The BIG Shock – AED Trial for Non-Experienced Responders

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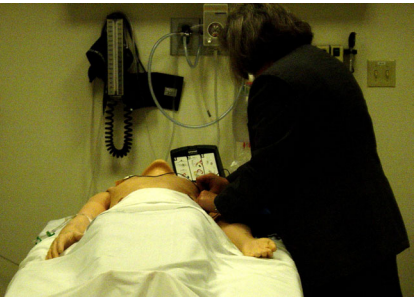
ABSTRACT

he spring of 2004 University of Pittsburgh Medical
ıter (UPMC) Health System committed to placing
Ds at over 200 of its facilities including physician
ces,physical therapy sites, business and corporate
ces. The committee needed to decide which AED would
t meet the needs of all sites. An expert panel was
ıed to establish the required characteristics needed for
AED. The panel then needed to evaluate whether the
ential AEDs met the require characteristics.

ting: UPMC, Peter M. Winter Institute for Simulation
ıcation and Research (WISER). Each training room
tained one full scale simulator, Laerdal SimMan, a
ent bed, audio and video capabilities.

ticipants: Fourteen untrained volunteer lay people who
l never used an AED evaluated 2 of 6 AEDs randomly
ected by the committee.

cedure: Facilitators informed each participant that we
ıld be evaluating the ease of use of randomly chosen
D's and recording their performance data. Each
ticipant was then questioned about the functionality of
devices and informed about the simulation setting.
ally, participants were told the victim was unconscious
l needed the AED. They were then given a randomly
sen AED. Record of time began at the point the
ticipant was given the AED. Primary endpoint was time
efibrillation. Trained observers (3) utilized an 8 - point
D Trial Evaluation Tool (ATET) constructed by the
luation committee to record participant performance.



INTRODUCTION

In the spring of 2004 UPMC established a task force of experts to evaluate and determine the feasibility of placing AEDs within the existing health system. The first objective of the task force was to identify the available AEDs currently on the market. Vendors were approached and asked to demonstrate to the task force a total of 8 AED's Using pre-established criteria **(Criteria A)** each AED was evaluated by the task force. Two of the eight AEDs did not meet the criteria and were eliminated from this study. The second objective was to evaluate the remaining 6 AEDs and determine which AED would best meet the needs of various health system sites .

Baseline AED Criteria (Criteria A)

- Simple pediatric capability
- Battery - prefer store bought
- Pads are pre-connected
- Rhythms shocked VT, V-fib & SVT (optional)
- Semi automatic
- Monophasic vs. biphasic defibrillation
- IR Port for download to PDA or PMCI card
- Allow for simple data collection without taking the system out of use.
- No ECG display
- Prompts – verbal to call for help, place pads, start CPR
- Maintenance - readiness indicator that includes battery and pads.
- Housing for wall mounts
- Housing for AED unit with supplies – gloves, razor, towels, mouth to mask device.

METHODS

Facilitators oriented participants to the environment and gave basic information that the victim was unresponsive and that the participant was asked to use the AED on the victim. Participants were informed that they were being monitored and that their performance was being timed. It was verbally reinforced to the participants that this was an observation for data collection and individual performance was not being evaluated. Participants evaluated 2 different AEDs. Participants were also given the opportunity to discuss their experience and comfort with the use of the AEDs.

METHODS

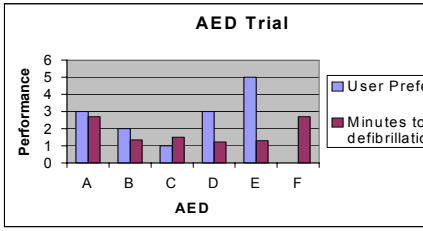
AED Trial Evaluation Tool (ATET)

Defibrillator: Rotation: 1 2 3

	Easy 1	2	3	4	5	Comments
Experience with AEDs?	Yes	No				
Time to Defibrillation						
Is this AED difficult to use?	Yes	No				
Voice – easy to understand?						
Ease of directions						
Pads – easy to open						
Pads – easy to apply						
Should we purchase?	Yes	No				

RESULTS

- All participants demonstrated the ability to use an AED without any training.
- Participants demonstrated transfer of knowledge from the use of one AED to the use of the next. This was observable in the decrease of time from set up and activation of the first AED to the set up and activation of the second AED.
- Participants stated that they would use an AED if the opportunity arises.



CONCLUSION

1. It is possible to utilize full scale human simulation to assess AED skills of untrained subjects.
2. It is also possible to access the functionality of clinical equipment needed by a facility using full scale simulation.
3. There appears to be a large variation in defibrillation times and user preferences in spite of the similarity of the devices.
4. By coupling time to defibrillation with user preferences we were able to construct an efficiency rating, a learni curve, and a composite score for performance and preferences of users.
5. This simulation methodology was extremely useful in assisting UPMC to purchase the "right" equipment for our facility. A similar methodology may be useful elsewhere.
6. Future studies should focus on what factors contribute to the variability in efficiency and user preference.

REFERENCES

American Heart Association Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. International Consensus on Science. Supplement to Circulation, volume 102, Number 8, August 22, 2000.

National Center for Early Defibrillation. http://www.early-defib.org/