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Project MERCI (Medical Emergency Response Care Initiative)


Grace E. Harris Leadership Institute, Virginia Commonwealth University

Alison Baski
Virginia Commonwealth University

Brian Cassel
Virginia Commonwealth University

See next page for additional authors

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Authors

Grace E. Harris Leadership Institute, Virginia Commonwealth University; Alison Baski; Brian Cassel; Zachary Goodell; Janet Hutchinson; Mary Nugent; Annie Publow; Jacqueline Smith-Mason; and Robert Taylor

MERCI: Medical Emergency Response Care Initiative

A proposal to improve responses to medical emergencies at VCU

Alison Baski, J. Brian Cassel, Zachary Goodell, Janet Hutchinson,
Mary Nugent, Annie Publow, Jacqueline Smith-Mason, and Robert Taylor

We propose a program intended to foster a greater sense of community, shared responsibility, and mutual aid within Virginia Commonwealth University. As the university continues to grow in size and becomes a more residential setting, we see an opportunity to develop the expectation that students, faculty and staff will come to one another's aid, and to provide the tools necessary to help ensure our mutual safety and health. Such an effort could take several years and comprise various health and safety issues. We selected medical emergencies as an initial project, and focused our research on the current status of CPR and first-aid training and the placement of automated external defibrillators (AEDs) at VCU. We found both strengths and weaknesses in the current state at VCU, as well as numerous opportunities for improvement.

Goals we expected to achieve included: 1) Enhance the role of lay people in the response to medical emergencies; 2) Improve the emergency response infrastructure; 3) Lay the groundwork for additional projects that focus on increasing the sense of a caring community within VCU.

Strategies we used included: 1) Identifying champions already working on this issue, such as Emergency Department chair Joseph Ornato, and make use of their expertise and connections; 2) Bringing together people whose roles and responsibilities touched on emergency responses, but who may not have known of one another or the extent to which their work was not yet coordinated; 3) Bringing our findings and preliminary conclusions back to our team's sponsor, Sue Ann Messmer (SAM), on a regular basis for discussion and advice.

Action steps included the following:

- Conversations with numerous stakeholders at VCU
- Conversations with service providers at Richmond Ambulance Authority
- Conversations with contacts at other universities in the state
- Analysis of data (such as VCU demographics, RAA / 911 calls from VCU)
- CPR / First-Aid training for all members of the team
- Determining exactly how many AEDs were already deployed, and who was responsible for their purchase and maintenance, and the training of personnel
- Literature review related to AEDs and CPR / First-aid training
- Price quotes on AED purchases

There have been several notable **findings and outcomes** from this project:

- VCU's community has increased to 30,276 students and 5,653 faculty and staff. Another 7,264 persons are employed by VCU Health System. About 5,002 (12%) of these 43,193 people are age 50+, placing them at higher risk for cardiac arrest.
- VCU has 13 publicly accessible AEDs installed on the Monroe Park campus and 14 on the MCV campus. We initiated the first meeting of the various parties who purchase, monitor and maintain AEDs and direct CPR training on both campuses, to encourage coordination and standardization of their efforts.
- The MERT (Medical Emergency Response Team) system in four outpatient buildings of the VCU Medical Center provides a model of coordinated, trained response to medical emergencies. There is no equivalent MERT system on the MP campus or balance of the MCV campus.
- In the past 7 years, the Richmond Ambulance Authority (RAA) has responded to 931 emergencies on the two campuses. All of these incidents may be relevant to a first-aid-trained layperson or MERT response. Our report includes analyses of the type and location of all of these incidents.
- Prior to this project, AEDs at VCU were not collectively registered with Richmond Ambulance Authority (RAA), which we have now facilitated. Registering AEDs can greatly improve the response to medical emergencies.
- All eight of us have now received CPR/AED or First Aid training, to demonstrate our own desire to be better prepared to come to the aid of others in the VCU community or elsewhere.

