

Review of Defibrillators

Adult Social Care and Health Select Committee



Final Report

October 2017

Adult Social Care and Health Select Committee
Stockton-on-Tees Borough Council
Municipal Buildings
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Acknowledgements

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With thanks to all those schools, colleges, parish and town councils, and town/shopping centres that provided information to the review.

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Foreword

We are pleased to introduce our first report as Chair and Vice-Chair of this Select Committee.

The Committee has taken an in-depth look at the role of publicly accessible defibrillators in treating cardiac arrest. Survival rates for out of hospital cardiac arrest are currently very poor but other countries have shown it is possible to improve these.

Although recognising that cardiac arrest is always a serious medical emergency, we are proposing a community-wide approach including a number of steps that can be taken with the aim of improving survival rates and long term outcomes. Everyone has a potential role to play in this work. Our approach includes:

- considering what more can be done to promote healthy living messages to help prevent heart disease and potential subsequent cardiac arrest where possible;
- promotion of awareness, first aid and public confidence in taking action when dealing with a cardiac arrest;
- improving the coverage of accessible defibrillators in the Borough.

We feel that this is a proportionate approach with the potential to save lives.

We would like to thank all those who contributed to the report and commend the Committee's report to Cabinet.

Councillor Lisa Grainge
Chair

Councillor Lauriane Povey
Vice Chair

Original Brief

Which of our strategic corporate objectives does this topic address?

The Council Plan 2017-20 contains the following objective: - Address ill health prevention

The review is in line with the following Policy Principle: - Developing strong and healthy communities

What are the main issues and overall aim of this review?

Approximately 80% of out-of-hospital cardiac arrests (OHCAs) occur in the home and only 20% in public places. Emergency services in England respond to around 60,000 OHCAs per year with resuscitation attempted in around 28,000 cases. The average overall survival to hospital discharge in those with attempted resuscitation is 8.6% - therefore it is clear to see that OHCA is a very serious event with generally poor outcomes.

The introduction and use of community-located Defibrillators (or Automated External Defibrillators – AEDs) has been seen as a response to the need to improve care for people undergoing cardiac arrest. Used in conjunction with Cardio-Pulmonary Resuscitation (CPR), AEDs can enable early intervention by members of the public/on-site staff prior to the arrival of medically trained personnel.

Some defibrillators are available in Stockton Borough but are not necessarily accessible 24 hours. It is understood that some static devices are available at Tees Active sites and some schools. Community-based AEDs are often provided for by charitable organisations or financed through fund-raising or donation on an individual basis.

The review will investigate the evidence for AED, their availability, accessibility and utilisation in Stockton Borough and make recommendations on improving the response to OHCA.

The Committee will undertake the following key lines of enquiry:

- What is the background to the use of AEDs, and the treatment of cardiac arrest?
- What is the evidence in support of the use of AEDs?
- What is the evidence in relation to the reasons behind the higher rates of survival from cardiac arrest in some areas identified in international research?
- What are the views and linkages to the emergency services and local health services?
- What is the evidence in relation to the prevalence of related medical conditions and incidence of resuscitation/AED use in the local area?
- What are the views of the local population on AED?
- Where are AEDs currently located in Stockton Borough? How accessible are they? How often have they been used?
- Which organisations have sourced, funded and maintained existing AEDs? Has there been training with staff (e.g. schools, leisure centres etc) on how to use AEDs?
- How are the locations of current AEDs publicised? / How would future publicity take place?
- What are the maintenance requirements and responsibilities for AEDs?

Executive Summary

- 1.1 This report presents the outcomes of the Adult Social Care and Health Select Committee's review of Defibrillators.
- 1.2 Automated external defibrillators (AEDs) are available in many public, community and private places around the country, and are designed to be used by people with no medical training. They can play a key role in improving survival rates for cardiac arrest.

'A cardiac arrest happens when your heart stops pumping blood around your body. If someone has suddenly collapsed, is not breathing normally and is unresponsive, they are in cardiac arrest. There is no time to lose. Even if you are untrained your actions can help. (British Heart Foundation).
- 1.3 The aim of the review was to:
 - to consider the role of defibrillators in treating Out of Hospital Cardiac Arrest (OHCA);
 - to review their availability, accessibility and utilisation in Stockton-on-Tees;
 - to make recommendations to improving the response to OHCA in the Borough.
- 1.4 The review recognised that wider health improvement initiatives are required to improve the rates of cardiovascular disease and to prevent cardiac arrest from occurring wherever possible in the first place.
- 1.5 Out of Hospital Cardiac Arrest is a serious incident and even with the best treatment outcomes can be poor. However effective and more consistent application of the steps in the 'chain of survival' have been demonstrated to improve survival rates.
- 1.6 Defibrillators are a key link in this chain, and steps have been taken to improve coverage across the region in recent years. A number of AEDs/publicly accessible AEDs (or cPADs) are now in place across the Borough, with the potential for this number to grow. There are however some gaps, for example Stockton Town Centre, and Committee considers that the Council would be in a position to help address these.
- 1.7 Although widespread placement of cPADs may not be suitable or cost effective, there may be a case for a targeted approach to build on the assets already in place, in order to provide a significant benefit to a small number of individuals over time.
- 1.8 Should any further steps be taken to increase the number of AEDs/cPADs in the Borough, consideration would need to be given to factors including how busy any given location is and the nature of the activities there, the need for training and maintenance of devices, and the accessibility of any device.
- 1.9 It is important to remember that the 2014 Consensus Paper on Cardiac Arrest (British Heart Foundation, NHS England, Resuscitation Council) stresses that access to AEDs is one part of the solution. It is also crucial to increase public awareness of:
 - cardiac arrest

