

City of South Jordan
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Project Cardiac React



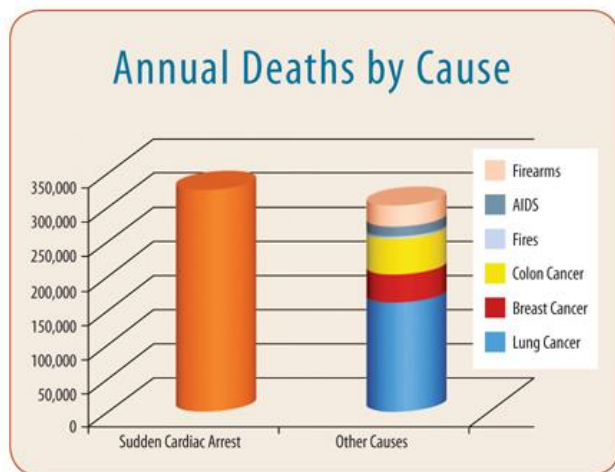
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Overview

It claims more lives each year than lung cancer, breast cancer, prostate cancer, AIDS, firearms, and fires combined; it is the equivalent of more than two 747's falling out of the sky every day; it is indiscriminate and it is a problem in every community. While many assume little can be done about it, they are wrong.

The numbers are staggering; in 2007, approximately 1.2 million Americans suffered a heart attack, of those about 425,000 died; and more than 325,000 people died from Sudden Cardiac Arrest (SCA) out of the hospital or in the emergency room.ⁱ Despite major advances in medical technology and emergency medical care, cardiovascular disease (CVD) continues to be the nation's leading cause of death.ⁱⁱ



As a result of the extraordinary commitment from South Jordan City, working from the ground up, the City developed and successfully implemented Project Cardiac React; **a System of Care which is reducing heart damage, improving the quality of life, increasing survivability, and reducing health care costs of individuals who have a heart attack or sudden cardiac arrest.** It is one of the most comprehensive pre-hospital cardiovascular initiatives in the Country. It is innovative both in scope and approach and has been recognized as a model program.

Project Cardiac React involves more than fifty strategies in several different areas including:

- An on-going community awareness campaign
- Widespread community training

- A comprehensive Public Access Defibrillator (PAD) program
- A link to the local emergency medical dispatch system
- First responders and advanced life support with heart ready enhancements and services
- Enhancements of existing services and development of new services or programs at local hospitals
- Enactment of new laws and ordinances
- A quality assurance program

South Jordan City has engaged employees from nearly every City department, residents, employees of local businesses, and many other stakeholders to develop, implement, and maintain Project Cardiac React. Additionally, to assist other communities with the implementation of similar strategies, City leaders provide assistance, support, and program materials to others across the United States.

Jurisdiction Description

The City of South Jordan is located in the Southwest portion of the Salt Lake Valley. With a population of more than 57,143, it is the 11th largest city in the state. The City is 22.1 square miles with a good mix of commercial and residential property. It is one of the fastest growing communities in Utah and more than 112,000 residents are expected at build-out.

Innovation Information

Prior to the implementation of Project Cardiac React, in South Jordan City, few heart attack patients had their blocked artery opened up within 90 minutes of arriving at the hospital ("door-to-balloon" time) as recommended by the American Heart Association (AHA). Further, the survival rate for out-of-hospital cardiac arrest patients in the City was a dismal 7%. In fact, while he had been on the job for more than two decades, prior to 2006, Fire Chief Evans had never witnessed a cardiac arrest patient survive. However, that would change in 2006 and while at the time he did not realize it, the experience would have a profound impact on his life and the lives of many others.

It was during the first five months of 2006, on two separate occasions, when Chief Evans witnessed bystanders and emergency responders from South Jordan City save the life of a sudden cardiac arrest patient. While he had never seen it occur before, over a five month period he had now witnessed two cardiac arrest patients survive. This experience, along with more than two decades of personal observations while working in various disciplines of public safety, and information obtained through research, led Evans to develop the vision, desired outcomes, and outputs for South Jordan City Project Cardiac React.

Innovation Importance/Benefits

The problem is not unique to South Jordan City. In the United States alone, about 300,000 emergency medical service treated out-of-hospital cardiac arrests occur annually; on average, only 31.4% of out-of-hospital cardiac arrest patients receive bystander CPR and 93% to 95% of sudden cardiac arrest patients die; the estimated direct and indirect cost of CVD for 2008 was \$475.3 billion dollars.ⁱⁱⁱ While prevention is preferred, history has clearly shown if we continue to focus on prevention alone little will change and hundreds of people will continue to die needlessly every day.

Heart Disease & Stroke

In the United States, each year about

- ❖ 700,000 people suffer a stroke
- ❖ 1.2 million Americans will experience a heart attack; about 425,000 will not survive
- ❖ 325,000 Sudden Cardiac Arrest (SCA) deaths occur out-of-hospital or in the emergency room

Project Cardiac React **is** reducing heart damage, increasing survivability, improving the quality of life, and reducing health care costs for those who have a heart attack or sudden cardiac arrest in South Jordan City.