Process observations are mostly positive. We found that the dozens of stakeholders we approached about this project responded positively and helpfully to our requests for information and assistance. We developed renewed admiration for the fine people at Richmond Ambulance Authority and the VCU Police who are working diligently and creatively to ensure public health and safety. And we have no idea how we could have done this kind of project without SAM's guidance and direction.

Recommendations:

- Over the course of several years, VCU should develop and implement a series of programs to foster a sense of mutual responsibility among its staff, faculty, students and other constituents.
- Regarding medical emergencies for the first such program, we recommend that:
 - VCU should evaluate the potential benefit of purchasing additional AEDs for all 20 vehicles in its force; only 2 are so equipped currently.
 - With the move of Police headquarters and a change to its phone system, there is a good opportunity to ensure that the dispatch system is as effective as possible in deploying the Richmond Ambulance Authority as quickly as possible to medical emergencies and integrating their response with the VCU Police response.
 - Regarding publicly accessible AEDs, VCU should consider purchasing 32 additional AEDs for the highest traffic areas, especially where there are large numbers of persons age 50+. We identify such buildings, as well as details on cost, maintenance, training to operate them, and a summary of their effectiveness in reducing mortality and morbidity.

- VCU should encourage more staff, faculty and students to obtain CPR or first-aid training, perhaps by subsidizing the cost of training or finding ways to make it more cost-effective. This may include in-house training programs and a web-based short course. Senior VCU leadership should be trained and serve as role models.
- VCU should consider setting up a Medical Emergency Response Team (MERT) system on the Monroe Park campus and expanding the existing one on the MCV campus. This would coordinate the first response by lay volunteers prior to the arrival of paramedics.
- Whatever steps are taken – additional AEDs, another MERT system, CPR trainings, etc. – should be coordinated with the Richmond Ambulance Authority and the Emergency Medicine Department of the VCU Health System as well as VCU Campus Police.
- VCU should develop and implement a social marketing / public awareness campaign about the availability of CPR trainings, the placement and operation of AEDs, the development of an expanded MERT system (if implemented), and more generally of the importance of bystander interventions. This may include posters, website content, and inclusion in orientations for new faculty, staff and students.
- Our team has presented our ideas to four vice presidents (John Bennett, Sr. Vice President for Finance and Administration; Stephen Gottfredson, Provost and Vice President of Academic Affairs; Sue A. Messmer, Chief of Staff and Vice President for External Relations; and Sheldon Retchin, Vice President for Health Sciences) and there was consensus that our team has laid extensive groundwork for a project that merits further development. So that this project may be further honed and developed, the suggestion was that a 10-12 person task force from across the university be formed with membership including the directors of employee health services and student health, and some team members for continuity. The task force will be provided with seed money and charged to establish the MERCI initiative perhaps through targeted pilot areas.

In conclusion, we believe that VCU can make great strides in establishing a caring community. We believe that **Project MERCI** would be a good first step in that direction.



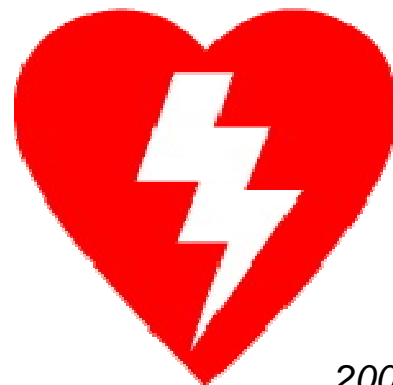
What would you do?



