



# The North Wales Community Out Of Hospital Cardiac Arrest (OOHCA)

Project, July 2018 to March 2021 report



**Situation:**

A cardiac arrest is a condition in which the heart suddenly and unexpectedly stops beating due to a malfunction in the electrical system of the heart. Anyone, at any age, even children, can suffer a sudden cardiac arrest. It is unpredictable and can strike at anytime, anywhere, without warning. Bystander CPR before the ambulance arrives can more than double the chance of survival. Defibrillation within 3-5 minutes of collapse can result in survival rates as high as 70%.

The Welsh Assembly Government published a document called "Out of Hospital Cardiac Arrest Plan for Wales" in 2017, this document states that every 60 minutes someone in Wales suffers a cardiac arrest; further reading highlights that the success rate of an out of hospital cardiac arrest varies significantly between countries.

In Norway 25% of Out of Hospital Cardiac Arrest patients survive, (CPR is taught in schools). In England it is only 8% and in Wales data on survival is currently being collated through the Welsh Cardiac Arrest Registry. The higher success rate in Norway is related to improving links in the cardiac arrest chain of survival i.e. early recognition and call for help, early bystander CPR and early use of public access defibrillation as well as early transport to hospital. Denmark increased their survival rates from 3% to 10% by introducing strategies such as CPR training in schools and mandatory CPR training when taking a driving test. Improving the first three links in the chain of survival is set out as one of the main aims in the out of Hospital Cardiac Arrest plan for Wales June 2017 and was linked to the BCUHB cardiac priorities when the project began in 2018-2019.

**Background:**

The character of rural North Wales is a challenge to any service, including the emergency services. Nearly 80% of cardiac arrests happen within the home. Having Community Public Access Defibrillators (CPADs) in the locality enables early defibrillation to be delivered in rural areas, prior to the arrival of the emergency services, giving the patient the best chance of survival.

The Automated External Defibrillator (AED) looks after itself and will perform self-checks to make sure that the lifesaving equipment is ready for use. If a malfunction is detected it will demonstrate this by indicating a red cross on the screen of the AED. If the AED is to be available for 24hr access as a CPAD it is recommended that it will need to be on an exterior wall in a heated cabinet to keep the AED battery and electrodes warm and at an operational temperature during the winter months. Defibrillators need a certain amount of maintenance; the electrodes (the pads that adhere to the patient) have to be replaced every three to five years as the gel that adheres to the patient degrades over this time. As they are single use they also need to be replaced following use at a cardiac arrest. The battery also needs to be replaced every 3 to 4 years, SADS UK can supply these replacement parts.

AEDs are a reliable way to ensure early defibrillation is instigated by the layperson who may not have had any previous training on how to use the device. However a significant delay occurs in chest compressions to allow the AED to assess the rhythm and instruct if a shock is required. Such interruptions in chest compressions can significantly reduce the success of defibrillation and have been linked to post resuscitation myocardial dysfunction and reduced survival rates. When The Welsh Ambulance Service reach the scene it

is therefore paramount that the paramedics are able to swiftly transfer from the AED used by the layperson to their own manual defibrillator which (because it is compatible) can be done quickly and easily without the need to replace pads if the ZOLL AED has been used. Manual defibrillation allows for prompt delivery of a shock with minimal pause in chest compressions for rhythm analysis and shock delivery. A pre shock pause of longer than 5 seconds can halve the chance of successful defibrillation therefore time is critical in this situation so having compatible pads is a significant step to prompt treatment.

All CPADs should be registered with the Circuit which is a national defibrillator database which updates ambulance service Computer Aided Despatch (CAD) systems daily so that the rescuer can be advised as to where the nearest defibrillator can be located. This also enables data collection to occur post cardiac arrest for the National Out Of Hospital Cardiac Arrest Outcome Project which gathers data from out of hospital cardiac arrests within the UK. Vitally this ensures that CPADs are returned to operational status as quickly as possible.

### **Assessment prior to the project 2018**

- There was no single point of contact in North Wales for communities to seek advice and sign posting to appropriate authorities with regard to purchasing an AED/ cabinet or to receive CPR training.
- CPADs were not always being registered with the WAST and CAD, potentially resulting in catastrophe.
- Communities were left stranded should their AED detect a malfunction.
- Communities were not receiving support following an out of hospital cardiac arrest.
- No data collection from AED following cardiac arrest was occurring.
- Incompatible pads were being left with CAPDs
- CPADs were being left dirty post use
- CAPDs left with low batteries.
- Non compatible AEDs with WAST were being placed within the community.
- Many charities were working independently within communities in North Wales to put CPADs in place and teach CPR, but there is no collaboration between them.
- CPADs were being put into the community with no plan to continue their maintenance to keep them operational.
- CPADs were being put in place without future planning for the payment of the aforementioned consumables (batteries and pads); resulting in the defibrillator not being operational when it is needed in a cardiac arrest emergency.