- how to recognise it
 - the need to call 999 immediately
 - the need to start CPR immediately
 - the fact that AEDs can be safely used by anyone.
- 1.10 In conjunction with encouraging the expansion of AED provision, the Committee would therefore emphasise the need to improve levels of first aid training in the Borough, and tackle myths surrounding the use of defibrillators and overcome any reluctance to provide first aid. As part of this work, the Committee would recommend that Stockton News could be a key method of raising awareness.
- 1.11 The Committee recommends that the Council:
1. **reviews and where necessary enhances, promotional activity in relation to prevention of heart disease;**
 2. **considers opportunities:**
 - a) **to increase public awareness of the importance of first aid for cardiac arrest, and increase public confidence in the use of CPR and defibrillators;**
 - b) **to promote increased participation on formal first aid courses within the local community;**
 - c) **to promote and support the role of Community First Responder;**
 3. **should strongly encourage all schools and colleges to give consideration to including first aid training (including CPR and use of an AED) for all students at an appropriate point in the curriculum;**
 4. a) **should, taking into account existing provision, funding opportunities, and good practice as outlined in this review report, install/assist the installation of publicly accessible defibrillators where significant gaps in provision exist.**
 - b) **ensures that first aid training opportunities are integral to this programme;**
 5. **encourages existing holders of static AEDs to consider how they can be made more accessible to the general public, including conversion to a publicly accessible defibrillator ('cPAD'), in conjunction with North East Ambulance Service;**
 6. **encourages existing holders of static AEDs across the Borough to make sure their locations are registered with North East Ambulance Service.**

Introduction

2.1 This report presents the outcomes of the Adult Social Care and Health Select Committee's review of Defibrillators. This took place during municipal year 2017-18.

2.2 Automated external defibrillators (AEDs) are available in many public, community and private places around the country, and are designed to be used by people with no medical training. They can play a key role in improving survival rates for cardiac arrest.

‘A cardiac arrest happens when your heart stops pumping blood around your body. If someone has suddenly collapsed, is not breathing normally and is unresponsive, they are in cardiac arrest. There is no time to lose. Even if you are untrained your actions can help. (British Heart Foundation).

2.3 The aim of the review was to:

- to consider the role of defibrillators in treating Out of Hospital Cardiac Arrest (OHCA);
- to review their availability, accessibility and utilisation in Stockton-on-Tees;
- to make recommendations to improving the response to OHCA in the Borough.

2.4 During its review the Committee held a number of meetings to gather information from North Tees and Hartlepool NHS Foundation Trust, North East Ambulance Service, Tees Active Limited, Cleveland Fire Brigade, and the Council's Public Health team.

2.5 All schools, colleges, and parish and town councils were surveyed to inform the Committee's work, and views were sought from town and shopping centre management. Hartlepool and Middlesrough Councils provided information on work undertaken in their areas.

2.6 A key finding of the review is the importance of recognising cardiac arrest and then acting fast. The British Heart Foundation hosts first aid information and a training video on the following page:

<https://www.bhf.org.uk/heart-health/how-to-save-a-life/how-to-do-cpr>

The following video from the St John Ambulance charity demonstrates the use of an automated external defibrillator:

<https://www.youtube.com/watch?v=UFvL7wTFzI0>

2.7 We would urge everyone reading this report to visit these websites to become familiar with first aid and use of a defibrillator when dealing with a cardiac arrest.

Background

- 3.1 Approximately 80% of out-of-hospital cardiac arrests (OHCAs) occur in the home and 20% in public places. Emergency services in England respond to around 60,000 OHCAs per year with resuscitation attempted by them in around 28,000 cases. The average overall survival to hospital discharge in those with attempted resuscitation is 8.6%. It is clear to see that OHCA is a very serious event with generally poor outcomes.
- 3.2 Cardiac arrest predominantly affects middle aged and older people, but some younger people including athletes up to the elite level suffer cardiac arrest/sudden cardiac death. There is often no recognised trigger for individual cases, but it often occurs during exertion.
- 3.3 The most common cause of a cardiac arrest is a life threatening abnormal heart rhythm called ventricular fibrillation (VF). Ventricular fibrillation happens when the electrical activity of the heart is interrupted or inefficient causing the heart to stop pumping properly.
- 3.4 There are various causes of VF, mostly related to problems with the heart. Patients with pre-existing heart disease are therefore most likely to experience sudden cardiac arrest. Heart attacks are not the same as cardiac arrest but can lead to them if untreated. Heart attacks occur when a blood vessel supplying the heart becomes blocked, and the patient is usually still conscious.