MERCI: Medical Emergency Response Care Initiative

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Grace E. Harris Leadership Institute

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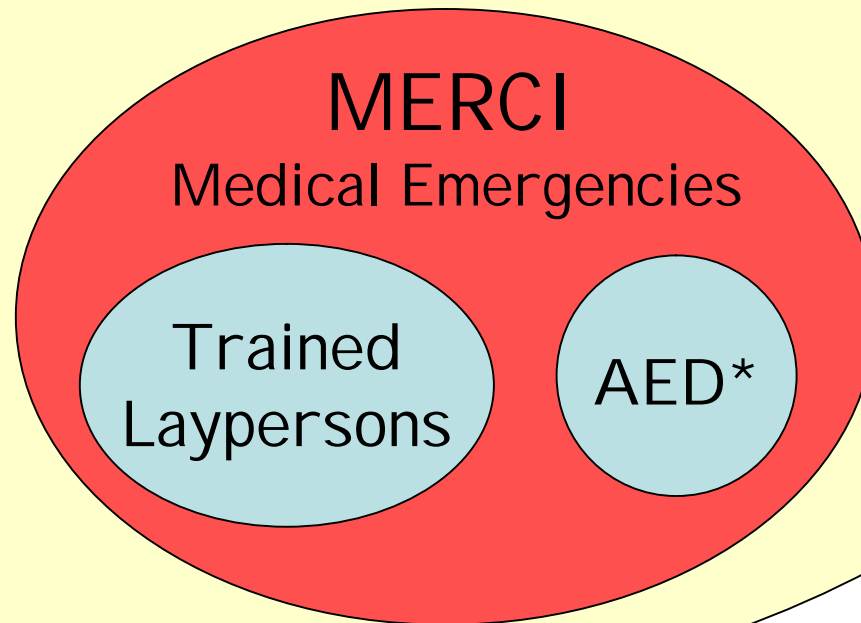
2006 GEHLI Team Collaboration "MERCI" Project



Vision of Project Merci

Fostering a Community of Responsibility at VCU:
"Don't be a bystander"

VCU: 43,000 persons
~130 medical
emergencies per year



* Automatic External Defibrillator
2006 GZHL Team Collaboration "MERCII" Project



Vital Medical Statistics

- Cardiovascular disease is the No. 1 cause of death in U.S.
 - Results in 950,000 deaths each year!
 - "Sudden Cardiac Arrest" causes 250,000 of deaths.
- After heart stops functioning, every minute without aid (CPR and defibrillation) decreases chance of survival by ~10%.
- What does that mean?
 - Twenty people stand up.
 - How many will survive after sudden cardiac arrest?

???

➔ *How can we improve these odds?*

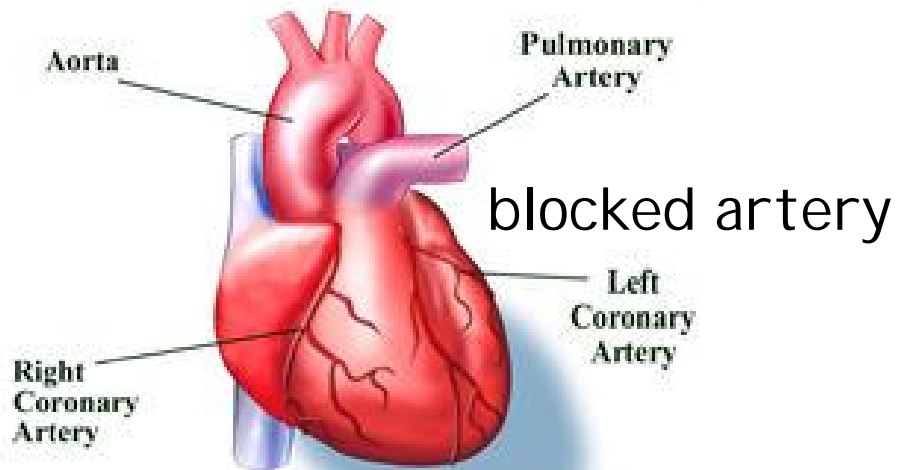
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Heart Attack vs. Cardiac Arrest

