

Emergency Services Foundation Scholarship 2015

CPR and AED Education Campaign – A review of a national approach to determine best practice

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- Resuscitation Research Group, Scotland
- Australian Resuscitation Outcomes Consortium

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- Andrew Redgrave, Community Engagement Manager, North West Ambulance Service

Executive Summary

In 2013-2014, Victoria bystander cardiopulmonary resuscitation (CPR) rates for bystander witnessed and emergency medical service (EMS) treated out-of-hospital cardiac arrest (OHCA) was reported at 75 per cent and survival rates at 10 per cent¹. While these rates represent the highest rates Ambulance Victoria (AV) has ever reported, disparities continue to exist between metropolitan and rural rates.^{1,2}

Research suggests that there is a significant relationship between improving early CPR and defibrillation and OHCA survival rates³.

In Victoria, there is currently no state-wide CPR and automated external defibrillator (AED) community awareness strategy that involves a multi-agency partnership and promotes a consistent message to improve bystander participation in early CPR and defibrillation.

In the United Kingdom (UK), the British Heart Foundation (BHF), National Health Service (NHS), Resuscitation Council of UK and the 14 ambulance services across the four nations of the UK work in partnership to develop and implement strategy, policy and initiatives that align to their consensus to improving survival for OHCA.

This study tour engaged with the BHF and four of the UK ambulance services to understand the role each agency plays toward improving OHCA survival in their community. There was particular focus around the partnerships that exist between these organisations and their communities to ensure they contribute to saving more lives.

The study tour provided insight into the benefits of adopting a multi-agency and localised community approach to OHCA, as well as the success of working with key agencies to implement a CPR and AED awareness campaign to improve the public's willingness to participate in early bystander CPR and defibrillation.

Study Tour Objective

This study tour investigated contemporary OHCA strategies, with particular focus on initiatives that enable early CPR and defibrillation, throughout the UK and Europe in order to obtain knowledge of:

- The processes undertaken to develop, implement and monitor the success of a national CPR and AED strategy. This includes identifying the role and responsibilities of key health and emergency service organisations (ESO) in achieving desired outcomes.
- Best practice community CPR and AED education campaigns, including awareness campaigns and CPR training programs.
- The application of the 2015 basic life support (BLS) guidelines in the UK and Europe, with particular focus on community education and awareness campaigns and programs.

This study tour provided insight into the suitability of adopting similar models in Victoria and if appropriate, across Australia.

In order to achieve the desired objectives, the following organisations were engaged:

- British Heart Foundation
- European Resuscitation Council
- London Ambulance Service
- Yorkshire Ambulance Service
- North West Ambulance Service
- Scotland Ambulance Service
- Research Resuscitation Group, Scotland

This report summarises the purpose and key findings from each of the engagements.

Recommendations have been made based on personal opinion that have been influenced by observations, research and specialised knowledge drawn from the study tour and seven years' experience in community education and engagement at AV.

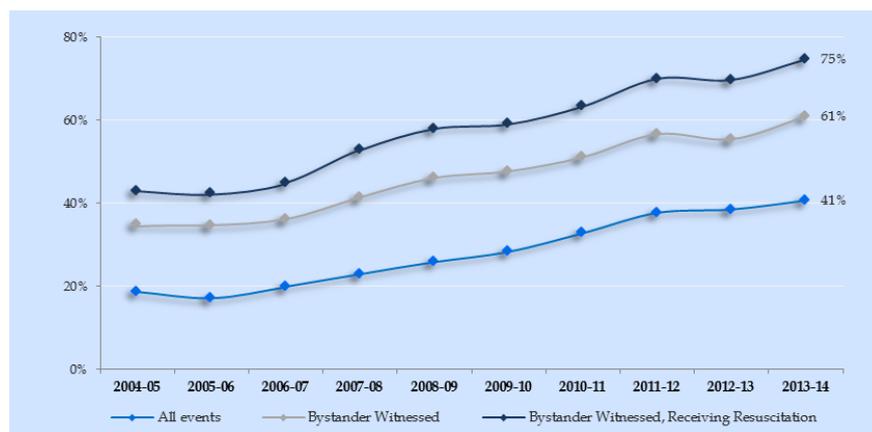
The findings in this report should be considered for future direction of community initiatives in continuing to improve early bystander CPR and defibrillation.

Background Victoria, Australia

Bystander CPR and OHCA Survival Rates

Over the past 11 years, there has been a continuous improvement in bystander CPR rates for bystander witnessed and AV treated cardiac arrests (see Figure 1). There has also been an increase in cardiac arrest survival to hospital discharge for AV treated cases, with 7 per cent in 2004-2005 vs 10 per cent in 2013-14.⁴

Figure 1. Bystander CPR rates, VACAR Annual Report 2013-2014



Since early 2000, Victorian ambulance services and the Victorian Government invested in several key initiatives with the aim to improve OHCA survival (see Figure 2).

These include, and are not limited to:

- Victorian Cardiac Arrest Registry (VACAR)
- Increasing paramedic training and skill sets
- AED registry
- Public Access Defibrillator (PAD) program
- Emergency Medical Responder (EMR) program with the Metropolitan Fire Brigade (MFB) and Country Fire Authority (CFA)
- Community First Responders Teams (CERTS)
- Delivery and continuous improvement of telephone instructions for CPR (T-CPR)
- CPR awareness program *4 Steps for Life* (2003-2010) and *4 Steps for Life Plus* (2010 BLS guidelines with inclusion of AED awareness)
- Ambulance in School programs

Several of these initiatives were commissioned as part of the Department of Health's Pre-Ambulance Basic Life Support (PABLS) unit.

VACAR is an instrumental in measuring the impact of initiatives (including research projects) have on improving the survival of OHCA patients in Victoria.

In 2003, the Department of Health and AV had a particular focus on improving rates of early bystander CPR. When a person suffers a cardiac arrest, survival decreases every minute CPR is not performed. So educating the community in recognising cardiac arrest and performing CPR is imperative to activate early CPR and save more lives.

This focus saw the inception of Ambulance Victoria’s CPR awareness program, *4 Steps for Life*.

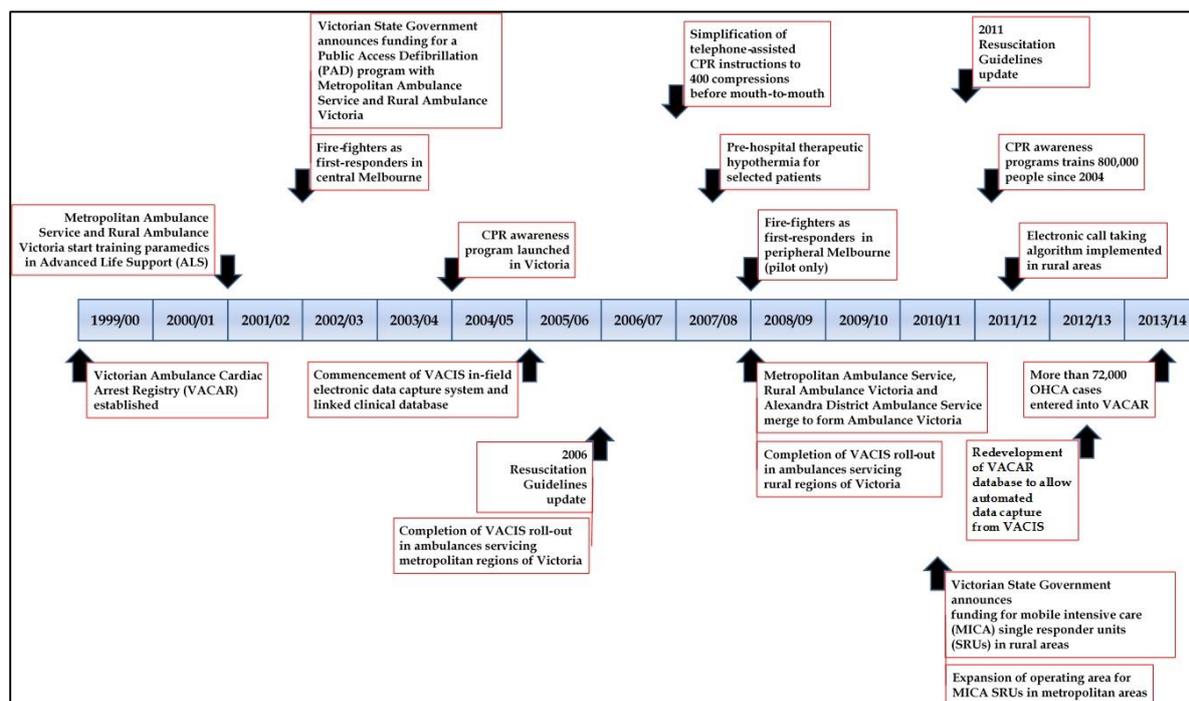


Figure 2. Ambulance Victoria key initiatives over time, since the establishment of VACAR. *VACAR Annual Report 2013-2014*