Heart-related causes of VF	Other causes of VF
Coronary heart disease	Lack of oxygen
Heart attack	Electrocution
Cardiomyopathy	Cocaine
Congenital heart disease	Significant blood loss
Heart valve disease	
Acute Myocarditis (inflammation of the heart muscle)	
Arrhythmias	

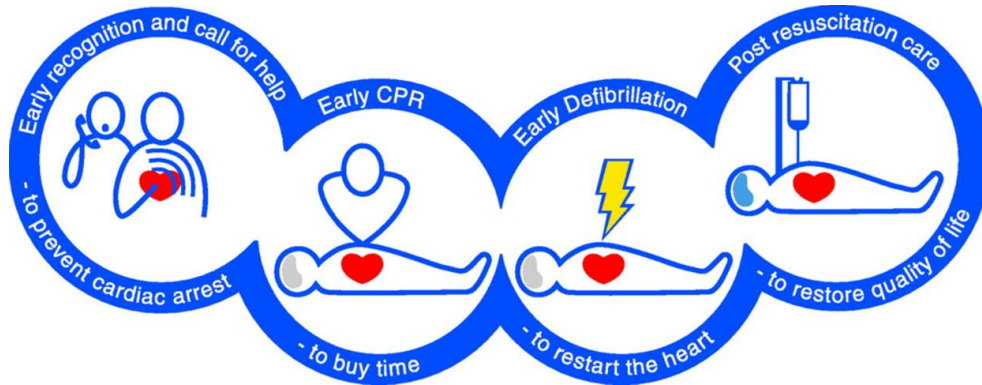
- 3.5 Cardiovascular disease is caused by a combination of risk factors and conditions, as follows:

Non modifiable risk factors	Modifiable risk factors	Conditions
Increasing age	Smoking	Diabetes
Gender - male	Overweight and obesity	High blood pressure
Family history of CVD	Diet	High blood cholesterol
Ethnicity	Physical activity	

- 3.6 Using national data, it would be expected that 200 out-of hospital cardiac arrests will occur each year in Stockton Borough, and attempts would be made to provide resuscitation in 92 cases (46%). Of the total number of 200, 40 (20%) occur in a public place. Overall, only 17 people (8.6%) would currently be expected to survive.
- 3.7 Research suggests that the survival rate is lower than what has been achieved in other well-developed countries. Studies have identified survival rates of 20% in Seattle, 21% in the North Holland region, and 25% in Norway. An important factor in these studies was the higher level of Cardio-Pulmonary Resuscitation (CPR) training in the populations covered.
- 3.8 The British Heart Foundation states that in Norway all school pupils are taught CPR, and if the Norwegian survival rate could be achieved in the United Kingdom, this would equate to almost 5000 more lives saved every year.
- 3.9 CPR 'buys time' by helping to pump blood around the body and the brain, before an emergency medical response reaches the scene, or the patient shows signs of regaining consciousness.
- 3.10 Early use of a defibrillator before emergency services arrive, in conjunction with CPR can further improve the chances of survival. Defibrillators work by providing an electric shock to restore the normal rhythm of the heart.

Findings

- 4.1 It is critical to recognise that both CPR and early use of a defibrillator are part of a recognised 'chain of survival' when responding to cardiac arrest:



- 4.2 Countries with the most improved survival rates for cardiac arrest have made attempts to strengthen all four links in this chain.
- 4.3 Every minute without defibrillation reduces chances of survival by 7 to 10%. NEAS noted that quality CPR and use of an AED significantly increases the chance of patient survival in cardiac arrest. CPR followed by defibrillation within 3 to 5 minutes is associated with improved outcomes. It is important to note that an ambulance, unless very close by, is unlikely to attend any incident within this timescale and so first aid prior to emergency service arrival is vital.
- 4.4 Use of a defibrillator does not guarantee survival. A cardiac arrest may be caused by a heart attack, for example, and survival will also be dependent on how responsive the patient is to treatment for the heart attack. A person's underlying health and wellbeing is also an important factor affecting their short to long term outcomes.
- 4.5 For those who survive cardiac arrest, there will be a variety of outcomes, and the longer a person is in cardiac arrest, the higher the risk of damage to the body, and the greater chance they will have long term care needs.

Ambulance Response

- 4.6 During the period of the review, NHS England announced the introduction of new ambulance response time targets. This followed concerns that the previous standards introduced from 1974 led to target driven responses aimed at 'stopping the clock' and led to the inefficient use of ambulances. Issues included dispatch of resources before the precise nature of a call was identified, the need to improve the type of vehicle sent to particular incidents by focussing more on clinical need, and the need to reduce the number of long waits for some lower priority calls.