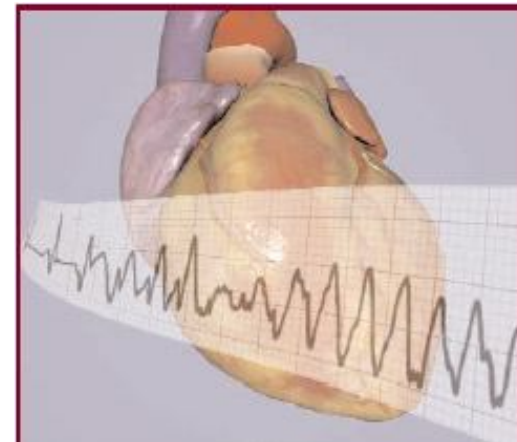
Heart Attack

"plumbing problem"



Sudden Cardiac Arrest

"electrical problem"



ventricular fibrillation

- It is **CRITICAL** that the heart be "**reset**" after sudden cardiac arrest using an automatic external defibrillator (**AED**).
- Cardiopulmonary resuscitation (**CPR**) is also necessary!



What is an AED?

AED = Automatic External Defibrillator



- Delivers an electrical shock to the heart to “reset” it.
- Will ONLY deliver shock for ventricular defibrillation.
- Voice prompt gives directions to user.



Laypersons Save Lives!

- VCU Department of Emergency Medicine: Dr. Joseph Ornato
- Richmond Ambulance Authority: Jerry Overton
- Peer-reviewed, \$16M NIH [Public Access Defibrillation \(PAD\) trial](#) showed that laypersons can save lives!
- [VCU](#) one of 24 participating sites in US and Canada. 19,000 laypersons trained with a CPR only control group. The CPR plus AED group showed significant improvement in survival rates – becoming the [first critical link](#) in [Chain of Survival](#).
- Results from PAD trial widely disseminated:
 - *New England Journal of Medicine*
 - American Heart Association guidelines
 - International guidelines published in *Resuscitation*



AHA Chain of Survival

- **Early Recognition and Early Access**
Call 9-1-1 or local emergency number as soon as possible.
- **Early Cardiopulmonary Resuscitation (CPR)**
Give CPR to circulate blood to vital organs until an AED and/or medical personnel arrive.
- **Early Defibrillation w/AED**
Use an AED to restore the heart beat of a sudden cardiac arrest victim. Each minute reduces victim's survival by ~10%.
- **Early Advanced Life Support**
Follow up with trained medical personnel who provide further care and transport to hospital.



How to do CPR



- **DEMONSTRATION** with mannequin
- **CPR** = sets of 30 compressions (~20 sec) and 2 breaths



Action Steps to Date

- Reviewed a 9-1-1 incident report from RAA for the last seven years.
- While there are mobile AED units in the clinics, we inventoried all fixed AED's at VCU and reported to RAA.
- Prioritized list for future AED locations.