## Recommendation following assessment 2018

A North Wales Public Access Defibrillator Support (PADS) officer was required to manage new and existing CPAD sites within BCUHB and be available to teach the community CPR. The role would include;

- Leading on the AED project as it is rolled out across North Wales, striving to gain better communications and collaborative working in partnership with charities working in the area. Working in unison will mean speedy implementation of the project throughout North Wales, improving Out of Hospital Cardiac Arrest survivor rates dramatically.
- Single point of contact in North Wales for communities to seek advice and sign posting to appropriate authorities to purchase an AED/ cabinet or to receive CPR training in the area.
- Ensure all CPAD sites are registered with the Ambulance Service
- Point of contact for failed CPAD sites.
- Be available to exchange consumables as and when required
- Arrange CPR training sessions for communities. Increasing knowledge and confidence
- Data collection post arrest for national audit
- Community support post cardiac arrest.
- Maintenance of CPAD site

## The North Wales Community OOHCA project:

The North Wales Project, is a partnership supported by the Welsh Ambulance Service, Betsi Cadwaladr University Health Board and the National Cardiac Charity SADS UK and was also supported by the previous Health Minister for Wales Vaughan Gething. Collectively we wish to increase survival rates from an out of hospital cardiac arrests within North Wales in addition to eradicating the problem of CPADs becoming dysfunctional. The Cardiac Charity SADS UK solely backed the first 2 years of the project, funding the North Wales Public Access Defibrillator Support (PADS) Officer. While year's 3 /4 have been funded collectively by BCUHB Cardiology departments within North Wales utilising their Awyr Las charitable fund donations as well as the support of the Cardiac Charity SADSUK.

## Launch:

The project was launched during the WAST "Shocktober" campaign with the intention to increase awareness of the need for bystander CPR by offering school children the opportunity to learn the basic lifesaving skills in CPR and defibrillation.

CPR training in schools has been highlighted as key to improving success rates of an out of hospital cardiac arrest, so a rolling program of free CPR training on an annual basis has been offered to all primary schools with the support of WAST and the BCUHB resuscitation team. Working in collaboration with other voluntary groups and charities such as St John and Achub Calon Y Dyffryn has encouraged a swift roll out of this program.

The BHF introduced this concept with the introduction of Heart Start some years ago but many secondary schools in North Wales had yet to engage with this project, so have since been encouraged to do so. This may now also change once the new curriculum is in place.

## **Raising the profile of the North Wales project.**

- Profile of PADS officer raised with senior management teams within BCUHB/ WAST.
- Support from all cardiology departments within BCUHB gained for the project.
- BCUHB/ WAST support gained to help raise the profile of the CPADS officer on social media.
- Regular Newspaper articles have been hosted by BCUHB about the North Wales project.
- SADS UK wrote to schools and provided information about the importance of CPR and defibrillation and offered free fundraising packs, including AED leaflets and promotional items to help schools raise funds for an AED.
- Educational CPR videos hosted the PADS officer have been produced.
- Email introduction to local schools, Councils, public officials and senior management within BCUHB/ WAST and have sent.
- PADS support officer twitter account set up @Pascymru
- Regular radio interviews
- Advertisement on the side of local buses

## **Increase awareness of the need for bystander CPR / Defibrillation**

- Links formed and North Wales Primary schools inviting them to join in WAST "Shocktober".
- SADS UK held a school competition, enabling children to discuss, write articles and produce videos about the importance of CPR and defibrillators.

## **Bilingual educational videos,**

- How did I die?
- Does CPR really work?

## **Branding/ Social Media**

- The North Wales project was branded, Cadwch Curiadau Keep the Beats (KTB).
- KTB logo designed.
- KTB advertising material such as pop up banners and selfie boards etc purchased and used during CPR/AED familiarisation training to aid with promotion.
- KTB web pages have been set up with the support of the North Wales NHS charity Awyr Las [www.awyrlas.org.uk/keepthebeats](http://www.awyrlas.org.uk/keepthebeats) [www.awyrlas.org.uk/cadwchcuriadau](http://www.awyrlas.org.uk/cadwchcuriadau)
- Regular social media posts have been issued in relation to cardiac arrest survivors, CPR/AED's on KTB, BCUHB, WAST Awyr Las and SADS UK.
- Regular press releases about Cardiac Arrest Survivors have been released by BCUHB, WAST Awyr Las and SADS UK.