- 4.7 Following the adoption of the Ambulance Response Programme (as part of the NHS Five Year Forward View Delivery Plan), there is now a greater focus on a more clinically focussed response using the full range of treatment options, better use of resources, and workforce development.
- 4.8 A key factor is giving call handlers more time to assess 999 calls that are not life threatening to enable them to provide a more appropriate response, at the same time as adding key questions to the beginning of a call to more quickly identify life threatening conditions, particularly cardiac arrest, to ensure they receive the fastest responses.
- 4.9 The new standards have undergone large scale testing and trials by three ambulance services, and an independent analysis. The independent analysis found that overall giving call handlers more time to assess a call works well, the most urgent emergency calls did not receive a slower response when call handlers were given this extra time, no patients came to harm, and services became more resilient. There was staff support for the changes, and it was also noted that patients in rural areas received a response more like urban areas.
- 4.10 Under the new standards, the target response time to life-threatening incidents is an average of 7 minutes in all cases (previously it was 8 minutes in 75% of cases, and 19 minutes in 95%), and a summary of the detail is as follows:

Call Type	Call Definition	Time available to the ambulance service to make a decision?	Response targets	What stops the clock?
Category 1	<p>Time-critical life-threatening event</p> <p>Cardiac arrest; airway obstruction; unconscious with abnormal or noisy breathing; hanging.</p> <p>Where mortality rates are high; a difference of one minute in response time is likely to affect outcome and there is evidence to support the fastest response</p>	<p>The earliest of:</p> <ul style="list-style-type: none"> •the problem is identified •an ambulance response is dispatched •30 seconds from the call being connected 	<p>Average response time (based on 100% of cases) should be: 7 minutes</p> <p>Response time in 90% of the cases should be: 15 minutes</p>	<p>The first ambulance service-dispatched emergency responder arrives.</p> <p>(There is an additional transport standard to ensure that these patients also receive early ambulance transportation.)</p>

- 4.11 Full details of the new standards (including videos) can be found at: <https://www.england.nhs.uk/urgent-emergency-care/arp/>

- 4.12 Formal performance monitoring of the new standards is to begin in April 2018. Although it is foreseen that this programme should improve identification and emergency response to cardiac arrest, it will still be critical to provide first aid in such circumstances.
- 4.13 In summary, the criteria for a successful outcome is as follows:
- the cardiac arrest is witnessed or discovered immediately
 - 999 is called immediately
 - effective CPR is provided without delay
 - the cause is a sudden disturbance of heart rhythm
 - the heart is in a 'shockable' rhythm (the chance of this can be improved by immediate and effective CPR)
 - a defibrillator is close by
 - use of defibrillator without delay
 - emergency medical services arrive very quickly.

First aid and public use of defibrillators

- 4.14 The Committee looked at the provision of first aid and the public's willingness to intervene.
- 4.15 Research from the British Heart Foundation looked at all cardiac arrests attended by NEAS for the period January 2011 to December 2012. At the time this was the only detailed report on cardiac arrests, outside of London. Of the total number of incidents, 26% were witnessed (ie. seen or heard) by a bystander. Of these, CPR was provided by bystanders in 53% of cases (this was lower than the London figure of 65%). An overall figure for the rate of bystander CPR in England has separately been given as 43%.
- 4.16 There are limited studies on the rate of OHCA treated with a public access AED. One study in the South of England put the rate at 1.74%. However this rate will of course be affected by the availability of an accessible AED at the time of the cardiac arrest.
- 4.17 Other factors affecting the rate of bystander CPR and /or AED use include:
- failure to recognise cardiac arrest
 - lack of knowledge as to what to do
 - fear of causing harm or being harmed
 - fear of being sued
 - lack of knowledge of the location of a public access AED.
- 4.18 Mythbusting and awareness raising is therefore important, and this can be addressed through first aid training and providing reassurance to overcome an unwillingness to assist. If a patient is in cardiac arrest, it is better to do something than nothing.
- 4.19 In relation specifically to AEDs:
- there are very few legal barriers to providing intervention in cardiac arrest, including using AEDs

- although deployment by trained first aiders would be the optimal scenario, AEDs are designed to be used by an untrained person (audible and visual instructions are used by AEDs to guide the user through the process), and have been used successfully in this way
 - AEDs are safe to use and will not cause further harm. The pads used to connect the AED to the patient determine whether a shock should be administered.
- 4.20 A demonstration of an AED was provided to the Committee during the review, and a similar demonstration can be viewed via the link at the beginning of this report.
- 4.21 Defibrillators are an important contribution towards increasing survival rates if they can be deployed in a timely manner, in conjunction with CPR, but a number of factors need to be considered in their provision.