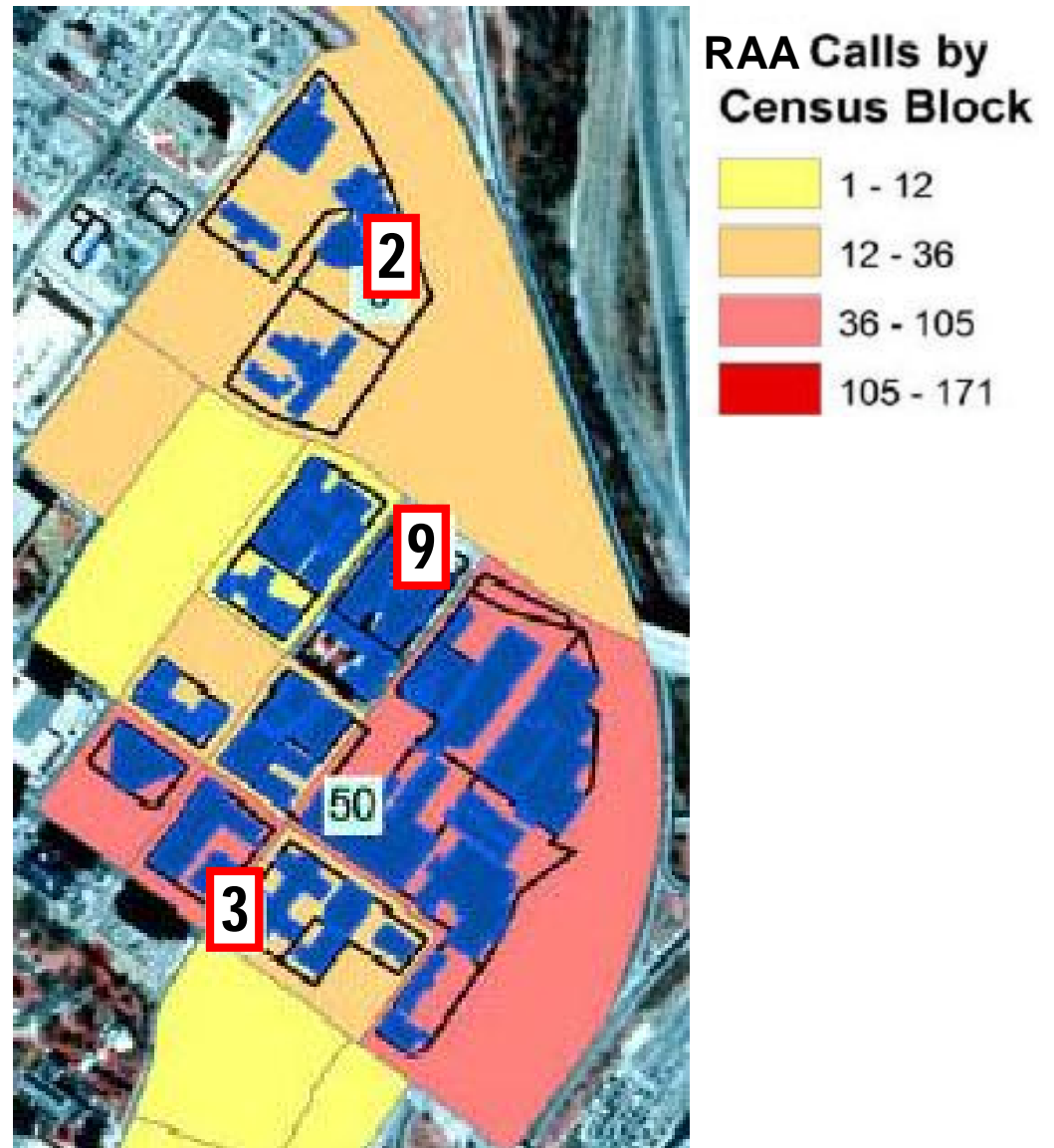
Fixed AED's on MCV Campus

- Existing AED's

- Larrick Center (2)
- School of Dentistry (9)
- Hospitality House (3)

