# *2022 BROWARD COUNTY EMS GRANT APPLICATION*

*"Funding to improve or expand prehospital EMS Systems"*

## Section I

1. **Project Title:** Automated Compression Device and Handtevy Bags for CSPFD

   Is this a pilot project? ☐ Yes ☒ No

2. **Project Cost $:** 26,180.60

3. **Agency Name:** Coral Springs Parkland Fire Department

   Address: 2801 Coral Springs Drive

   Telephone: 954-344-5935 Fax: 954-344-5933

4. **Project Manager:** The individual with direct knowledge of project and responsible for project implementation.

   Name: Chief Juan Cardona

   Telephone: 954-344-1349 Email: jcardona@coralsprings.org

5. **Authorized Signatory:** The individual authorized to sign the application on behalf of the agency or entity.

   Name of Signatory: Michael McNally

   Title of Signatory: Fire Chief

6. **Projects Impacting Direct Services to Emergency Victims:** This may include, but is not limited to: vehicles, medical and rescue equipment, communications, dispatch, navigation, and other equipment that impacts on-site treatment. (Countywide projects must offer participation to all licensed EMS providers, based upon levels of service.) Attach Form A.

   Countywide: ☐ Yes ☐ No

   Multiple Agencies: ☐ Yes ☐ No How Many? _____

   Single Agency: ☒ Yes ☐ No

7. **Projects Impacting Indirect Services:** Training of all types (public, first responders, law enforcement personnel, EMS personnel and other healthcare staff), research, and documentation. (Countywide projects must offer participation to all licensed EMS providers.) Attach Form A.

   Countywide: ☐ Yes ☐ No

   Multiple Agencies: ☐ Yes ☒ No How Many? _____

   Single Agency: ☒ Yes ☐ No

**8. Problem/Unmet Need Description:** Provide a narrative of the problem or need and the population affected by describing the present situation and management (if any) and the potential adverse consequences if not addressed.

Automated Compression Device
In 2020 The Coral Springs – Parkland Fire Department responded to 14,745 calls, of those calls 67% or 9,950 calls were medical emergencies. Of these medical calls 1.5% or 114 calls were cardiac related. Annually, our call volume increases by 1%. Data from ESO shows the deaths due to cardiac emergencies has increased by 33.3% since 2010. In a direct correlation our department is experiencing an increase in calls requiring CPR.

The 2020 American Heart Association (AHA) guidelines state that chest compressions should be delivered at a rate of 100 to 120, at a depth of at least 2 inches with minimal interruptions. Providing quality manual compressions is extremely difficult and dangerous for our responders throughout transport. It is well recognized the difficulties of maneuvering emergency vehicles in South Florida traffic. Additionally, a study published in the Journal of American Medical Association by Dr. Benjamin Abella found that:
"Even seasoned healthcare professionals get fatigued performing manual CPR, causing compressions to be slow and shallow, making compressions not consistent throughout patient care."
"When interruptions occur (moving the patient to the stretcher, switching rescuers) the victim quickly loses the benefits of blood flow resulting from compressions." This necessitates that an automated device be used as soon as possible in the rescue process.

Currently all cardiac emergencies receive a 2 unit response which includes an ALS transport rescue truck. This puts 5 personnel on scene and sometimes an additional chief officer. We have seen significantly positive results in our Return of Spontaneous Circulation when we have been able to quickly attach an automated compression device to a patient. These outcomes have resulted in our purchase of an automated compression device for each of our existing rescues. However this does create a negative situation for us when a unit is pulled for training of staff (BLS / ACLS/ Protocol training) as well as for promotional testing and new hire testing. We are in the midst of our first major retirement phase from the expansion of EMS in the late 1990's and early 2000. We find ourselves needing to remove a functional Automatic Compression Device from an active unit for several hours, resulting in the potential for less than optimal resources and treatment modalities should a cardiac emergency occur in that zone. We also are not able to provide a device for our detail crews at events. This proposed additional unit would also be placed on a unit when we move to a disaster / hurricane mobilization and press our reserve apparatus back on duty to handle the anticipated increase in needed responses.
Demographics also support an increasing need for these devices, as both Coral Springs and Parkland are showing a significant shift in the size of our senior populations. The fact that our local medical receiving hospitals (BHCS and Northwest) are now both Cardiac Catherization Lab operational means there is a greater chance for successful outcomes when field response is optimized, and these automated Compression devices are a critical part of that. National Rates of ROSC were 23.0% in 2020, down from 29.8% in 2019. During the last five years, our department has maintained a ROSC of @ 34%, ranging from 31% to a high of 43% in 2018.