CPR Awareness Program

4 Steps for Life (4SFL) was funded by PABLS and developed in 2004 with the aim to increase bystander CPR rates through improving the confidence and capacity of Victorian community to action the chain of survival. The program targeted older adults (aged 50 and over) and was provided free of charge to community clubs and groups across Victoria.⁴

The program has received several updates in line with the Australian Resuscitation Council’s (ARC) BLS guidelines. The target audience has also shifted to suit the needs of Victorians, from targeting community organisations with members of over 50 years of age to any community organisations outside of a formal school setting. In 2012 the program was redeveloped and launched as *4 Steps for Life Plus (4SFL+)* to incorporate AEDs as part of the program’s BLS algorithm.

4SFL+ is embedded into all of AVs Community Education and Engagement programs (i.e. Ambulance in Schools) to ensure a consistent approach to community CPR and AED education across Victoria.

The program is promoted through internal AV communication avenues, the AV website and community events and presentations conducted by AV. The program has educated over 955,000 Victorians over the past 11 years.

4SFL+ is one of only two self-educational awareness programs currently implemented in Australia by ambulance services or relevant training and emergency service organisations.

4SFL+ is a program currently used by more than 1,400 CPR champions. These champions are members of the community who want to educate their community as they feel there is a knowledge gap.

The program is championed by AV and other emergency service staff and volunteers in order to create safer communities, with 17 per cent of the CPR Champions registered as AV staff member/volunteers.

In 2012, AV commissioned a social return of investment analysis on *4SFL* to understand the social impact of the program.

A recommendation from the analysis indicated that AV should consider raising the program's profile with a suggestion to use a television CPR awareness campaign⁵. This would particularly assist in reaching the broader community (metropolitan, regional and remote) as well as private residences.

While there are many stakeholders across Australia and Victoria that play a role in improving OHCA survival, including ambulance services, first aid organisations, non for profits and community groups, there is currently no national or state-wide OHCA consensus or strategy that unifies these organisations in working together to achieve a common goal (e.g. educate one million Victorians in CPR by December 2016).

Current Situation in Victoria – Early CPR and Defibrillation

Strengths	Weaknesses
<ul style="list-style-type: none"> • High percentage bystander CPR rates • Research capabilities (i.e. VACAR and AUSROC) • AV brand awareness • Council of Ambulance Authority (relationship with other ambulance services) • 3000 + AV staff and volunteers • Remote Area Nurses • 1,400 4SFL+ CPR Champions • Members of the public have some knowledge of CPR • Current OHCA initiatives (including skilled Advance Life Support and Mobile Intensive Care Ambulance paramedics) • AV Community Education and Engagement programs (50,000 reach/year), including 4SFL+ • Established relationships with ESO and health organisations (i.e. MFB, CFA and National Heart Foundation, Emergency Management Victoria, State Emergency Service) • AED registry developed by AV • Established relationships with medical equipment suppliers • One of two ambulance services in Australia to offer a CPR awareness program • Only one emergency ambulance service in Victoria (Ambulance Victoria) 	<ul style="list-style-type: none"> • No state-wide or national OHCA strategy • OHCA survival rates • Unknown number of stakeholders contributing to improving community knowledge of CPR and AEDs • Confusing CPR messages (e.g. compression only vs conventional CPR) • No national or state-wide campaign for CPR and AEDs • Regional variation for OHCA survival • Budget • Clarification of roles and responsibilities of organisations that contribute to improving OHCA (including Australian Resuscitation Council, ambulance services and foundations) • Retention of CPR and AED knowledge for members of the public

Opportunities	Threats
<ul style="list-style-type: none"> • Develop OHCA strategy (includes roles and responsibilities of stakeholders) • Utilisation of AV staff and volunteers (volunteer models) • Multi-agency engagement and partnerships (other ambulance services) • Community engagement (stakeholder mapping) • Ambulance Performance and Policy Consultative Committee report actions • AV Annual report items • Heart Foundation investing in survival (CPR and AEDs) • Campaigns on CPR and AEDs • Survivors/bystanders stories • Build on AVs brand and reputation • Current AV staff community engagement (CERTs, Ambulance Community Officers, paramedics educating their communities) • High frequency low dose CPR and AED education 	<ul style="list-style-type: none"> • Lack of multi-agency partnerships in current mass CPR education • Decrease in bystander CPR rates • Decrease in OHCA survival rates (people's lives) • Community resistance • Multiple AED locator and first responder smart phone applications

International OHCA Strategies

Seattle and King County

There are systems that have been recognised as setting a 'gold standard' for OHCA survival, such as Seattle and King County in Washington United States of America. They are recognised for having world leading survival rates.

The 'gold standard' they have set is implementing the '10 Steps for Improving Survival from Sudden Cardiac Arrest', a system of care for OHCA.⁶ In 2014, Seattle and King County reported survival rates of 54 per cent (113/209 cases)⁷ for bystander witnessed, EMS treated and presumed cardiac cause OHCA. These rates have improved from 26 per cent (79/309 cases) in 2002.⁸

Dr. Mickey Eisenberg, King County Emergency Medical Services Medical Director says "it takes a system to save a life". In Seattle and King County, they have invested in initiatives that aim to strengthen the links in the system of care for OHCA patients. These include:

1. Adoption of high-performance CPR method by emergency medical technicians to maximize oxygen circulation and increase survival chances
2. Adoption of T-CPR, whereby 911 emergency personnel provide instant CPR instructions by phone
3. Increasing public availability of AEDs, including more than 100 in King County facilities, and placement of AEDs in many law enforcement vehicles
4. High rates of CPR training for local residents
5. A regional paramedic training program, funded by charitable contributions, that exceeds national standards for certification.

Denmark

Since 2005, Denmark has also implemented several initiatives to improve survival rates for OHCA, these include³:

- Mandatory resuscitation training in elementary schools (since 2005) and for drivers' licence acquisitions (2006)
- Distribution of 150,000 free CPR self-instruction training kits (2005-2010)
- Improving telephone guidance from emergency dispatch centres
- Increasing public accessibility of AEDs (approximately 15,000 placed by 2011)
- Improving clinical guidelines and care (including more training for EMS personnel and mobile intensive care responses).

England

England is faced with the challenge of gathering OHCA data from the 11 EMS across the country.⁹ Not all of the EMS have an OHCA register and therefore not able to capture OHCA data. This makes it difficult to understand the precise number of cases, bystander CPR rate and OHCA survival rates in England.

London is one of the EMS in England that has an OHCA register and the statistics for London have been able to assist in understanding the OHCA problem in England.

In 2012, bystander CPR rates in London were reported at 41 per cent⁹, and in 2015 this had increased to 63.1 per cent.¹⁰ In order to assist in improving early bystander CPR and defibrillation across England, strategies, policies, campaigns and initiatives have been implemented.

