the community. We called our little training company CPR Associates.

I loved teaching these classes and wanted to teach many more. Luckily, in 1984, my SIH-ICU co-worker and friend Rosemary Egitto-Burda read about an open position for CPR Coordinator at Long Island College Hospital, in Brooklyn. I interviewed for this position and was accepted. I was to remain at LICH at an educator for the next 25 years (my first 13 years as a Staff-Development Instructor and CPR Coordinator; my last 12 years as Director of Nursing Education and Informatics).

During my time at LICH, 1984-2009, I was also involved in American Heart Association (AHA) program developments as a Committee Member at The Regional Emergency Medical Services Council, of NY (REMSCO). It was the only Community Training Center (CTC) in NYC at the time (1980’s). Names that stand out from those days are Nancy and
George Benedetto, Virginia Klunder, Mary Gallagher, and Ed Stapleton. Our group looked at the evidence-based practice and science to develop the best training programs for NY trainers in ACLS, BLS, and PALS. This organization also provided guidelines for the New York City EMS services.

I would especially like thank to my LICH co-workers in the Nursing Education Department: Esme Elisson, RN-NP, Emergency Department Clinical Nurse Specialist; Lorraine Woltman, RN; and, and Louisa Travers, RN. I worked closely with these amazingly talented nursing educators teaching the nurses and other healthcare professionals for 25 years. Many of these years included the late Lynn Hahn, RN. Lynn was a very experienced and professional nurse whose skills I always admired.

I am especially proud of Robin Ndiaye, the administrative secretary for the Nursing Department. She also took the BLS Instructor Course and has been teaching CPR to the staff and community for many years. These woman would flex their hours and work with manikins on the floor for hours and hours in order to get our staff certified. We would then clean the manikins for another two hours – and we always had a good time doing it together.

I would also like to thank my good friend and fellow nurse Christine Molinari. We started together in critical care on Staten Island. And, coincidentally, both of our families moved out to Long Island to work and live. We teach many, many classes together. She always brings great humor, and a great work ethic, to all of my classes. Christine has always made my students feel comfortable and relaxed with a friendly learning environment.

More than anyone else, I must thank my best friend and husband, Joseph. When Joe and I met in 1984, I was working full-time in the Intensive Care Unit at Staten Island Hospital, in New York City, and teaching a few classes in Brooklyn and Queens, on the side. Joe was building his first start-up company on Long Island, and assisting me with the classes. Around 1988 the two of us took a part-time job at B & G, a nursing service in Brooklyn, where we taught AHA certification classes to nurses and physicians. I taught the classes, and Joe learned about managing the business, the classes, the students, the classroom, the other instructors, and the equipment.
Eventually we started to teach more classes on our own. We very quickly built a dedicated following of nurses and physicians throughout New York City and Long Island. We then started to grow the company very quickly by training and certifying the medical staff at several medical offices - and then entire hospitals. Amazingly, we now train and certify medical professionals and students in over 600 hospitals, medical offices, surgi-centers, and universities throughout Long Island, New York City, and Westchester.

Our business would not be as successful as it is without the both of us working together. Right from the beginning Joe brought all his business experience and entrepreneurial fortitude into our operation. Joe had been developing his business skills and work-ethic from a very young age. He has worked very hard at making our business professional, successful, and strong. Over these last 29+ years, I have perfected the teaching part of our operation, and he has perfected the marketing, management, and financial side.

He is also the one that makes it possible for our little training business to reach out and connect with many thousands of healthcare professionals every day of the year, all over the world. He has an amazing ability to put all the information I throw at him into a practical and beautiful format. He is able to make our publications, websites, and videos, in such a way that our students are able learn the material with ease.

Joe has been our business manager since 1984. In 2003, we expanded our business once again, and named it Dickson Keanaghan, which are names from Joe’s family. Joe became the President and CEO of our new corporation, and he officially became Director of Operations for our training company. In these roles he is responsible for all finance, marketing, and business development. Our business has been a wonderful 29 year learning experience and journey.

*Michele G. Kunz*
Long Island, New York
Praise for the *Zombie Notes Study Charts* and for Michele and Her Classes

“Michele’s YouTube videos were terrific! Clear, concise, and very helpful. The *Zombie Notes* are the best way to study and review this information - and actually learn it. The groupings and mnemonics make it easy to apply in real patient situations. In Michele’s class I actually learned pertinent facts that translate into real practice. It really doesn’t get any better than Michele’s class - quick, convenient, and very meaningful.”