- Proposed Areas

- Biotech Center I-VII
- Bookstore, Library
- Sanger Hall



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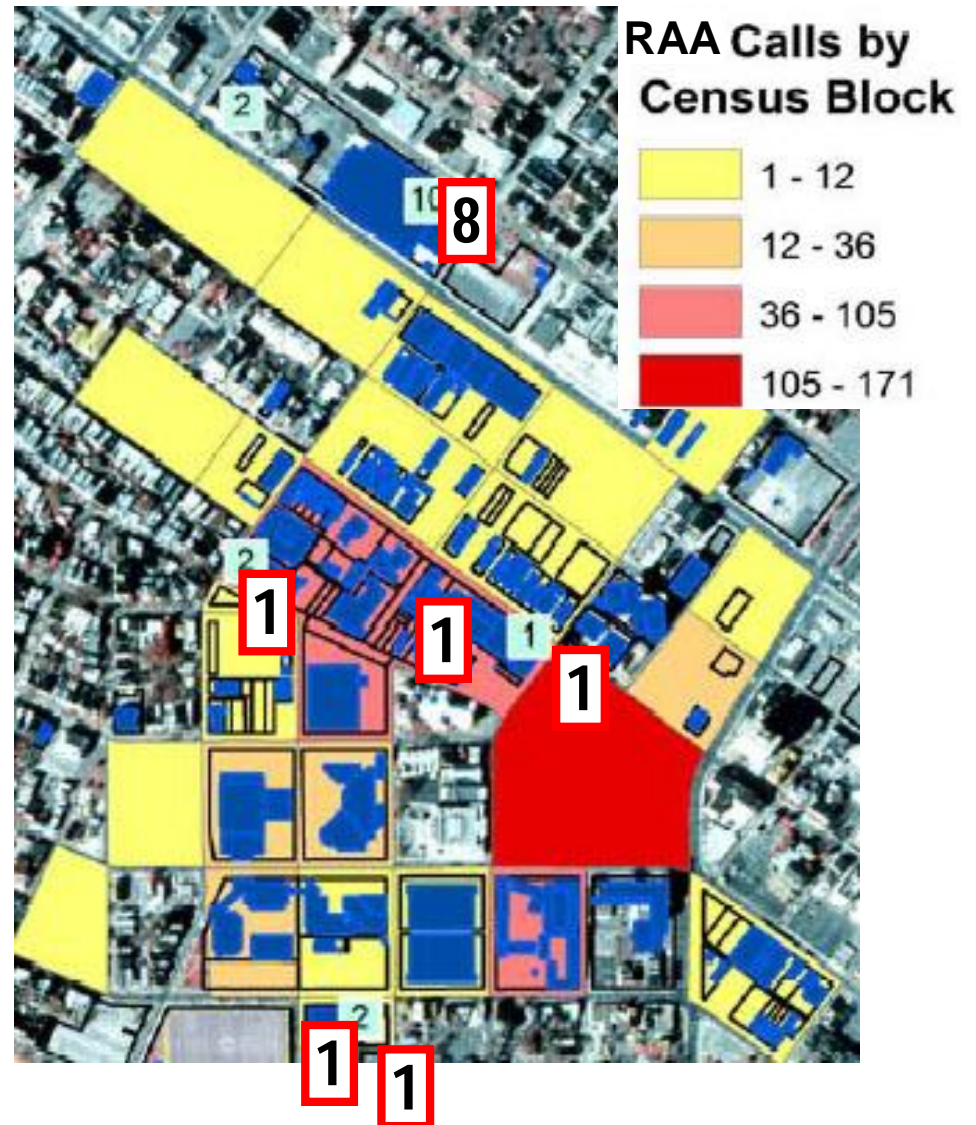
Fixed AED's on Monroe Park Campus

- Existing AED's

- Siegel Center (8)
- Franklin St. Gym (1)
- Cary St. Rec. Center (1)
- Thalheimer Tennis Ctr. (1)
- Performing Arts Center (1)
- Shafer St. Playhouse (1)