In 2012, the BHF launched its *Vinnie Jones Hard and Fast CPR* social media campaign to improve bystander CPR rates across Britain by raising awareness of hands only CPR. The campaign was developed and launched independent of a strategy. Sara Askew, Head of Survival at the BHF said “the campaign was a success as it reported to have saved 40 lives across Britain”.

In 2014, following the success of the Vinnie Jones CPR campaign, the BHF, Resuscitation Council (UK) and the NHS England produced an *OHCA consensus paper* that outlines the challenge England faces with OCHA.¹¹ In 2013, bystander CPR rates were reported to be 43 per cent and OHCA survival for EMS treated out of hospital cardiac arrest reported at 8.6 per cent.¹¹ The paper highlights that countries who implement interventions to strengthen the chain of survival are reported to have the highest rates of OHCA survival, and this is the approach the UK should adopt.

In response to the OHCA problem, the BHF developed a *We fight for every heartbeat 2020* strategy¹² with ambitions to lead the fight on cardiac arrest survival and create a nation of lifesavers in the UK.

The BHF also released a *Nation of Life Savers* policy statement¹³ that outlines the key national initiatives that will be implemented to achieve the goal of increasing cardiac arrest survival in the UK by 2020. This includes, the commitment of the EMS across England.

Scotland

In 2015, The Scottish Government released the *Out of Hospital Cardiac Arrest, A Strategy for Scotland*¹⁴ to improve the OHCA survival for Scotland.

With only 1 in 20 people surviving out OHCA in Scotland, the strategy aims to strengthen the chain of survival and implement new initiatives and make changes to current OHCA practices.

The strategy outlines the problem in Scotland and details the initiatives that will be developed and/or strengthened to achieve their goal.

The strategy is underpinned by the chain of survival and heavily focuses on a multi-agency approach to improving OCHA survival across the nation. The Minister for Public Health states ‘if we get this right, many more Scottish lives will be saved – perhaps 1,000 more by 2020’.¹⁴

Increasing Bystander CPR participation is key!

The way emergency medical systems operate across the world varies and therefore some of the initiatives may not be transferrable.

With research suggesting that early improving bystander participation in OHCA is vital for improving OHCA survival¹⁵ it is critical for systems to understand the reasons for low bystander CPR and implement local approaches to enable bystander involvement in OHCA.¹⁶ In Denmark, the increase in OHCA survival was significantly associated with an increase in bystander CPR.³

Study Tour Engagement

British Heart Foundation

Purpose of Engagement

Develop an understanding of the processes undertaken to develop, implement and monitor the success of a national CPR and AED strategy, *We Fight for Every Heart Beat 2020* and underlying policies and initiatives (i.e. *Call Push Rescue* program).

The purpose of this engagement was to:

- Investigate the ability of adopting a similar approach in Victoria and potentially Australia
- Understand program logistics for implementing a national CPR and AED education program.

Representatives

- Sara Askew, Head of Survival
- Sarah Forsey, Project Manager (Survival)

Discussion Points

- *We Fight for Every Heart Beat 2020 Strategy* (Survival Pillar)¹²
- *Nation of Lifesavers Policy*¹³
- Vinnie Jones CPR Campaign¹⁷
- *Heart Start program*¹⁸
- *Call Push Rescue program*¹⁹
- Relationship with EMS across UK
- OHCA specific projects (i.e. Feasibility study for national AED registry and revised AED sign design)
- Policy call (Compulsory CPR and AED education in schools)
- AEDs (Funding for community and research projects)²⁰



British Heart Foundation Analysis

Organisation overview

BHF is a well-known charity across the UK. It has strong links with the NHS and in turn, the government and ambulance service trusts. It is an influential organisation that advocates for change of policy.

BHF pushed for the development of a consensus for OHCA across UK and are currently advocating to government for compulsory CPR and AED education in schools.

The compulsory CPR in schools policy call was mentioned by stakeholders (including EMS and academics) throughout this study tour. They felt that once CPR and AED education was embedded into schools, there would be greater awareness of CPR and AEDs and OHCA survival would improve as a result.

Call Push Rescue

BHF has taken the lead in implementing a national CPR and AED program called *Call Push Rescue*, a program that is heavily utilised by EMS staff and volunteers, community groups and schools across the UK. *Call Push Rescue* adopts a peer education model, similar to AV's 4SFL+. It is the only CPR and AED self-education program used across the UK.

Call Push Rescue is the successor of a program called *Heart Start*, an established program that incorporates six elements of first aid, including CPR.

The BHF decided to resign *Heart Start* in an effort to focus of their core role of improving survival from OHCA by providing CPR and AED education. *Heart Start* is still active in communities through the UK, including London. The BHF aims to phase out the program.

In Scotland, *Call Push Rescue* is being utilised in schools using a peer education model where students teach students.

Call Push Rescue incorporates an inflatable resuscitation manikin and an instructional DVD along with other consumables to facilitate a CPR and AED education session (see Figure 3). The manikin is the same manikin used in the American Heart Association's CPR Now program.

BHF charges corporate entities for the *Call Push Rescue* program and in turn these funds assist in cost recovery and enable the BHF to educate community groups and schools in the lifesaving skills. This is a model that leverages off the corporate social responsibility of corporations.



Figure 3. *Call Push Rescue* program

The BHF manages the application, distribution and customer relations of the *Call Push Rescue* program, this includes processing orders from EMS so they can use the program to educate their community.

Call Push Rescue program gives the users an explanation about the 'choice' they have to provide conventional (compression and breath, ratio of 30:2) or compression only CPR. The program explains that conventional CPR gives people the best chance of survival, however if you are unable or unwilling, compression only is acceptable.

Call Push Rescue is a tool that teaches conventional CPR, whereas the Vinnie Jones campaign aimed to raise awareness of CPR and therefore compression only (hands only CPR) was adequate for use with a mass audience.

The BHF finds it challenging to monitor the community engagement activities of those who utilise the program. This is a similar challenge experience by AV's *4SFL+* program. There was understanding that this challenge could be rectified by the development of an online portal to enable program registration and reporting mechanisms for community members.

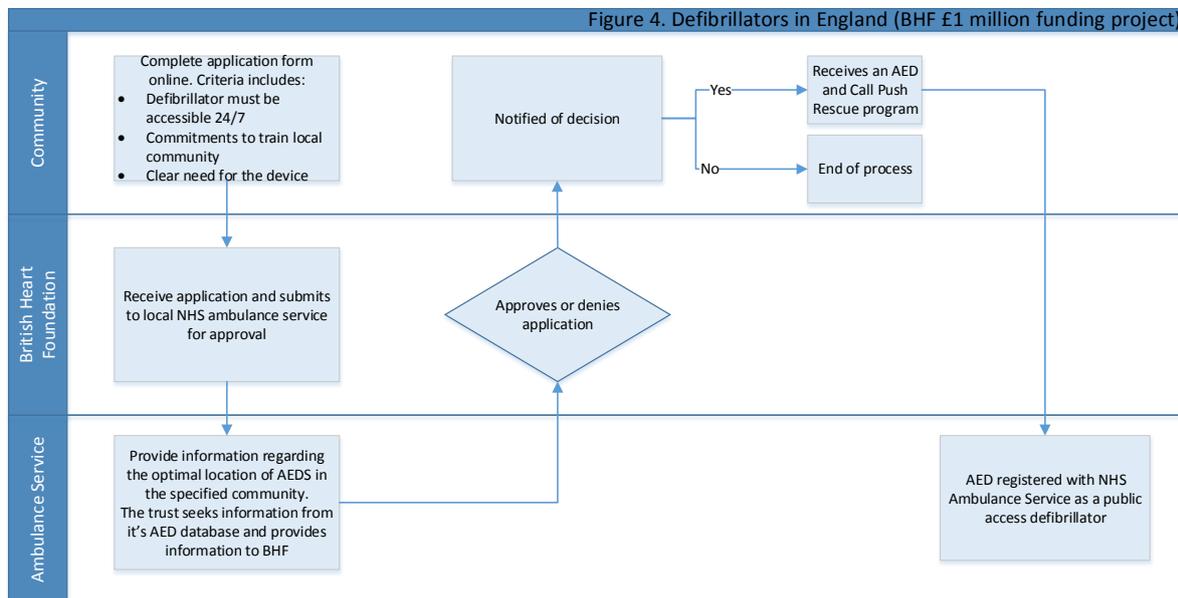
Relationship with Ambulance Services (EMS)

The BHF works in partnership with the all EMS across UK, however it is understood that the level of engagement varies. From observation, there seem to be strong partnerships between the BHF and the Scottish Ambulance Service (SAS), London Ambulance Service (LAS), Yorkshire Ambulance Service (YAS) and North West Ambulance service (NWAS).