Handtevy Bags
Managing pediatric emergencies in the pre-hospital setting is challenging. There are significant difficulties in calculating critical medication doses based on age or weight, and the size of airway and other necessary equipment. Providing pediatric care in the field requires the provider to do mathematical calculations to figure out proper medication doses, and the interactions from parent and bystanders increase the paramedic's stress and could result in calculation error.
Because of this high-stress environment, healthcare providers need tools to help them navigate the treatment options and render care efficiently and effectively. The Handtevy system is recognized as the state of the art in pediatric care, and has had a positive impact on outcomes by our crews for several years.

**9. EMS Improvement and Expansion to Resolve Problem or Address Needs:** Describe proposed solutions to the problem and/or need (question #8 – problem description). State the improvements that are reasonably foreseeable and measurable. Use data, scientific, or anecdotal information to support the agency's request. Explain how the project will improve and/or expand prehospital EMS in Broward County. Be specific.

The implementation of automatic chest compression devices will reduce the risk of injury for personnel during transport, or during transport of a patient using high angle rescue techniques, small elevators and narrow hallways. It will also significantly improve patient outcomes as seen in ROSC statistics. Combined with our efforts to increase bystander CPR intervention, it is our aim to increase our average ROSC rate from 34% to over 40% on a consistent basis. This should be noticeable after analyzing data from 2022-2025, comparing to the prior three year period. Having one additional automatic compression device will facilitate the training in cardiac arrest management for all members of the fire department. When EMS crews go to training one of the objectives is to conduct those scenarios in a way that makes them as close to reality as possible. Science tells us that interruptions in CPR can be detrimental for patients who need this lifesaving procedure. Having the same equipment used in the field, being able to apply it in an efficient manner to simulated patients, facilitates in building confidence on the part of our crews. These repeated training scenarios build muscle memory, enhance the pit-crew approach and will make the teamwork become second nature. The additional unit will provide our patients with high quality, AHA compliant chest compressions for all CSPFD rescue units at all times. The use of automated chest compression devices has shown to improve blood flow to normal levels and increase myocardial (coronary) blood flow. Aortic pressures are 30% higher with an automated chest compression device and coronary profusion pressure improved by 33%. With an automated chest compression device only 2 responders will be needed throughout transport and only 1 rescue unit will need to respond. The device will perform perfect compressions without getting tired. Responders will be able to perform other necessary functions (defibrillate, administer drugs etc.) required for cardiac arrest protocols.

The CSPFD can benefit by getting updated Handtevy bags that will replace the old, outdated and heavy Pelican boxes that were purchased over seven years ago. Our crews will benefit by having all the updated pediatric supplies needed to work a critical pediatric patient, with access clearly and consistently laid out during a call. At the same time, patients will benefit from crews who have access to supplies in a standardized bag that all know and operate easily. This will also provide confidence during the high stress of a pediatric arrest, since the calculation of correct medication dosage is predetermined once the patient age is determined. The CSPFD responds to an average 858 pediatric emergencies each typical year, although we may see impacts from the COVID pandemic that could impact significantly.

The Handtevy Pediatric System is the leading software solution designed to give clinical teams rapid access to lifesaving dosing information while documenting in real time. Integration with leading EHRs/ePCRs allows clinicians to perform real-time verification for high acuity medications, ensure accurate scene documentation, and facilitate a culture of patient safety. The Handtevy System is the first of its kind system that is tailored uniquely to local protocols and concentrations of medication carried and equipment. Through cognitive offloading, clinicians are able to confidently and accurately treat underlying issues on-scene, while simultaneously reducing medical errors. The new bags are complete and can carried as a backpack upon arrival, facilitating movement through crowds and obstructions.

Handtevy Bag Set (HPB):
Organizes medical equipment in a light-weight, easy to use bag that can also be used as a backpack. It allows for easy identification of pediatric equipment sizes with seven age-based color-coded pouches. Made with 600 Denier Polyester, and a hideaway adjustable, padded backpack strap harness system.
Dimensions: 21" x 14" x 10"

To determine the impact of the new Handtevy system, we will use our Quality Assurance team to compare on-scene time periods and successful treatment responses with prior years data. We are anticipating an improvement of 10-20 % over two years, however the impact of COVID is still unknown.