Types of defibrillator



- 4.22 The Committee noted that AEDs come in two main types.
- 4.23 Some companies, clubs and public/community buildings such as schools and colleges have '**static**' AEDs on site. These provide coverage for their staff, visitors and students. These are mainly available during operational opening hours only, with some staff trained to use them and be aware of their location. For example, all dentists are required to hold an AED on site.
- 4.24 The Committee found that NEAS are not necessarily aware of all static AEDs located in the region. NEAS would find it beneficial for all static AEDs to be logged on their system, so that should an incident happen at a given location, they will be able to make sure the person making the call is aware of its availability.
- 4.25 Although the Resuscitation Council outlined that schools are not recommended to provide AEDs unless there is a child or staff at higher risk, Members noted that statutory guidance on supporting pupils at school with medical conditions recommends that schools consider purchasing an AED as part of their first aid equipment. The Department of Education has produced further guidance on AEDs for educational establishments.

- 4.26 A Private Member's Bill was introduced in the last Parliament to require the 'provision of defibrillators in education establishments, and in leisure, sports and certain other public facilities' as well as requiring training and funding. However that particular Bill will not be taken forward as it did not progress through the legislative stages before the June 2017 General Election was called.
- 4.27 Organisations hosting static AEDs may wish to convert them into public accessible defibrillators where appropriate. For them to be used in this way, they would need to be in a publicly accessible place at all times, and housed in an appropriate casing, as outlined further below.
- 4.28 Within the Council, the review to date has not identified any static AEDs in the main office locations. Currently, individual workplace assessments govern whether or not an AED should be included within first aid equipment.
- 4.29 The use of defibrillators was added to the curriculum of the Emergency First Aid, and First Aid at Work, courses and refresher courses from January 2017, in addition to the existing modules on CPR. Therefore over time all First Aid trained personnel should have an understanding of and an ability to safely deploy an AED in support of CPR where necessary. As provision of first aiders is managed locally within services, there is no central list of first aid/CPR trained members of staff.
- 4.30 In the North East, AEDs that are available at any time to the public are generally referred to as **community-public accessible defibrillators** or '**cPADs**'. These are often provided through initiatives such as fund-raising by local parish councils, the community, and in some cases the Local Authority. They are not normally provided by the NHS but close liaison with the ambulance service is essential, and NEAS actively promotes further coverage.
- 4.31 These are usually located in easily identifiable public locations, available 24/7, and are hosted in clearly visible cabinets. These are code-locked and only accessible after calling the Ambulance Service (which should have the cPAD registered on its system). At least one 'guardian' (a volunteer member of the community or working in an organisation based nearby) is needed and they are responsible for making periodic checks to ensure the cPAD is in working order.
- 4.32 The general guidance of the Resuscitation Council and BHF is that publicly accessible AEDs should not be kept in locked containers unless there is a specific risk. However, NEAS does not support this approach for public accessible AEDs and works to ensure that cPADs can only be accessed once a 4 digit code has been provided by the Ambulance Control Room.
- 4.33 This governance process is in place so that NEAS can be confident that when they direct a person to a cPAD, it will be stocked and ready to use. If a cPAD was used in an emergency, NEAS would then take it 'offline' until it had been confirmed as being restocked by the guardians. The system also prompts a 999 call to be made before any other action is taken, which is the first and crucial step in the chain of survival. Protection from vandalism is also a consideration, although recorded incidence of vandalism is relatively low.

- 4.34 If a call of cardiac arrest (or medical condition that could progress to a cardiac arrest) is received and it is identified as occurring within a 500m radius of a cPAD, the location of the cPAD will be flagged up to the operator in the control room. If only one person is in attendance at the scene they will be given instruction by telephone to carry out CPR until NEAS personnel arrive. If two or more people are in attendance, one person will be asked to provide first aid, while another will be provided with the code and directed to the cPAD, and then asked to assist at the scene.
- 4.35 Once a cPAD is installed, there is usually some form of launch event, with NEAS able to provide an awareness session for local people and organisations in the immediate area. Training would be particularly beneficial for staff and/or volunteers working and living in the vicinity.
- 4.36 The Accident and Emergency Lead at North Tees Hospital stated that although he was not aware of cPAD use being recorded as a matter of course, he had never been told that a cPAD had been used on a patient attending North Tees. Separate evidence highlighted that static AEDs have been used successfully, including on Tees Active premises.

Location of publicly accessible defibrillators

- 4.37 To improve outcomes, the Resuscitation Council recommends that defibrillators are made available where there are large numbers of people (eg. busy railway stations and shopping centres), and where there is an increased risk of cardiac arrest (eg. gyms). Workplaces with staff at risk should also consider AEDs, and train staff to undertake CPR and use AEDs.
- 4.38 A number of factors would need to be considered before the location of a cPAD was determined. They have in many cases been installed in village locations, recognising the challenges that face emergency services when responding to more rural locations.
- 4.39 In more urban areas, a key factor is the volume of people within a given area. One study has estimated any location that has over 1000 adults over the age of 35 present during normal business hours can expect one incident of sudden cardiac arrest every five years. This can be considered to be a useful guide to assist any decisions to locate a public access AED.
- 4.40 As noted, a cPAD can be used if an incident is identified within 500m of its location. To put this into context, a cPAD placed at in the vicinity of Stockton Town Hall for example would potentially cover an area stretching from Splash to the southern edge of Stockton Town Centre.
- 4.41 Widespread roll-out across the community would be unlikely to have a major impact on outcomes given that cardiac arrest would be a rare event for most public locations.
- 4.42 Consideration of areas of potential risk including disease prevalence may also be a factor. To assist any future placement of AEDs, NEAS can provide further data on previous incidents and their severity, and call type and volume within a particular area.