Innovative/Creativity

“This program will make a difference in the lives of South Jordan citizens and is a true model for other communities”.

Sharon Brockett
AHA Community Strategies Manager

“If you are going to have a heart attack, try to be in South Jordan when it happens”.

Kristin Sokol
South Valley Journal

“This initiative is a forward thinking plan which will help provide an important safety net for the citizens of South Jordan City. You are to be commended for your thoughtful effort in this regard”.

Fred Lampropoulos, Chairman/CEO
Merit Medical Systems, Inc.

“It is the most comprehensive I have seen to date internationally. You are going to save a lot of lives with this”.

Dan Mohrbacher
AED Advocates

“They do wonders. I’m proof of that and I can’t yell loud enough how proud I am to be a resident of South Jordan City”.

Thomas Anderson
Sudden Cardiac Arrest Survivor

The program has been described by others as innovative, creative, forward thinking, comprehensive, lifesaving, and a model for other communities to follow. A few of the elements that support the comments made by others include:

- It is comprehensive in nature and it led to the implementation of a wide variety of strategies (out of hospital and in-hospital) related to the treatment of a heart attack or sudden cardiac arrest – it is a System of Care.
- It required a collaborative effort involving multiple City departments, residents, business leaders, local hospitals, emergency medical dispatch center, the Utah Department of Health, State and local elected officials, and many others.
- Most of the start-up expenses were provided through grants, donations, in-kind services and public-private partnerships; and it was fully implemented during a period where we experienced cuts to our operating budget and received no new allocations due to the recession.

- A new Chapter in State Law was created which not only consolidated and modernized Utah CPR & AED laws but it also expanded the civil liability protection related to CPR & AEDs.
- A local ordinance was drafted & adopted that requires an AED in all police, fire and animal control vehicles; and a public access defibrillator (PAD) in certain new and existing buildings regardless of occupant load or building size, certain buildings with an occupant load of more than 50 people, and in all other public or private buildings with an occupant load of more than one-hundred fifty people.
- City employees provide free CPR training and other free support to assist local businesses and residents with establishing and maintaining an effective PAD program.
- Prepared and submitted a request to provide financial assistance for a pre-hospital 12-lead ECG program (about \$500,000) in 25 other communities in Utah. The project has since been fully funded by the Utah Hospital Association and it is anticipated that all funds will be distributed to providers by February 1, 2011.
- For several years representatives from South Jordan served on the AHA Western States Community Strategies Council and today continue to serve on the AHA Western States STEMI Task Force and the newly created Utah STEMI Expert Advisory Panel.
- Articles on Project Cardiac React have appeared in several national publications and we continue to respond to requests for additional information as a result.

The list of enhancements, new services, and other outputs is extensive. For an overview of key program objectives, outputs, and our progress to date see Appendix A.

Who is Benefiting from the Innovation

It has been said, "if you are going to have a heart attack, have it in South Jordan City." **As the result of Project Cardiac React, in 2010, in South Jordan City,**

- **On average, heart attack patients had their blocked artery opened in less than 90 minutes from calling 911;**
- **80% of all witnessed cardiac arrest patients received lay rescuer CPR before the ambulance arrived; and**
- **30% of witnessed cardiac arrest patients survived to discharge.**
- In 2009 and 2010, Project Cardiac React was presented at a conference in Denver, Colorado.
- In November of 2010, the program was presented to approximately 200 people who attended the 4th Annual Heart Care Alliance symposium sponsored by the South Carolina Hospital Association in Columbia, SC.
- All program related material has been organized on a CD for distribution, free of charge, to anyone who requests it. The disk and additional information has been shared with the AHA, Red Cross, and various communities throughout Utah as well as representatives from communities in Alaska, California, Colorado, Illinois, Kansas, Kentucky, Nevada, North Carolina, Ohio, and South Carolina.

While there is no question Project Cardiac React has had a positive impact on the lives of numerous South Jordan residents, the benefits extend far beyond the City. South Jordan leaders continue to look for and/or create opportunities to encourage and assist others with implementing similar strategies in communities across the United States. A few examples of our efforts include the following:

- In cooperation with representatives from the AHA, we organized, shared information, and continue to participate in several "STEMI" task forces in other regions of Utah.

We are committed to sharing information, program material, and providing other assistance to others throughout the Country.

Development and Implementation

Beginning in the summer of 2006 and continuing through the first half of 2007, the vision was developed, objectives, outputs, and a budget were established, and we began to lay the foundation for the implementation of the program.

While we recognized certain aspects of the program would have a greater impact on patient outcomes than others, to ensure success, implementation was prioritized based on a number of factors such as available funding, obstacles, gaps, opportunities, doing the greatest good for the greatest number, and whether or not outside assistance or authorization was required.

Implementation began in the summer of 2007 with the expansion and enhancement of a CPR training program and the implementation of the STEMI System of Care. Almost immediately we began to see positive results. Over the next 24 to 36 months, City staff continued to chip away at the obstacles, develop program material, pursue the required funding and other services and support, and implement additional strategies. With the full implementation of the local ordinance requiring public access AEDs as of July 1, 2010, the City has now implemented nearly all strategies as outlined in the original plan.

