

# Evaluation of the Cardiac Emergency Preparedness of Philadelphia's Parks and Recreation Centers

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## Sudden Cardiac Arrest in Younger Populations

- **Sudden Cardiac Arrest (SCA)** is a life-threatening condition in which the heartbeat stops suddenly and unexpectedly.
  - Caused by an abnormality in the heart's electrical system
    - Ventricular fibrillation (VF) or tachycardia (VT)
    - Blood flow to the body and brain stop
- **Sudden Cardiac Death (SCD)** occurs if emergency treatment with CPR/AED or spontaneous recovery does not occur.
  - Greatest in the 10-19 age group
  - Occurs in approximately 350,000 adults and 7000 child deaths annually in US
  - In youth, associated with inherited electrical conditions, weakened heart muscle, or coronary artery anomalies.
    - Hypertrophic Cardiomyopathy (HCM) and Long QT Syndrome (LQTS) are the cause for almost 60% of SCAs.

## Role of CPR and AEDs in the Chain of Survival

- **CPR:** Cardiopulmonary resuscitation is when you push hard and fast on the center of chest to make the heart pump; compressions may be given with or without rescue breaths.
- **AED:** Automated external defibrillator is a device that analyzes the heart and if it detects a problem may deliver a shock to restart the heart's normal rhythm. The rhythm abnormalities shock is commonly advised for are Ventricular fibrillation and Pulseless Ventricular Tachycardia.
- SCD can be aborted by using CPR and/or AED, this can double or triple a person's chance of survival.
- Every minute of delay following SCA decreases chance of survival by 10%.



## Youth Heart Watch (YHW) and Project Adam at CHOP

- Works to prevent sudden cardiac death among children and adolescents by placing AEDs in schools, recreation centers and other public places.

## STUDY AIM

- To determine the number of functional AEDs in the Philadelphia Parks and Recreation (PPR) Centers
- To replace the expired AEDs, batteries, and electrode pads to ensure functional units (Rescue Ready) to increase the safety of the Philadelphia community

## METHODS

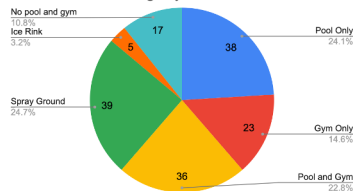
- Phone surveys conducted with each Center's Manager and site visits to determine the expiration dates of the Adult Pads, Pediatric Pads, and Batteries in the Centers' AED units.
- All expired materials noted in the survey data were then brought to the Recreation Centers and the AED units were left in working condition.
- Creation of a database to track expiration of AED units, batteries and electrode pads for future planning and timely replacement.

## Programs hosted/run by Recreation Centers

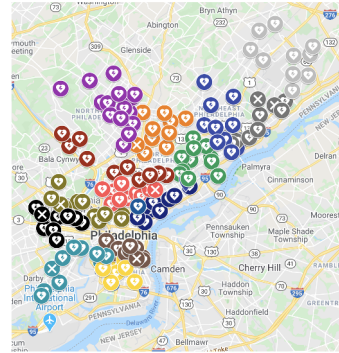
- In 2016, 179,567 youth between the ages of 2 and 18 participated in programs hosted by PPR
- Over 130 day camps and a dozen theme camps are hosted each summer by rec centers
  - More than 7000 kids between the ages of 6-12 participate in these programs

## Facilities Available at Recreation Centers

Rec Center Percentage by Facilities



## Importance of Recreation Centers in Philadelphia Communities



Map of Philadelphia Recreation Centers (color coordinated by district)

- 22% of Philadelphia's population is under the age of 18.
- The median age in Philadelphia is 34.5, with 57% of the population under the age of 40.
- Rec Centers serve as community builders and safe spaces for many children and young adults in Philadelphia.
- These centers are used for recreational activities, daycare, senior centers, and general gathering places within Philadelphia communities.
- 35% of children under 18 in Philadelphia are living in poverty.
- AEDs and Emergency Preparedness maintains the role of these Rec Centers as safe spaces by ensuring the best possible response to a SCA.

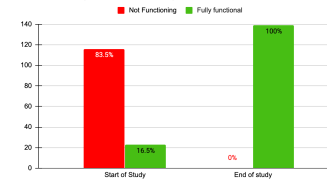
## Challenges of Research during the COVID-19 Pandemic

- Sharing our mission of making these Rec Centers prepared for a cardiac emergency, PPR worked with us amongst the challenges of COVID-19.
- PURM team members trained virtually using CPR manikins shipped to home address.
- As a part of the study's ongoing relationship with PPR, this study considered ways to teach CPR and AED usage to Rec Center Staff virtually.
- The team explored the usage of homemade manikins out of soda bottles or toilet paper rolls to teach CPR and AED usage virtually.
- Increased emphasis on home life and how the instruction of CPR and AED usage could save the lives of family members within the Recreation Center's community.



## RESULTS

Start of Study and End of study



- All active rec centers have fully functioning AEDs.
- Three of the centers are under construction.
- Unmanned centers and centers that are closed, will be served by PPR.

- \* Not functioning: Rec center that have AEDs with expired batteries, pads or both
- \* Fully functioning: Rec centers that have AEDs with up to date batteries and pads



## CONCLUSIONS

- Rec Centers are main gathering centers for younger populations in Philadelphia's communities. They are locations for recreation and socialization.
- The units at PPR centers were donated by Philadelphia police and fire 10-20 years ago, and many of the materials needed to be updated.
- In order for these centers to be safe, they must be prepared for a SCA by having staff trained in CPR and AED use and updated AED materials.
- AED units are effective for ~10 years; the batteries are functional for 4 to 5 years, and the pads are functional for 2 to 4 years. The results of this study enable us to track the expiration of PPR's AED materials and prepare for future replacement efforts to keep the Rec Centers Rescue Ready.

## REFERENCES

- Parent Heart Watch database 2007
- Phila.gov
- Census profile: Philadelphia, PA. (n.d.). [accessed 2020 Aug 15]. <https://censusreporter.org/dp/offices/160001S4260000-philadelphia-pa/>