The BHF assists EMS with funding, research and support for projects. Current projects include:

- National AED registry feasibility study (this involves engagement with all 14 UK EMS to understand the data available and the benefits of a national registry).
- Defibrillators in England, a £1 million scheme funded by the Department of Health to make defibrillators and CPR training more accessible for communities across (see Figure 4).
- *Map my defib* AED campaign²¹, a project in partnership with YAS that aims to find AEDs in the community and register them with YAS through a social media campaign.
- Piloting emergency medical response with fire services in Manchester and Scotland. This includes providing fire services with *Call Push Rescue* kits to educate to use with their community. The fire services are reported to have a low case load and therefore they can provide CPR education at their stations.

The discussion with the BHF suggested that the EMS play a vital role in educating their local communities, however the level and commitment varies depending on availability of EMS staff and community needs.



Key Observations

Strengths

- Multi-agency partnerships (clarity of roles, responsibilities and accountabilities)
- Research projects in collaboration with Ambulance Service Trusts
- Marketing campaigns
- Provide clear messaging of CPR and AED.

Challenges

- Communication between organisations
- No formal evaluation for Vinnie Jones Hard and Fast Campaign, only anecdotal evidence and digital media analytics
- Monitoring community participation and use of *Call Push Rescue* program
- Sustainability of BHF funded initiatives.

Opportunities for Victoria

- Consider establishing formal partnership with Heart Foundation regarding CPR and AED projects
- Consider implementing conventional CPR guidelines into all education programs and acknowledging that the bystander has the choice to provide conventional or compression only CPR
- Investigate options for accessing corporate social responsibility of organisations to fund community education
- Consider utilising an inflatable manikin resource to improve quality of face-to-face education sessions
- Consider a multi-agency approach to developing one consistent CPR and AED self-education program.

European Resuscitation Congress

Purpose of Engagement



Attend and participate in discussion at the European Resuscitation Councils (ERC) *Pathway to new guidelines - New science, new guidelines 2015* congress in Prague.

The International Liaison Committee of Resuscitation (ILCOR) released the revised consensus of resuscitation guidelines in October 2015. In order to understand the revised guidelines, and in preparation for the release of the Australian Resuscitation Council (ARC) guidelines in 2016, it was imperative to attend international discussions regarding the implementation of the guidelines into practice.

The particular focus was to understand best practice for community CPR and AED education and gain insight into how organisations throughout Europe are implementing campaigns, strategies and programs to improve early CPR and defibrillation and saving lives.

Representatives

- Delegates from European EMS, first aid, research and hospital organisations.



Discussion Points/Highlights

- BLS guidelines (differentiating between lay and trained bystanders)
- Science behind guidelines and process of guideline consensus
- OCHA registries
- Community CPR and AED campaigns
- Community first responder programs (connecting first responders to OCHA cases to improve early CPR and defibrillation)
- Training the next generation of lifesavers (children as lifesavers)
- Networking with Australian and international delegates
- Implementing guidelines into practice
- Innovative ways to improve bystander CPR and increase accessibility of AEDs.



Summary of findings

Best Practice Community CPR and AED Education

In determining what is classified as ‘best practice’, it should be noted that a common theme presented throughout the congress was that countries should focus their attention on training next generation of lifesavers, being children from 12 years of age. There was emphasis on the fact that CPR is a lifelong skill, Ian Maconochie from UK suggested “by teaching them the importance of CPR and helping others, we are teaching them how to be good citizens”.

There was a particular focus throughout the conference on changing attitudes of the public to increase willingness to participate in bystander CPR and defibrillation. Research suggests that the use of a target media campaign can increase willingness to use an AED and improves confidence to perform chest compressions.²²

A popular event that was referred to throughout the conference was the ERC’s *Restart a Heart Day*. This is an awareness raising event on 16 October every year that has been absorbed by many countries across Europe, including Germany.²³

There were several presentations on the use of community first responders to help reduce delay in CPR and defibrillation for OHCA patients. In the Netherlands, an alert system has been implemented to notify lay rescuers of OHCA incidence and where the nearest AED is.²⁴

New Guidelines

The process of developing a consensus for each guideline was explained and current innovations and research were presented.

In the presentation for the BLS guidelines, the following three key points were made:

1. There are three resuscitation teams, community response, advance life support and hospital. In the community response team (see Figure 5), the call taker is considered the leader and brings together the key ingredients (early bystander CPR and defibrillation) to improve survival of OHCA.²⁵

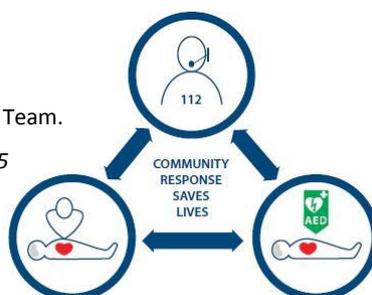


Figure 5. Community Response Team.

Perkins et al. Resuscitation 2015

2. When recognising a cardiac arrest the key observations are 'unresponsive' and 'not breathing normally'. It is the role of the community and call taker to recognise cardiac arrest using the mentioned observations so EMS can be dispatched early and early CPR and defibrillation can be achieved.
3. The guidelines for BLS CPR remain similar to 2010, however the following will enable more effective CPR;
 - Compressions at a rate of 100-120
 - Compression depth one third the depth of the chest
 - Compression and breath is recommended at a ratio of 30:2 for trained bystanders
 - Compression only CPR instructions are adequate for 'lay' or 'untrained' bystanders. The terms trained and untrained raised discussion with regards to education, training and awareness campaigns. The explanation of what key messages should be used in a mass campaign remained unclear.
 - For AEDs the key message is to attach it to the patient as soon as it arrives.

Key Observations

Strengths

- New guidelines are very clear and easy to understand and implement due to minimal change
- Confident the ARC guidelines that will be release in early 2016 will be similar to ERC guidelines
- Kids save lives and are the next generation of lifesavers, in particular focus on ages 12 and up
- AED dispatch applications/systems save lives, yet CPR is most important factor in saving lives.

Challenges

- Understanding what is considered trained and lay bystanders. Does trained mean they are accredited or can this be anyone educating prior to an OHCA scenario? Appropriate messaging for trained and lay bystanders (conventional vs compression only)
- OHCA registries are not common or consistent across the world and this makes research at a national and international level difficult.

Opportunities for AV

- Consider using compression only (hands only) CPR key messages in mass media campaigns and conventional CPR in all education programs
- Focus on educating the 'next generation' of lifesavers in a school setting
- Simplify current 4SFL+ program
- Implement mass media campaigns to change attitudes towards willingness to participate in resuscitation
- Consider implementing a strategy to improve OHCA survival
- Community First Responder programs throughout Victoria (utilising lay bystanders).

London Ambulance Service

Purpose of Engagement

This component of the study tour provided Ambulance Victoria with the opportunity to engage with the LAS to understand of how the BHF's *Nation of Lifesavers* policy has been implemented within their organisation.



The meeting with Chris Hartley-Sharpe provided understanding of:

- How LAS coordinate Community First Responders (CFRs) and *Heart Start* training programs, with a focus on the role LAS play in educating their community
- The partnership between LAS with BHF
- The logistics behind the LAS's AED accreditation program (*Shockingly Easy*) and how this could be adopted in Victoria
- The role of LAS play in providing advice relating to the purchase and placement of AEDs in the community.