Costs and maintenance

- 4.43 The one-off costs with purchasing individual AEDs are relatively low, although provision must also be made for ongoing maintenance which are generally minimal. As a general guide, an individual AED costs between £850-£1000 plus VAT. The pads used to attach the AED to the patient would need to be replaced after use at a cost of c.£30, otherwise their shelf life is up to 5 years. Batteries are also available with a shelf life of up to 5 years and a battery would cover many deployments before needing to be replaced in the interim (the eventual replacement cost is c. £200).
- 4.44 In addition, a cPAD would require an externally mounted, secure cabinet (guide price £600), connected to an electricity supply in order to maintain the temperature in the cabinet. Annual electricity costs are c.£30.
- 4.45 Actual costs would differ depending on the method of delivery. Community-led provision would for example have greater access to charitable funds (eg. British Heart Foundation) although there can be restrictions on this funding for example BHF does not fund locked cPADs. Local authorities are also able to purchase AEDs through North East Procurement Organisation, and educational establishments have access to the NHS Supply Chain.

Mapping existing provision

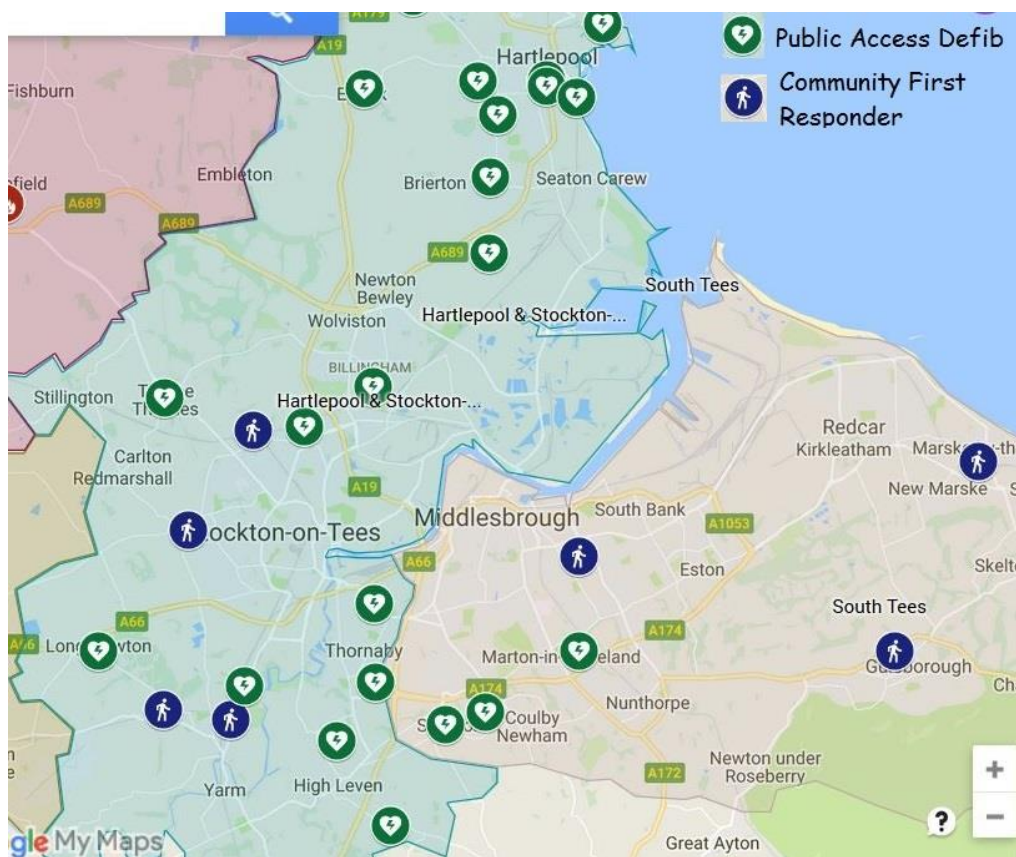
- 4.46 As of June 2017, NEAS reported that there were 13 AEDs designated as cPADs in the Clinical Commissioning Group area (which includes Hartlepool) and this number has subsequently increased. Further developments were coming on stream and an up to date list has been gathered as part of the review (nb. this is not intended to be exhaustive in relation to static AEDs).
- 4.47 Information gathering to date has identified the following cPADs in town centres and communities:
- Stockton Town Centre area is not covered by a cPAD and Castlegate and Wellington Square Shopping Centres do not host cPADs. Stockton Town Pastors have undertaken fundraising to contribute towards defibrillator provision in the Town Centre and there is potential funding in place for an AED and box, which could contribute towards Town Centre provision.
 - Billingham Town Centre has one cPAD in the Town Centre. An additional public AED was referenced by the Town Centre but was not registered with NEAS, but following the review contacts would be made by both parties. Funding was provided by a local charity which was match-funded by the Town Centre.
 - Thornaby - Woodside Grange Care Home and Teesside Golf Club have cPADs. The Town Centre reports that a local business has made a donation to acquire a cPAD but it is not yet operational.
 - Ingleby Barwick – the Town Council has recently installed a cPAD at the Community Hall, using money from the Wind Farm Community Fund. Cllr