Denise May, RN, Winthrop University Hospital, Mineola, NY

“I took Michele’s class with all of my co-workers here at our office. I loved the *Zombie Notes Study Charts*. They were very helpful. Michele has a great personality and is perfect for teaching nurses. I really enjoyed her class and I look forward to taking her other classes.”

Erin Cunningham, RN, Long Island Lung Center, Bay Shore, NY

“The YouTube videos were great. I have been to Michele’s classes in the past. The *Zombie Notes Study Charts* were short, concise, and to the point, but full of pertinent information. I like that Michele provided us with the Zombie Notes. Michele is full of practical and useful information and very funny.”

Kate Burke, RN, Cohen Children’s Medical Center of New York, New York City, NY

“Michele’s videos were the first time I was seeing EKG strips. Because of her videos, I showed up to her class well prepared. They helped make the class much easier to understand. I rewrote the *Zombie Notes* twice to help memorize them. By going back and re-reading what I wrote, while watching the videos, was helping me to understand them. I am applying for my clinical ladder and Michele’s class was a requirement. I am glad I learned this material. Michele kept the class fun and interesting. The notes and slides were broken down into very easy to understand segments.”

Christine Chambers, Good Samaritan Hospital, West Islip, NY
“Michele’s program has an excellent presentation and an enjoyable format. Her program is interactive and an excellent discussion that can’t be offered by a computer-based program.”

**Dr. Paul Epstein, NAPA, North Shore - Long Island Jewish Medical Center, Manhasset, NY**

“I have already been to Michele’s classes three times. The *Zombie Notes* are the best memorization guide available. Michele is also the best educator around, by far. We ask her to teach our office every time.”

**Dr. Steven Macharola, Island Eye Surgi-Center, Carle Place, NY**

“I watched Michele’s videos. They helped me know what to expect and how to prepare for class. I have been to Michele’s classes in the past. I loved the *Zombie Notes*. Everyone I know uses them to study for the PA boards. I liked the pace of Michele’s class, and the hands-on-experience we gained.”

**Samanta Prinzing, PA, Montefiore Hospital, Manhattan, NY**

“Michele’s videos were awesome. My friends at Brookhaven Hospital told me about Michele’s classes. The *Zombie Notes* were also awesome. They really helped me retain the information. The class was excellent and I learned a lot. The class is very concise and informative. Michele is a great instructor. Thank you Michele.”

**Ken Daniels, RN, Jamaica Hospital, Queens, NY**

“I learned about Michele’s classes from a co-worker. The videos were very helpful in understanding the material. Michele made the class a lot of fun, but we also gained a lot of knowledge. Michele had an excellent knowledge of the material and was able to help me understand the info.”

**Sandra Fernandez, RN, Long Island Center for Digestive Health, Garden City, NY**

“I learned about Michele’s classes from a co-worker. Her *Zombie Notes* were great - brief and to the point. Michele was very easy to understand. I felt much more confident in the subject matter by the time I finished her class. I loved Michele’s class so much. I felt more relaxed than when I first took ACLS with a different instructor.”

**Doreen Cooney, RN, Nassau University Medical Center, East Meadow, NY**
“I have taken Michele’s classes in the past and returned to take her ACLS class again. Her class was informative, timely, and very pertinent.”

Barbara Kusky, RN, Bay Pines VA Hospital, Bay Pines, FL

“Michele’s class is concise, to the point, very informative, and very entertaining.”

Laurie Savoia, RN, Long Island Center for Digestive Health, Garden City, NY

“I come to Michele Kunz every time I need an AHA class because she is the greatest instructor, educator, teacher, nursing brain to ever walk on the planet.”

Andrea LaFata, RN, Nursing Supervisor, Good Samaritan Hospital, West Islip, NY

“I liked Michele’s YouTube videos very much. They were very informative. After watching, everything began to “click”, and I began to understand much more. Michele was very informative, and student friendly. She is very geared to teaching and helping, not failing people.”

Laura Monas, RN, Cohen’s Children’s Medical Center Of New York, at Long Island Jewish Medical Center, Lake Success, NY

“Michele’s YouTube videos made it very easy for me to prepare for the class. The Zombie Notes Study Charts were excellent, and highlighted all the important information. Michele is very personable, and made learning the material less stressful.”

Madaline Safrey, RN, St. Joseph’s Hospital, Bethpage, NY

“I liked Michele’s YouTube videos. The Zombie Notes Study Charts were very helpful. Her class is very interactive and very friendly. Everything was excellent.”

Dr. Araz Ibragimov, Kings County Hospital, Brooklyn, NY

“The Zombie Notes Study Charts were an excellent study guide. It goes straight to the important stuff.”