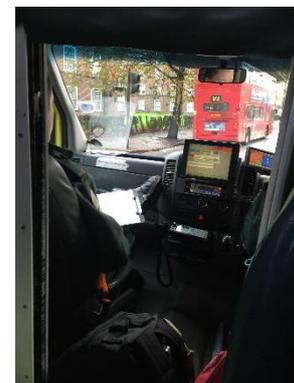
Representatives

- Chris Hartley-Sharpe, Head of First Responders, London Ambulance Service
- Waterloo Station, LAS Team.



Discussion Points

- *Heart Start* program
- Shockingly Easy Public Access Defibrillator (PAD) accreditation scheme²⁶
- AED registry
- CFR Program
- Role of LAS in community education
- Partnership between BHF and LAS
- Role LAS plays in executing initiatives within the *Nation of Lifesavers* policy from BHF
- Gain knowledge relating to the OHCA system of care and how the EMS systems operates in London.



Summary of Findings

Community Education and Responder Programs

The LAS's First Responder Department consists of five units:

- Community Resuscitation Training
- Volunteer Responders
- Co-responders
- Public Access Defibrillation Program
- Commercial Training Program

There is no dedicated community education unit and LAS does not provide formal school education. Schools generally engage with the *Call Push Rescue* or the former *Heart Start* program from the BHF.

An initiative that was launched in London in 2007 was *Saving London's Lives*²⁷ it was a collaboration between St John, BHF, LAS, St Georges Medical School and the NHS which aimed to train teachers to teach their students CPR. This program received funding from the NHS and once the funding was retired, St John took over the program.

LAS engage CFRs as part of a tiered response to certain medical emergencies across London. CFRs volunteer their time and obtain a level of accreditation in CPR and AED that enables them to qualify to respond.

LAS utilise CFRs to deliver free community education through the *Heart Start* program.

LAS maintains the accreditation process of CFRs and also provides them with training to be able to educate the community in the *Heart Start* program, which will become *Call Push Rescue* as the program is phased out. It should be noted that LAS are interested in developing their own version of *Heart Start* to ensure consistency of the program.

In order for CFRs to provide community education, they have to observe a *Heart Start* course and agree that they may be observed by another CFR at any time during the year.

As part of the reporting for the *Heart Start* courses, CFRs are required to report on who attended, they provide names of participants so that a BHF *Heart Start* certificate can be supplied. The *Heart Start* training is not an accredited course.

During an observation and engagement with participants of a *Heart Start* program at the London Town Hall, it was evident that the participants were mainly university students who require a certificate for their degrees.

Shockingly Easy and First Responders

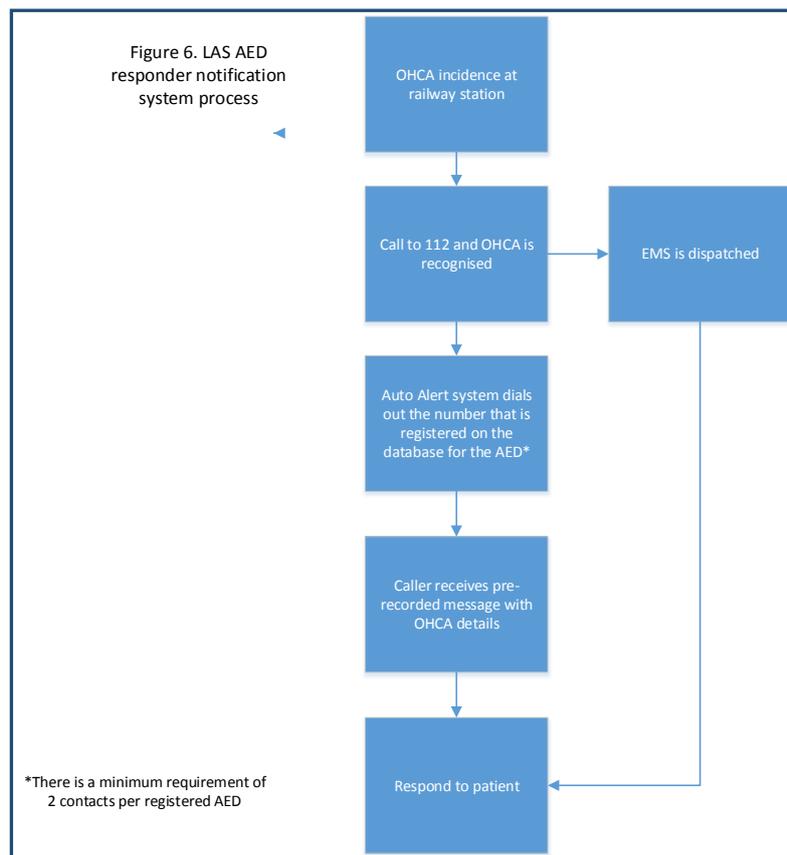
LAS have developed their own AED registry/database that is attached to the first responder application, GoodSam (only CFRs are registered on GoodSam), and linked to the computer aided dispatch system.

LAS have developed the *Shockingly Easy* AED accreditation scheme to improve the number of publically accessible defibrillators across London.

The scheme provides a LAS support to organisations in the implementation of their AEDs (i.e., placement, maintenance and signage) and in return the LAS register the AED to its AED registry.

The scheme places the responsibility on the AED owner to maintain the device and keep their accreditation. The LAS AED database sends automated reminders to check battery and consumables on the AED, however LAS are hoping to move away from being relied upon for this information.

As part of the accreditation process each AED is required to provide at least two contacts that agree to be notified of nearby OHCA or medical emergencies. This is conducted through a text message to the nominated phone numbers under the registration (see Figure 6).



In January 2016, LAS are starting a trial of emergency medical response with fire services. This will include four of the 32 boroughs in London and will result in approximately 4-6 people responding to an OHCA.

In late 2015, LAS commenced a six month trial with the Metropolitan Police stations in Croydon, Ealing and Enfield. Every response vehicle and station in these areas will have an AED. Once an OHCA call is received by 112, the computer aided dispatch system will notify the police and then the police prioritise their case load and respond if possible. All police officers receive AED training by LAS.

Key Observations

Strengths

- Use of community volunteers in the CFR program and *Heart Start* Education
- *Shockingly Easy* AED scheme
- AED registry and GoodSam app
- Pilot of police OHCA response
- Partnership with BHF.

Challenges

- Cessation of *Heart Start* Program with BHF
- Developing own CPR and AED education sessions
- Union resistance with EMR programs
- Maintaining AED database.

Opportunities for AV

- Investigate suitability of CFR model in Victoria, accessing all ESO staff and volunteers who are CPR and AED trained
- Adopt a community volunteer CPR and AED education model
- Investigate the suitability of GoodSam and the LAS AED registry for Victoria
- Police OHCA response capabilities.

Scotland Ambulance Service

Purpose of Engagement

This engagement provided an understanding of:

- The role of stakeholders within the *Out-of-Hospital Cardiac Arrest, A Strategy for Scotland 2015*¹⁴
- Current OHCA research projects
- Information regarding event management and collaboration with stakeholders to implement a national CPR and AED awareness event, *Restart a Heart Day*
- The role of the *Rapid Resuscitation Response Unit (3RU)*.



Representatives

- Paul Gowens, FC Paramedic, Scottish Ambulance Service and National Clinical Advisor, The Scottish Government
- Dave Bywater, Consultant Paramedic, Scottish Ambulance Service
- Dr Gareth Clegg, Resuscitation Research Group Lead and Clinical Support Lecturer and Hon Consultant in Emergency Medicine.

Discussion Points

- *Out-of-Hospital Cardiac Arrest, A Strategy for Scotland 2015*
- 3RU cardiac arrest response vehicles
- Ambulance Service/system of care for patients
- Resuscitation Research Group (RRG)
- *Save Lives Scotland* and *Restart a Heart Day* Edinburgh
- Stakeholder engagement (multi-agency approach to OHCA).