Expenses and Savings

The start-up cost was estimated at more than five-hundred thousand dollars. This includes upgraded heart monitors for EMS vehicles, external cardiac support pumps for ambulances, specialized training for all EMS personnel, additional equipment for other related service upgrades, an AED for every police vehicle, school, government building and fire department staff vehicle, CPR training equipment and related supplies, software to assist with the tracking and maintenance of all public access AEDs, and material and fees associated with a public awareness campaign.

We did not receive any new allocations from the general fund to support the program, in fact, due to the economy our operating budget was reduced during implementation. Through the donation of money, equipment, software, in-kind services, and the use of existing funds from our operating budget, public-private partnerships, and grants, we fully funded the program over a 24 to 30 month period.

The partnerships that have been established as the result of the program have resulted in substantial initial and on-going savings to the City, local businesses, and residents. The grants, donations of equipment & money, and in-kind services provided to the City include the following:

- AED training simulators and AEDs

- Medical oversight
- A software solution to assist with the maintenance of the PAD program
- Certain marketing services
- Specialized training for hospital/EMS personnel
- More than \$250,000 in cash
- Special pricing for equipment

Additionally, the City offers the following support to local businesses and residents:

- Free CPR training (participation has increased 14 fold since implementation of the program)
- Free site survey, prescription, operating guideline, and other implementation support
- Discount pricing for equipment
- Free access to a web based software program to assist with the maintenance of their PAD program
- Free post event support

Taking into consideration the initial cost of the AED, cabinet, and sign, replacement of electrodes and batteries as required, CPR training for up to 12 employees every two years, and other support such as assistance with maintenance of the AED, the ten year cost was estimated at about \$6,700 per AED. However, in South Jordan City, due to the services offered by the City and their partners, the same equipment and services for a ten year period is estimated at less than \$1,900 per AED.

When you consider the PAD support alone typically runs about \$100 per year per AED, and whereas more than 200 AEDs have already been installed throughout the community, the donation of the software solution coupled with the free services offered by the City results in a savings of more than two-hundred thousand dollars per year.

The City has not reduced or eliminated any other service or program and has not added any new employees to support Project Cardiac React. It was fully implemented with existing personnel and no new budget allocations.

Lessons Learned

As you can imagine, conducting the research and developing the vision, desired outcomes, outputs, gaps, and opportunities was the easy part; the implementation was much more challenging. It did take an extraordinary level of commitment to bring this program to life.

Do not assume others, including medical professionals, are informed as it relates to the problem and/or real life solutions. Many stakeholders did not know the significance of the problem, assumed little could be done, thought the solutions would be cost prohibitive, and felt CPR and the use of an AED was too complicated for a lay rescuer. Once informed most embraced the concept however some still did not believe the City could pull it off due to the scope of the program, the collaboration that would be required, and the start-up cost.

A few of the key lessons include:

- Conduct a needs assessment to identify and evaluate the problem, gaps, challenges, and opportunities
- Develop a written plan
- Identify a program champion who has the knowledge, skill, ability, passion, and commitment to manage the process and lead others.
- Educate, inspire, and engage stakeholders
- Anticipate concerns or obstacles and remove or mitigate the issue prior to implementation of the associated strategy
- Use public-private partnerships, in-kind services, donations, and grants
- Consider starting with strategies which require no outside assistance or authorization

- To evaluate the effectiveness of strategies, set-up and begin tracking data points early
- Plan ahead as certain aspects of the program will take a year or longer to work through the process
- Do not accept no – with perseverance you will achieve the desired results

The program will have a profound impact on the lives of others, don't give up!

Department and/or Individuals who Championed the Innovation

While members of the South Jordan City Fire Department took the lead with development and implementation, there are many other individuals and/or organizations who have contributed to its tremendous success. They include:

- South Jordan City elected officials, the leadership team, and other City departments including Finance, Information Services, Legal, Municipal Services, Parks & Recreation, and the Police Department
- Fred Lampropoulos and Merit Medical Systems, Inc.
- Dr. Bart Johansen, Jon Butterfield and other representatives at Iasis Healthcare & Jordan Valley Medical Center
- First-Med Urgent Care, Sam's Club and Rocky Mountain Power
- Utah legislators
- ZOLL Medical Corporation and En-Pro, Inc.
- American Heart Association
- Utah Bureau of Emergency Medical Services

The success of the program is the result of a collaborative community-wide effort.

ⁱ American Heart Association, American Stroke Association. "Know the Facts, Get the Stats 2007". 55-1041, December 2006.

ⁱⁱ Kung, Hoyert, XU, Murphy. "Deaths: Final Data for 2005." Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. National Vital Statistics Reports, Volume 56, Number 10, April 24, 2008.

ⁱⁱⁱ American Heart Association. "Heart Disease & Stroke Statistics". 2009 Update At-A-Glance.