Dr. Yimar Berrios, Kings County Hospital, Brooklyn, NY
“Thank you very much Michele! I always look forward to your classes. You truly have a gift. Making people laugh and enjoy learning at the same time is a beautiful thing.”

Rosemary Fine, RN North Shore-Long Island Jewish Medical Center, Lake Success, NY

“My nursing professor Cathy Jansen at Nassau Community College recommended that I take Michele’s class for ACLS. Professor Jansen has previously taken Michele’s ACLS class. I really enjoyed Michele’s YouTube videos tremendously. And her Zombie Notes Study Charts were also a great way to comprehend the study material beforehand. As a student nurse, I have a great interest in critical care, which is Michele’s specialty. Michele is phenomenal. Her class was broken up between the lecture, the video, the written test, and the hands-on exam.”

Jessica Joseph, Nursing student at Nassau Community College, Garden City, NY

“Michele’s YouTube videos were terrific! Clear, concise, and very helpful. The Zombie Notes Study Charts are the best way to study and review this information – and actually learn it. The groupings and mnemonics make it easy to apply in real patient situations. In Michele’s class I actually learned pertinent facts that translate into real practice. It really doesn’t get any better than Michele’s class – quick, convenient, and meaningful.”

Denise May, Winthrop University Hospital, Mineola, NY
Request For Testimonials

We are looking for short testimonials about this book to be used in all of our promotional material, on our websites, and possibly here in this book.

It should be a three to five sentence long statement about this book and how it has helped you with passing the certification exam. Please be as specific and as detailed as possible. You can see examples of great testimonials inside the book.

Please include your name, title, hospital or company name, and town and state. You are also welcome to include a small picture of yourself, as well as a link to your website.

You can quickly and easily send us your testimonial by email at: MKunz@TheNurseEducator.com.

By sending us your testimonial, you are giving us permission to use it in any and all of our advertising and marketing programs.

Thank you very much. We greatly appreciate your help with this.

Joe & Michele Kunz

“I just completed Michele’s ACLS and BLS certification classes. I loved the Zombie Notes Study Charts. They streamlined the key facts needed to provide effective ACLS and BLS to my patients – and were a big help when preparing for the class and exam. I also enjoyed Michele’s YouTube videos. I was very impressed with how easy Michele’s videos made it for me to understand the topics we needed to know about for the class. Michele’s class was very relaxed, yet very professional.”

Linda Stio, RN, Neurological Surgery, PC, Long Island, NY
BISAC EDI-Codes and Subject Headings for this Publication:
MED026000 MEDICAL / Emergency Medicine
MED024000 MEDICAL / Education & Training
MED086000 MEDICAL / Test Preparation & Review

Thema Codes and Subject Headings for this Publication:
MQF: First Aid & Paramedical Services
MR: Medical study & revision guides & reference material
4CP: For vocational / professional education

Note: Dickson Keanaghan developed this book to be a living, evolving document, and as such, intends to update this document as needed, and as new content becomes available. We welcome your participation to keep this book up to date. If you know of more recent developments, or have suggestions for other topics to cover within this publication, please let us know. Contact JCKunzJr@DicksonKeanghan.com.
Our Other Publications

We are hoping to have this book available in 2015. Visit our website for more information at EmpowermentEducation.com.

101 Medical Word-Search Puzzles. Have fun with the terms of art for 101 different medical subjects and specialties. Visit our website for more information at EmpowermentEducation.com.

Here they are, The Zombie Notes Study Charts. Each one is two pages long. They can be downloaded for the kindle, or purchased as a laminated card-stock. Visit our website for more information at EmpowermentEducation.com.
PASS THE ACLS EXAM THE FIRST TIME

- 101 questions that cover every possible medical and nursing scenario and topic on the ACLS certification exam
- No confusing wrong answers to clutter your brain
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- Covers all topics on the ACLS exam
- Updated to the current guidelines
- View Michele’s free medical-education video lessons at YouTube.com/MicheleKunz
- Download Michele’s free study charts

EmpowermentEducation.com

More info about this book, free downloads, videos, & more!

Michele and Joe have been on the front-line of teaching and certifying healthcare professionals since 1984. They have built their medical training company into New York City’s and Long Island’s most popular. Michele is also the Director of Nursing Education at one of New York’s best hospitals. Joe has been building and managing the business and finding and creating new and better ways to reach out and help more healthcare professionals. Their Zombie Notes Study Charts have been used by hundreds of thousands of healthcare professionals and students all over the world. Together, the Kunz’s have helped many medical professionals and students pass the ACLS, BLS, and PALS certification exams. They can help you be successful too!

Michele & Joe