Summary of Findings

OHCA Strategy

The Scottish Government, Scottish Ambulance Service (SAS), The British Heart Foundation (BHF) and the Resuscitation Research Group (RRG) played a key role in the development of the *Out-of-hospital Cardiac Arrest, A Strategy for Scotland*.

Each organisation has a strong working relationship and understands the role they play in improving OHCA survival outcomes over the next five years. The objectives, actions and commitments of each organisation is clearly defined through the *Out-of-Hospital Cardiac Arrest, A Strategy for Scotland* report.¹⁴

The *Out-of-Hospital Cardiac Arrest, A Strategy for Scotland* focuses on implementing an augmented approach to the chain of survival (see Figure 7). This approach includes improving community readiness and willingness to help (i.e. saying *I'll do it*), as well as data collection and governance, and post resuscitation care (after care).

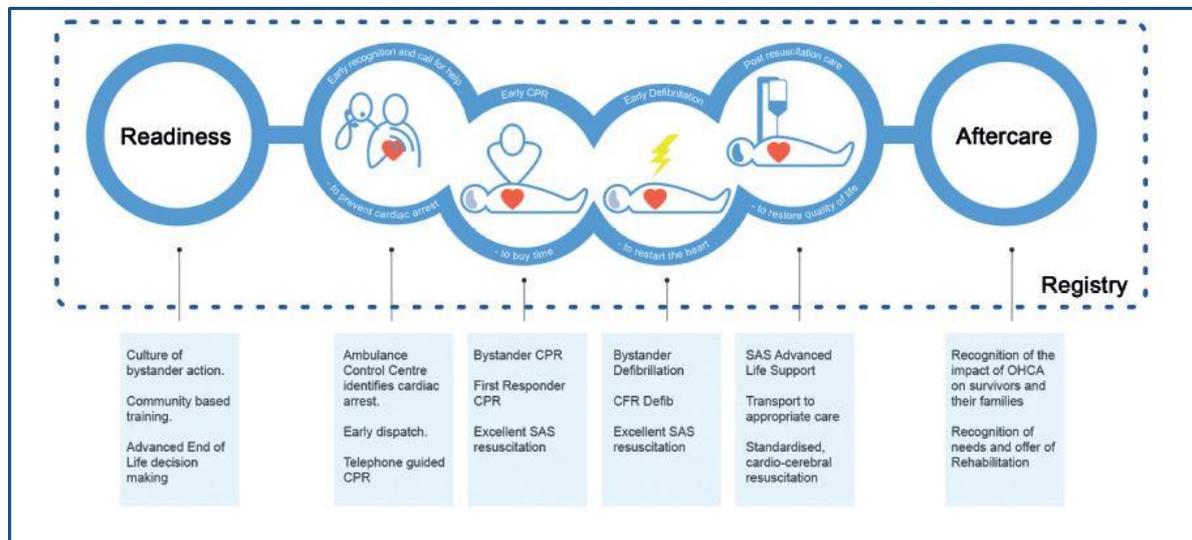


Figure 7. The augmented chain of survival¹⁴

The RRG is the academic influence in OHCA in Scotland. They also play a lead role, in partnership with the BHF to educate the community. The SAS focus on implementing clinical practices and appropriate emergency response to OHCA. This includes facilitating localised community first response models across Scotland to improve patient outcomes.

OHCA Research

A priority for Scotland is to establish an OHCA registry to collate more than ten years patient care records for OHCA. Once this is established, they will be able to monitor the effectiveness of initiatives implemented to improve patient outcomes.

To understand the current attitudes and behaviours of the Scottish population, the RRG recently completed a literature review followed by market research with 1200 Scots to understand the barriers and enablers to performing CPR. The findings have yet to be published as they are in the process of releasing the preliminary report and applying for funding to develop a social marketing campaign.

RRG is currently undertaking a study called *The First, First Responder*. This study aims to understand the experience of OHCA bystander responders, including the decision making process they go through in offering assistance and calling emergency services.²⁸ This study will help understand the impacts of first response on bystanders and will help inform improvements in the early links in the

chain of survival in Scotland. The RRG will gain consent from bystanders at scene to be followed up post the event.

OHCA SAS Response

Scotland has implemented 3RU vehicle. They are a second tiered response to OHCA. The key role of 3RU is to provide rapid response and leadership to OHCA cases. RRG are currently evaluating the impact of this tiered response to OHCA.

The *Out-of-Hospital Cardiac Arrest, A Strategy for Scotland* is committed to improving community resilience through supporting and strengthening community first responders across Scotland, with particular focus on hard to reach communities. They aim to achieve this through partnerships with other emergency service organisations to enhance community first responders and improving access of public access defibrillators.¹⁴

In order to improve the rate of bystander CPR, the SAS are committed to ensuring that the closest CPR trained responders are dispatched. SAS are looking into systems to assist with this, they have an interest in the system adopted in London.

Community Education

In the fight to save more lives in Scotland, the Scottish Government called for a multi-agency approach to saving lives. This saw the inception of the *Save a Life Scotland* initiative. This approach involves several key agencies across Scotland such as Zoll, The Scottish Government, Laedra, British Red Cross, Scottish Ambulance Service, Resuscitation Research Group and Chest, Heart and Stroke Scotland.

Save a Life Scotland initiative hosts several programs that aim to educate 500,000 Scots by 2020 to improve early CPR and defibrillation.²⁹ *Save a Life Scotland* was officially launched on 16 October 2015 the internationally recognised *Restart a Heart Day*. This was a campaign that involved social media and a public event that was held in Edinburgh. The campaign involved all key agencies coming together to provide a united front to save more lives. *Restart a Heart Day* will be an annual event for Scotland, as it is across Europe.

Gareth Clegg, RRG Lead, has played an integral role in implementing the *Save a Life Scotland* initiative to improve willingness and ability of Scots to participate in resuscitation for OHCA.

In Scotland, they are focusing on priming the community to be confident and 'able' to perform CPR. They believe that if the community are willing to perform CPR, then the call taker can support the quality of CPR. Gareth Clegg said "we want people to be performing CPR when paramedics arrive, the call taker and other education programs delivered by partners, can address the quality of CPR".

The *Save a Life Scotland* initiative focuses on getting members of the public to say “I’ll do it” when it comes to bystander resuscitation.

SAS and BHF are teaming up with the fire services to build the capacity of the fire services to deliver CPR education to the community. This involves the fire services opening their doors to the community for education sessions. This is a similar approach to London where they believe the fire service play a major role in educating the community, especially when they are co-responders for OHCA.

Key Observations

Strengths

- OHCA Strategy, commitment to improve OHCA survival
- Multi-agency partnerships approach to OHCA (i.e. *Restart a Heart Day*)
- Academic influence directly links to OHCA strategy
- RRG and SAS completing research and market research relating to ‘willingness’ of bystanders
- Fire Services offering free CPR and AED education.

Challenges

- No OHCA registry, limited data
- Challenging service area
- Limited evaluation of social media campaigns that have been implemented across UK.

Opportunities for AV

- Develop a multi-agency approach to CPR and AED awareness (i.e. *Restart a Heart Day*)
- Consider a rural approach to OHCA, volunteer and community engagement models
- Focus on understanding and targeting attitudes of community to improve bystander participation in resuscitation.

Yorkshire Ambulance Service

Purpose of Engagement

This engagement provided an understanding of:

- The role of Community Defibrillation Officer within YAS
- The partnership between YAS and BHF, including the Map My Defib program
- *Restart a Heart Day* campaign and events across Yorkshire



Representatives

- Emma Scott, Community Defibrillation Officer
- Mark Millins, Associate Director of Paramedic Practice
- Paul Stevens, Head of Community Resilience
- Jason Carlyon, Resuscitation Manager

Discussion Points

- YAS Resuscitation Plan
- Community Resilience Team, including the role of Community Defibrillation Officer
- CFRs
- Public Access Defibrillators in Yorkshire, including *Map my Defib* pilot with BHF
- *Restart a Heart Day*
- Partnership with BHF
- Community Education



Summary of Findings

Resuscitation Plan 2015-2020

The YAS *Resuscitation Plan 2015-2020*³⁰ is underpinned by the chain of survival. The plan outlines the priorities and actions that YAS will implement in order to improve OHCA outcomes.