Mitchell is a nominated guardian. Another cPAD is being considered for inclusion at the new Community Centre at The Rings.

- Norton Sports Complex has a cPAD but the High Street area is not currently covered.
- Long Newton (Wilson Centre) and Thorpe Thewles (Parish Hall) both have cPADs in place, funded via public subscription and the Grindon Parish Council respectively. Both of these have been deployed (nb. not necessarily used) in 2017 since being installed. NEAS noted that Hilton has a cPAD at the Falcon Inn public house. All Saints Church in Preston-on-Tees has a defibrillator.
- Stillington and Whitton. Stillington has four static AEDs located at Darchem and the GP Practice. Darchem are undertaking further work to install an additional AED as a cPAD although this is not yet operational. At Whitton, the parish council has adopted a disused phone box to host a cPAD in the near future, and has completed fundraising from the local community and donations to raise the £3300 needed to complete the necessary work (which includes connection to the street lighting electricity supply). Funding will also cover training needs.

4.48 Other parish councils would be interested in discussing the options for their areas.

4.49 The following map has been provided by NEAS and identifies current resources across the Tees area (as of 13 September 2017).



Community First Responders are described in more detail at 4.62

- 4.50 There is therefore already some coverage by cPADs in Stockton Borough with the potential for further developments in the short term, however there remains some gaps in provision with Stockton Town Centre being clearly identified as a minimum.
- 4.51 As can be seen static AEDs have been identified at a number of locations. Further static AEDs are identified in Tees Active facilities including in Town Centre areas including Splash, Pavilion, Thornaby Pool, and Billingham Forum. Other resources in similar areas include for example Queensway Dental Practice, as well as those at locations such as Stillington as outlined above.
- 4.52 Tees Active's static AEDs have been installed over the last 9-10 years. In addition, the Tees Barrage Park Run has funded an AED at the Barrage and Tees Active will maintain it (this is shown in the photograph at the front of this report), and a static AED will also be located at the new Leisure Centre in Ingleby Barwick.
- 4.53 Due to concerns about maintaining staffing levels on site, Tees Active has not previously advertised their AED locations externally, as staff were not in a position to act as first responders to any incident outside the premises. Consideration could be given to further increasing the accessibility of its AEDs subject to whether staff would be required to assist (for example, whether as a minimum they would need to locate and provide the AED) and ensuring no impact on the safe operation of the service. Following discussion with the review, Tees Active will discuss with NEAS the potential to make their AEDs more publically available.
- 4.54 The Forum's AEDs have been used three times, all with positive outcomes. All lifeguards and staff with First Aid at Work qualifications are trained in their use, which undoubtedly improves their response capability. The effect on staff at having to use an AED 'for real' should not however be underestimated.
- 4.55 Twenty-one Primary Schools including eight academies responded to the Committee's survey. Eleven of these have static AEDs on site, and another school has active plans to install an AED, and seven others would consider it, including one stating that a cPAD would be considered. Eighteen respondents outlined their staff training, with seven describing a variety of first aid training for pupils.
- 4.56 Nine secondary schools responded (including five mainstream academies, one free school, and two special schools). Of these, eight have AEDs on site, with one of these willing to consider hosting a cPAD subject to satisfactory resolution of safeguarding issues. Three schools outlined first aid training for pupils in some form (for example, for all at the Year 8 stage, or Sixth Form). One post-16 provider has an AED in place.
- 4.57 Funding for school based AEDs has been from a variety of sources including school budgets, parent donations, charity and company donations. One secondary school deployed its AED to an incident as a precaution but it did not have to be used.
- 4.58 Incidence of OHCA in schools is tragic but thankfully very rare. However a recognised benefit of AEDs being located in schools is that it raises awareness amongst pupils and can improve the quality of first aid training that may be given for pupils and staff.

The Committee were pleased to see that some schools included first aid training in their curriculum in some form, and would encourage this amongst all schools.