| **10. Measurable Outcomes:** Outcomes should be viewed from the perspective of the project and provide for: improved conditions/service - for patients as well as EMS personnel; expanded services; new knowledge; or improved knowledge. **Outcomes must be measurable and attainable. (Attach additional pages, as needed.)** | |
|---|---|
| **A. Project** | 1. One Automated Cardiac Compression Device<br>2. Ten (10) New Handtevy Bags |
| **B. Activities** | 1. The automated Cardiac compression device will be used by our training division staff to train our personnel during ACLS and Paramedic protocols. This unit will also be used for crew training on ACLS, screening and training of new hires and probationary FF/PM's, and promotional testing.<br>2.Handtevy pelican boxes will be upgraded to the new system which incorporates new protocol equipment and current approved pediatric medications in a backpack system for ease and efficiency in accessing and treating pediatric patients. |
| **C. Outcomes** | 1. It is our aim to increase our average ROSC rate from 34% to over 40% on a consistent basis. This should be noticeable after analyzing data from 2022-2025, comparing to the prior three year period.<br>2. To determine the impact of the new Handtevy system, we will use our Quality Assurance team to compare on-scene time periods and successful treatment responses for pediatric emergencies with prior years data. We are anticipating an improvement of 10-20 % over two years, |
| **D. Indicators** | 1. For the automatic cardiac compression device we will be monitoring ROSC and survival rates.<br>2. For the Handtevy bags it will be efficient and effective pediatric care, as indicated by a decrease in on-scene treatment time (when appropriate) and successful treatment responses compared to existing data. |
| **E. Data Source** | ESO, Biospatial, CARES registry, Hospital Outcome data |
| **F. Data Collection Method** | The CSPFD Quality Assurance Coordinator will file quarterly reports assessing the impacts of both system additions (Automated Compression Device and upgraded Handtevy system). These reports will be reviewed by the department EMS Chief and will be shared with the training division staff and Medical Director for analysis and action if indicated. |

**11. Project Schedule:** Please complete the table below. Insert additional rows if needed.

| Months after Grant is Executed | Activity |
|---|---|
| 1 month | Price & Order Automated compression device and pediatric Handtevy bags |
| 3 months | Begin using Automated compression device in all appropriate training situations, as well as in testing, ACLS renewals and protocol instruction. |
| 4 months | Gather first quarter data and analyze for impact or modification. |
| 6 months | Schedule use of additional Compression Device for EMS details and disaster response. |
| 8 months | Gather second quarter data and analyze for impact or modification. |
| | |

**12. Supporting Research or Literature?** ☐ Yes (Attachment A) ☐ No
(Required if this is a Pilot Project.)

**13. Letters of Support or Reference?** ☐ Yes (Attachment B) ■ No

**14. Budget:** Do not use brand names when listing items. Use only generic names. Round up/down to the nearest dollar. Please use the table below. Insert additional rows if needed. Do not include extended warranties.

| Item | Unit Cost | Quantity | Total |
|---|---|---|---|
| Pediatric bag which includes 7 equipment pouches each | 441.00 | 10 | 4410.00 |
| Chest Compression Device and accessories | 21657.69 | 1 | 21657.69 |
| | | | |
| | | | |
| | | | |
| Delivery charges, if any | | | 112.91 |
| Total | | | $26,180.60 |

**15. Future Expenses:** Estimate the maintenance or other required recurring expenses per unit after the first grant year (if applicable). Note: No funding will be provided for these expenses under this grant program and must be absorbed by the grant recipient(s). Discuss this issue with your agency as it may affect its budget.

| Items | Cost |
|---|---|
| ProCare Chest Compression Device Annual Service | 4,773.60 |
| | |
| | |
| | |
| | |

***Grant monies cannot be used to replace existing equipment.***

MM
Initials of authorized signatory acknowledging the individual understands this statement.

16. **Medical Director Approval:** For all projects requiring approval from the agency's Medical Director in accordance with Chapter 401, Florida Statutes, or Chapter 64J-1, Florida Administrative Code.

**The undersigned, as Medical Director for this agency, supports and approves this project.**

Signature: _____ Date: 9/13/2021

Printed Name: Dr. Peter Antevy

17. **Partial Funding:** Will the agency accept partial funding?
(Note: If the agency is awarded partial funding, an amendment to the outcomes and budget forms must be submitted).

☒ Yes, the agency will accept partial funding

☐ No, the agency will not accept partial funding

Signature: _____
(Authorized Signatory)

Printed Name: Fire Chief Michael McNally

**AGENCY NAME:** Coral Springs Parkland Fire Department

**AUTHORIZED SIGNATORY:** _____

**DATE:** 9/13/21

**PRINT AUTHORIZED SIGNATORY NAME:** Michael McNally

**TITLE:** Fire Chief

**PROJECT MANAGER'S SIGNATURE:** _____

**PRINT PROJECT MANAGER'S NAME:** Juan Cardona

**TITLE:** EMS Division Chief

**TELEPHONE:** 954-344-1349

**EMAIL:** jcardona@coralsprings.org

**If this is a Single Agency Project, this is the last page of the application.**

**If this is a Multiple Agency/Countywide Project (excluding Countywide training projects), please continue by completing the Participating Agency Summary Sheet (Form A) and Section II for *each* Participating Agency.**

***Grant Application Submission Deadline:***

***Wednesday, September 15, 2021 at 3 p.m.***

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