In 2013/2014, YAS reported a 9.6 per cent survival rate from EMS treated OHCA. YAS has committed to improving OHCA survival rates by 10 per cent in the next five years.³⁰ The key actions they will complete to achieve their objectives are:

- Improve bystander CPR rates from 43 per cent to 60 per cent
- YAS will work with partner organisations (i.e. other emergency services and charities) to educate 1,000,000 people in basic life support

- Increase public access defibrillators and sites by 10 per cent annually
- Increase the number of CFRs by over eight percent annually
- Explore alternate strategies to increase involvement of other agencies in co-responder models
- Improve quality of paramedic administered CPR
- Implement a regional Red Arrest Team (RAT) leader model to provide leadership at OHCA scenes, including roll out of automated CPR devices

Community Resilience Department

The Community Resilience Department at YAS is responsible for all services that are not part of the ‘frontline’ ambulance service. For instance, they manage the training and implementation of CFRs and partner agencies such as coast guards, mountain rescue, fires services and military. They also manage the PAD program and community education.

Within the Community Resilience Department there are several Community Defibrillation Officers (CDOs). The CDOs focus on building the resilience of allocated communities across Yorkshire through implementing localised community first response models. They coordinate the recruitment, training and retention of CFRs as well as offer advice and support to community regarding PADs. CDOs are not required to be operational staff (i.e. paramedics).

Community First Responders

CFRs provide lifesaving treatment to residents across YAS. They are trained to provide first response in the first critical minutes prior to ambulance arrival. CFRs are equipped with CPR, defibrillation and oxygen administration training and carry an AED.

CFRs are members of the community who volunteer their time to provide time critical first aid. They respond in their own vehicles.

CFRs are manually allocated to certain medical emergencies by a dispatcher in the EMS call centre. Once allocated, the CFR receives a text message with the case details and the CFR replies to the text message to confirm or deny their attendance.

There is a dedicated dispatcher for ‘community resources’ within the EMS call centre.

Restart a Heart Day

YAS coordinates the annual *Restart a Heart Day* in Yorkshire. The CPR and AED awareness day is conducted across Europe and aims to create an international awareness through social media and face-to-face CPR and AED education.

In 2015 YAS engaged the BHF to utilise the *Call Push Rescue* program, under the BHF's *Nation of Life Savers policy*, to run a successful *Restart a Heart Day* campaign.³¹ The day saw more than 20,000 children from 89 secondary schools across Yorkshire educated in CPR and using an AED.

The 2015 *Restart a Heart Day* involved multiple stakeholders including 400 YAS staff, 60 St John volunteers, teachers and staff at local hospitals.

The planning for the event on 16 October 2015 began in January and involved the development of a thorough communications plan. The communication plan included contacting all secondary schools across Yorkshire, media releases, social media and a website to host the campaign. Media monitoring of the event reported 164 media mentions. This was a significant improvement from the previous year with media mentions increasing by 120 and website views tripled.

The campaign was led by Jason Carlyon, Resuscitation Manager who was the single point of contact. Jason received an overwhelming response from schools. The *Call Push Rescue* kits that were provided by BHF only provided enough resources for 35 students per session. YAS and the registered schools wanted more students educated, so YAS collated utilising manikins from schools who has spare manikins from the previous year.

During the registration process, schools were asked if they had an AED on the premise, this assisted YAS to follow up to see if the AED was registered and also provided YAS the opportunity to educate the school about the importance of having an AED on site.

Jason attributes the success of the event to the dedication and support from all of the helpers and volunteers from YAS, St John, fire services, schools and hospital. Jason hosted pre event briefings to ensure everyone knew what to expect and clearly understood what the event entailed.

Post event feedback was received from 79 of the 89 schools, with all reporting they would recommend the event for 2016.

[Map My Defib and AED Registry](#)

BHF funded the pilot of a *Map My Defib* campaign in YAS with the aim to put community defibrillators on a map and inform the BHF's *National PAD Database Feasibility Study*. The findings from this study are yet to be published. The campaign involved the use of a marketing company who engaged social media and direct mail to target members of the public and organisations within Yorkshire.

Emma Scott, CDO, reported there was an increase of 415 AEDs registered on their database as a result of the campaign, with a few duplications. YAS was satisfied with the results as this raised their total number of AEDs on their computer aided dispatch systems to 2,631.

The campaign also resulted in numerous enquiries from the community regarding the purchase of AEDs.

In response to community AED enquiries, YAS is able to provide the community with information on two preferred AEDs, this is not the case in Victoria.

YAS has an agreement with two AED companies that are inoperable with the AEDs used by YAS operationally. The AED companies provide a large discount to community members who purchase an AED through YAS.

Key Observations

Strengths

- Involvement of YAS staff and volunteers in *Restart a Heart Day*
- *Restart a Heart Day* reach
- Involvement of other ESO and first aid organisations in achieving a common goal
- Local models to improve regional response
- Community response to AED enquiries (including agreement with AED companies who provide quality service to community).

Challenges

- Manual allocation of CFRs to emergencies
- CFRs are registered to a fixed address
- No dedicated community education team to facilitate broader YAS community education.

Opportunities for AV

- Consider implementing *Restart a Herat Day* as an annual event to generate CPR and AED awareness. This doesn't have to be limited to schools
- Investigate suitability of CFR model in Victoria, accessing all ESO staff and volunteers who are CPR and AED trained
- Consider the development of partnerships with AED companies to provide consistent service to community
- Consider implementing a social media campaign and partnering with key agencies (i.e Heart Foundation), to increase number of public accessible AEDs on *Register my AED* registry.

North West Ambulance Service

Purpose of Engagement

The aim of this engagement was to:

- Understand the role of the Chain of Survival Strategy Coordinator
- Understand the level community education and community engagement that NWS provided that focused specifically on early CPR and defibrillation
- Investigate their community first responder model.

Representatives

- Sara Harris, Chain of Survival Coordinator
- Andrew Redgrave, Community Engagement Manager
- Chain of Survival Team

Discussion Points

- Community Engagement Department structure and scope (including the role of Chain of Survival Coordinators)
- *Shocktober* (find the defib project)
- *Cardiac Smart*

Summary of Findings

Community Engagement Division

NWS is the second largest ambulance service in England. It services more than seven million people across five different counties.³² Within each county is a Chain of Survival Coordinator (COSC) that sits within the Community Engagement Division of NWS. The COSC are part of a team that facilitate the strategic placement of defibrillations across NWS and they work in partnership with key stakeholders in their local area (including charities, members of the public, health services and AED suppliers). The aim is to link key stakeholders together in implementing a holistic community approach to improving OHCA patient outcomes.

Each COSC oversees the community and partnership engagement, CPR education, community public access defibrillators (CPAD), training events and fundraising within their county. The implementation of COSC within NWS has seen localised strategies implemented to respond to the need of the community. Each county in NWS has its own challenges and one 'model' of community engagement does not fit all. In the county of Cumbria, there are particular response time challenges due to geography of the region, therefore, in this county there is a strong presence of community



North West Ambulance Service



charities and volunteer. In this county the NWAS is committed to improving the awareness, access and availability of CPADs.

The visit to NWAS was hosted by Sara Harris, the COSC for the Greater Manchester Area. Sara is a paramedic and her COSC role was originally funded by the BHF as an initiative to improve OHCA survival across England. The funding for this initiative ceased and the NWAS decided to fund the role on a permanent basis. Sara's main focus is to improve the ability of her community to action the chain of survival, with particular focus on building the knowledge and confidence of members of the public to perform CPR and use an AED. Sara is passionate about educating school aged children.