Local Authority Case Studies

- 4.59 Examples of case studies of direct local authority involvement were examined as part of the review. Hartlepool Council has undertaken a rolling programme of work on defibrillators. Overall, so far, the Council has directly assisted the delivery of eight cPADs. Initial delivery saw the introduction of cPADs in busy public places and rural areas, and to increase the coverage by static AEDs within leisure centre provision.
- 4.60 A second phase of work saw further delivery from the Council and responses to requests from community groups. The Council has now worked with the Community Heart Beat Trust (<https://www.communityheartbeat.org.uk/>) and this also provides an online governance system which helps manage the maintenance and checking regime. Funding for the programme has been provided by through Public Health funds. The Council has worked with community groups to continue its programme, and this includes 'Defibs4Hartlepool' which has focussed on installing AEDs in schools.
- 4.61 Middlesbrough Council has undertaken to develop a ten-year Defibrillator Plan to increase defibrillator coverage, in conjunction with increasing awareness of resuscitation techniques, and its wider prevention strategy. The plan initially aims to install eleven cPADs in key locations, with launch events planned for each, including leaflet drops in the immediate areas, and a plan for sustainability and governance. Led by the Public Health team with an identified clinical lead, a budget of £15k was identified to purchase the defibrillators, spare pads etc, and the external wall fitted cabinets.

Other responses to out of hospital cardiac arrest

- 4.62 Another response to improving outcomes is the roll out of the volunteer Community First Responders (CFRs) scheme across the region. This is managed by the ambulance service. CFRs are equipped with a range of basic life-saving equipment including AEDs and oxygen, and are tasked with responding to emergency calls within their vicinity, in addition to an ambulance response.
- 4.63 There are currently four CFRs in Stockton, and a recent recruitment drive in Tees has seen initial interest generated with a potential eight more volunteers identified. The Committee would wish to support this scheme and the admirable work of the volunteers.
- 4.64 A benefit of the programme is clearly the increase in the availability of AEDs within a given community, and CFRs are in some cases also able to provide source of training for local community groups.
- 4.65 Additional coverage has until recently been provided by Cleveland Fire Brigade (CFB). All fire appliances carry AEDs and the crews are trained in their use. Since 2016 regional fire services have been providing a co-response with NEAS as part of the Emergency Medical Response trial. This was not intended to replace ambulance attendance at potential/actual cardiac arrests as NEAS will continue to attend incidents, but the scheme enabled a faster attendance on the scene by an equipped,

emergency response service than may otherwise have been the case. Since co-responding was introduced in the Stockton area, crews were called out on 641 occasions. Defibrillators have been used twice by crews in Stockton District during 2017 (as of end of July).

- 4.66 However towards the end of the review, the Committee was informed that as part of national negotiations on the role of the fire fighter, the co-responder trial would end on 18 September 2017. The North East Regional Scrutiny Committee will be further monitoring the impact of this, as the arrival of a fire service co-responder on the scene was counted towards meeting the response target times by NEAS and some impact on performance may therefore be expected.
- 4.67 The fire service co-responder scheme will continue in some parts of Redcar and Cleveland due to being part of a separate long standing scheme, but for the foreseeable future in the rest of the region, NEAS will be concentrating on expanding the Community First Responder scheme, and increasing the number of cPADs, as well as developing its own services.
- 4.68 The Cleveland Fire Support Network charity delivers British Heart Foundation Heart Start training programmes. 17 sessions were delivered in Stockton in 2016-17 reaching 238 people, and 7 sessions for 69 people have been provided in 2017-18 to date.

Conclusion

- 5.1 The review recognises that wider health improvement initiatives are required to improve the rates of cardiovascular disease and to prevent cardiac arrest from occurring wherever possible in the first place.
- 5.2 Out of Hospital Cardiac Arrest is clearly a serious incident and even with the best treatment outcomes can be poor. However effective and more consistent application of the steps in the 'chain of survival' have been demonstrated to improve survival rates.
- 5.3 Defibrillators are a key link in this chain, and steps have been taken to improve coverage across the region in recent years. A number of AEDs/cPADs are now in place across the Borough, with the potential for this number to grow. There are however some gaps, for example Stockton Town Centre.
- 5.4 Although widespread placement of public access AEDs may not be suitable or cost effective, there may be a case for a targeted approach to build on the assets already in place, in order to benefit a small number of individuals over time.
- 5.5 Should any further steps be taken to increase the number of AEDs/cPADs in the Borough, consideration would need to be given to factors including how busy any given location is and the nature of the activities there (i.e. likelihood of an actual cardiac event occurring), the need for training and maintenance of devices, and the accessibility of any AED device.
- 5.6 It is important to remember that the 2014 Consensus Paper on Cardiac Arrest (British Heart Foundation, NHS England, Resuscitation Council) stresses that access to AEDs is one part of the solution. It is also crucial to increase public awareness of:
 - cardiac arrest
 - how to recognise it
 - the need to call 999 immediately
 - the need to start CPR immediately
 - the fact that cPADs can be safely used by anyone.