- Proposed Areas

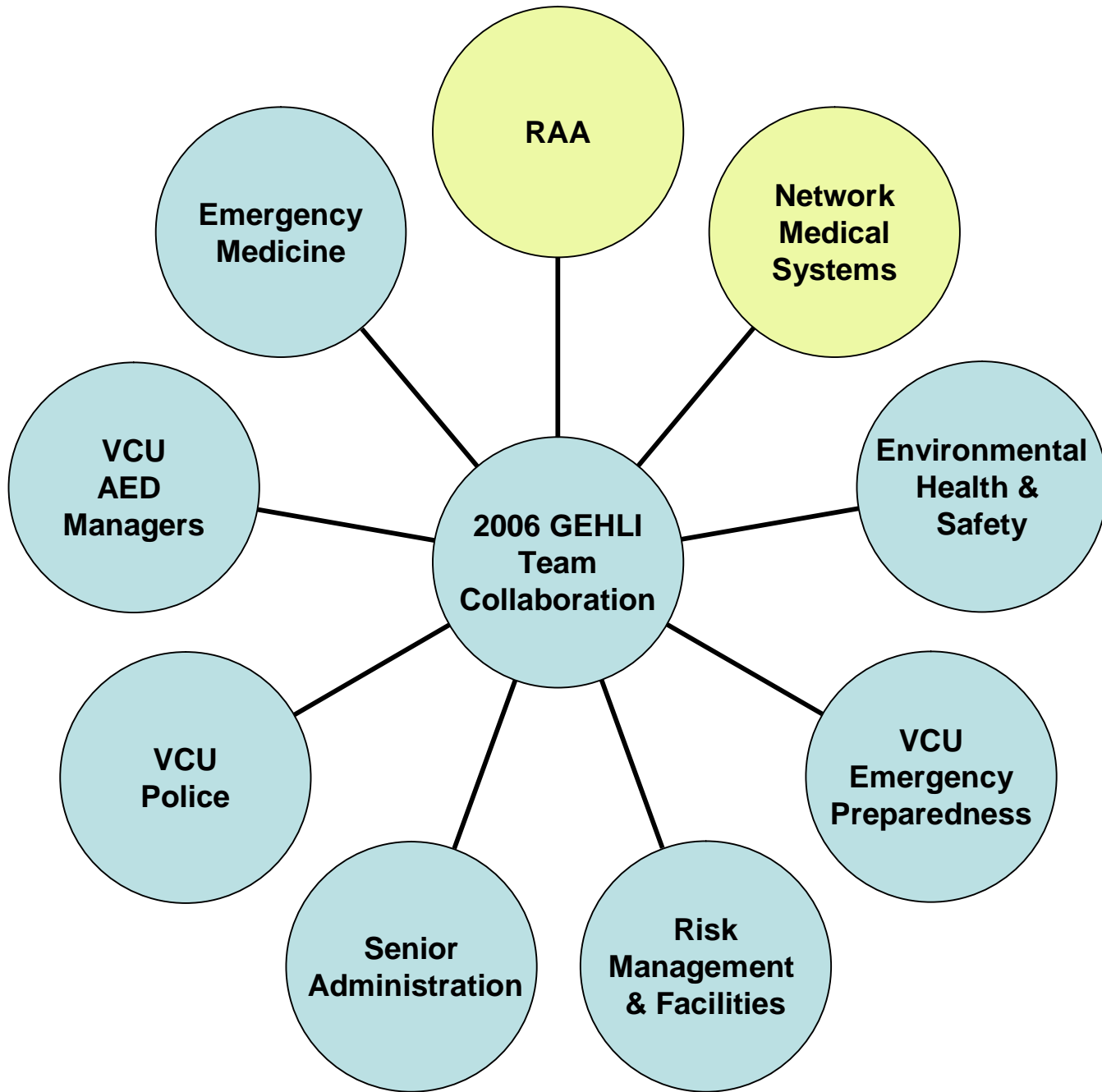
- Bookstore, Library, Commons
- Hibbs, Temple, Business
- Engineering, Monroe Park Campus Addition





Action Steps to Date

- Certified team members in First Aid including CPR/AED.
- Identified existing training programs that could serve as models.
- Summarized our findings in a report.
- Met with stakeholders





Recommendations for MERCI

- Project MERCI

- Purchase additional fixed AED's for both campuses and for all police vehicles (only 2 of 20 at present).
- Encourage all members of the VCU community to obtain CPR training through web-based and/or hands-on methods.
- Consider setting up a more formal first-response system on the Monroe Park campus, e.g. MERT system.
- Coordinate first-response measures with RAA, Dept. of Emergency Medicine, Dept. of Emergency Communications, and VCU police.
- Implement a social marketing campaign.



Recommendations for Future

Fostering a Community of Responsibility at VCU

Healthy Lifestyles

Smoking Cessation

Alcohol Awareness

Fitness

MERCI

Medical Emergencies

Trained Laypersons

AED



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Questions & Answers