Each COSC believes the benefit of their role is the ability to work in partnership with their local community, agencies and volunteers to develop strategies that address the needs of the community. The COSC conduct regular community engagement sessions with round table discussions within the local community to identify any issues or opportunities.

Cardiac Smart

Cardiac Smart is an initiative run by the Chain of Survival team within the Community Engagement Department at NWAS. *Cardiac Smart* aims to improve the community's capability to respond to OHCA by increasing the number of AEDs and the community's capacity to perform CPR and use an AED.³³ *Cardiac Smart* encourages the community to take ownership to improve OHCA survival in their community. It recognises workplaces, schools and organisations for their efforts through the *Cardiac Smart* awards. *Cardiac Smart* also presents 'lifesaver' awards to members of the public who deserve to be commended for their lifesaving actions.

Cardiac Smart hosts a website and social media channels that provide information regarding local community projects and events and provides information regarding how to learn CPR and use an AED. *Cardiac Smart* offers free *Heart Start* training sessions to community groups and they can contact the *Cardiac Smart* team to register their interest.

AED campaign

In 2015, NWAS took part in a social media challenge '*Shocktober*'. The campaign aimed to find unregistered defibrillators through the use of 'selfies'. The campaign engaged members of the public to post a picture on social media of their AED along with the location. The Greater Manchester Fire and Rescue Service supported NWAS in this campaign.³⁴ Similar to the Yorkshire Ambulance Service, this campaign was funded by BHF as part of the *National PAD Registry Feasibility Study*. Sara Harris reported that the campaign assisted in registering an additional 200 AEDs.

Community First Responders

The Community Engagement Division at NWS also oversees the recruitment and training of CFRs. The CFRs in NWS are volunteers who donate their time to respond to medical emergencies in their community. CFRs provide support to NWS paramedics and only respond to cases that fit within their scope (i.e. no trauma cases or infant cases). Similar to YAS, CFRs are allocated to appropriate cases manually by a Community Resources Dispatcher in the call centre. CFRs in NWS have a response area and are notified through a pager.

NWS is very proactive with recruitment and retention of CFRs. They have a website promoting CFRs and the recruitment process and they have strong links to the community through the COSCs.³⁵

Partnership with British Heart Foundation

NWS has a strong working relationship with the BHF. As previously mentioned, the BHF initially funded the COSC roles throughout the ambulance service.

NWS fulfils their role under the BHF's *Nation of Lifesaver* policy by advocating for compulsory CPR education in schools and utilises the *Heart Start* and *Call Push Rescue* programs within their community education. While NWS encourages the community to utilise the BHF's *Call Push Rescue* program, they believe there is more benefit in providing their own face-to-face education to the community and therefore they continue to provide the BHF's *Heart Start* program to the community free of charge and on request.

Key Observations

Strengths

- Chain of Survival Coordinators (localised holistic approach to OHCA survival)
- Community First Responder program
- Partnership with BHF and other key agencies
- *Cardiac Smart* initiative.

Challenges

- Cessation of *Heart Start* Program with BHF
- Developing their own CPR and AED education sessions to replace *Heart Smart* program
- No dedicated community education department or team, therefore all community requests are absorbed into already existing roles and the NWS feel this is too reactive.

Opportunities for AV

- Investigate suitability of COSC model in Victoria
- Social media campaign to locate unregistered AEDs.

Conclusion

In concluding, this study tour provided a comprehensive understanding of the community education and engagement practices that are being implemented across the UK in order to improve OHCA.

It was made evident that the British Heart Foundation play a vital role in leading and facilitating national programs to improve survival outcomes from OHCA. The *Nation of Lifesaver* policy has been a common thread through each of the ambulance services, with each service providing a tailored education and engagement model within their community that involves the use of BHF's resources and programs.

The working relationships with between the BHF and the ambulance services across the UK are two way, whereby the BHF supports resources and funding and the ambulance services provide advice and data to assist the BHF in its projects.

The *Call Push Rescue* program and the *Heart Start* program have been utilised across the four ambulance services visited during this study tour, with each service using the program in their own way.

The ambulance services all acknowledge they play a role in educating and engaging the community to contribute to improving OHCA survival outcomes. However each ambulance service has their own unique way of achieving this, in fact, regions or counties within each ambulance service implemented their unique targeted strategies.

Within the UK there was one strong element to the strategies that ambulance services implemented within the community, they all involved a partner or multi-agency approach. Whereby, the ambulance service linked the community together to improve response to medical emergencies, in particular OHCA. This may be through CPR and AED partner agency events (i.e *Restart a Heart Day* in Edinburgh), Community First Responder programs, emergency medical response programs (fire services and police) and/or the use of volunteers to deliver CPR and AED education (*Call Push Rescue* and *Heart Start*).

The findings from this study tour highlight the strengths of implementing a use of a state-wide or national consensus for OHCA. Through the tour each agency acknowledged at least one of the key initiatives under the *Nation of Life Saver* policy and they all had responsibility to contribute to the policies goal of saving more lives.

This study tour indicated that ambulance services should work in partnership with key agencies to implement localised CPR and AED education and engagement strategies and that not one size will fit all.

The study tour also highlighted the importance for Victoria to adopt an approach that brings together all of the current initiatives and programs that contribute to improving OHCA and therefore the following recommendations should be considered in order to strengthen the chain of survival in Victoria and continue to improve patient outcomes for OHCA.

Recommendations

1. Implement a community framework that builds the capacity of a community to provide early CPR and defibrillation in their community. The framework should incorporate the following:

- Identifies and involves key stakeholders that can work together to save lives from OHCA
- A state-wide consensus to OHCA (including outlining key CPR and AED education messages). This partners Ambulance Victoria, National Heart Foundation, Australian Resuscitation Council and other emergency services.
- A selection of programs, initiatives and response models that can contribute to improving OHCA in communities
- A system where communities create a committee and coordinate their own community engagement and implementation of OHCA programs to build their safety rating.
- Builds on those in the community who are willing and able action the chain of survival
- Optimises the use of 'champions' and leaders in communities to take ownership (e.g. 4SFL+ Champions, AV CERTS, ACOs, paramedics, doctors, survivors, remote area nurses, Paramedic Community Support Coordinators)
- Gives communities the 'choice' to implement initiatives to suit their needs. It is a community led initiative facilitated and supported by a multi-agency approach.

NOTE: Ambulance Victoria's role in implementing such a framework would be to assist in:

- Facilitating the governing committee
- The 'accreditation' of communities (determining the criteria for communities)
- Facilitating community education relating to cardiac arrest, CPR and AEDs
- Providing communities with advice relating to purchase and registration of AEDs
- The implementation of first responders in targeted 'at risk' areas.

2. Implement a multi-agency state-wide CPR and AED awareness day *Restart a Heart Day* on 16 October 2016 to generate an international partnership to improving OHCA outcomes.

List of Abbreviations

4SFL	4 Steps for Life
4SFL+	4 Steps for Life Plus
ARC	Australian Resuscitation Council
AV	Ambulance Victoria
BHF	British Heart Foundation
BLS	Basic Life Support
CDO	Community Defibrillation Officer
CERT	Community Emergency Response Team
CFA	Country Fire Authority
CFR	Community First Responder
CPAD	Community Public Access Defibrillator
EMR	Emergency Medical Response
EMS	Emergency Medical Service
ESO	Emergency Service Organisation
LAS	London Ambulance Service
MFB	Metropolitan Fire Brigade
NHS	National Health Service
NWAS	North West Ambulance Service
PABLS	Pre Ambulance Basic Life Support
PAD	Public Accessible Defibrillator
RAT	Red Arrest Team
RRG	Resuscitation Research Group
SAS	Scottish Ambulance Service
SES	State Emergency Service
T-CPR	Telephone Cardiopulmonary Resuscitation
VACAR	Victorian Ambulance Cardiac Arrest Register
YAS	Yorkshire Ambulance Service
3RU	Rapid Resuscitation Response

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