## **Raising the profile of CPR by supporting large events to teach CPR.**

- Zip Rock
- Eisteddfod
- Royal Welsh Show
- Shocktober/Defibuary
- Save a life September
- Community events
- Annual sporting events such as marathons etc.

## **Ensured all local AED are registered to WAST CAD System.**

### **Treasure hunt project**

- Engaged with Community First Responder (CFR) teams to help with process mapping of all known AED sites within North Wales.
- Utilised CFR teams to aid with data gathering of known CPADS to update the CAD system.
- Utilised CFR teams to applying a green WAST tick to all AEDS registered with WAST
- Bilingual video hosted by project manager Julie Starling and Tomos Hughes PADS Officer (That could easily be rebranded to be used throughout Wales), sent to all primary schools within North Wales inviting them to join in the Treasure hunt.
- Public support requested to locate unregistered CPAD sites i.e. those without WAST green tick.

### **Maintaining CPAD sites within North Wales**

- Standardised all new AEDs for ease of pads and battery replacement by PADS officer
- Spot checks on CPAD sites performed to ensure they are registered and rescue ready.
- Location list of CPAD sites, pad/battery expiry maintained to aid with maintenance (now on BHF Circuit)
- PADS Officer has a supply of pads and batteries from WAST to enable CPAD sites to be re-instated without delay.
- PADS Officer informed by WAST when a CPAD has been utilised.

### **Increase survival rates and management support post event**

- As a First responder PADS Officer attends red calls within the area of his working day to assist with early CPR/AED use.
- PADS Officer has a target of 48hrs to re instate CPAD site post use.
- PADS Officer is available to download information from a used AED (This must be performed prior to the insertion of new pads and batteries otherwise data is lost) to support:
  - Hospital diagnosis i.e. inherited heart conditions
  - Police inquiry
  - Coroners' cases
  - Malfunctioned AED- manufacture's request.

## **PADS officers Training/ Experience**

- PADS Officer has extensive prior knowledge of installing CPAD sites
- PADS Officer, as a first responder, has regular WAST updates to maintain competency enabling red calls to be attended.
- Mandatory Training is supported by WAST.
- Intermediate Life Support (ILS) training supported by BCUHB (to ensure the PADS Officer has a greater knowledge than Basic Life support (BLS) when teaching the community).
- Teaching skills of BLS assessed (as currently no BLS instructors course available).
- Driving licence that allows the towing of a trailer (to aid with both AED delivery and CPR training)
- WAST driving assessment for non-blue light vehicles to assist WAST during the pandemic.
- Donning and doffing training to support red calls and paramedics during the pandemic.

## **Community support:**

### **Working with the NHS charity Awyr Las KTB has gained charity status and is able to:**

- Financially support the PADS Officer's role from 2020-2022.
- Offer financial support for CPAD sites utilising community donations.
- Obtain funding from grant application from Awyr Las for new CPAD sites.
- Apply for outside grants for community projects.
- Offer the community low cost defibrillators and cabinets.

### **CPAD Support Officer is available to:**

- Offer advice and support to existing and new CPAD location
- CPAD Installation
- Type of cabinet/ AED to purchase for a CPAD
- Offer advice re the purchase and painting of a phone kiosks
- Offer advice to customise a phone kiosk with educational board and CPAD location
- Support with grant application for CPAD sites
- Point of contact for advice re CPR/AED training
- Offer CPR/ AED training to North Wales' communities
- Grant application support for life saving equipment

## Pandemic support:

- The PADS Support Officer placed Temporary CPAD sites in high risk areas within North Wales.
- KTB supported funding to purchase replacement pads for all CPAD sites during the pandemic to ensure they remained rescue ready while their guardians were in lockdown.
- Decontamination policy for CPADs used in the community.
- PADS Officer offered support to WAST to assist paramedics with donning and doffing of PPE equipment during red calls.
- KTB trailer used by PADS Officer to support BCUHB and WAST with transport of vital equipment and PPE to various sites throughout BCUHB.
- With the support of Awyr Las, KTB took the lead in the coordination of community production and distribution of PPE to support WAST and BCUHB in the early stages of the pandemic.

## Outcomes:

At the time of writing this report North Wales has 1353 Community Public Access Defibrillators within the area, only 5 of which are not available as they have recently been used and are pending replacement pads or batteries.

## New CPAD sites;

Thanks to the North Wales Project 502 extra CPAD sites have been made available to WAST. This has been achieved by placing 331 new CPADS in North Wales, 105 CPAD in South Wales and registering 56 CPAD on the CAD system with WAST that were highlighted as unregistered thanks to the "Treasure Hunt". Every Secondary school within BCUHB's catchment area now has an AED on site.

## CPADS made rescue ready;

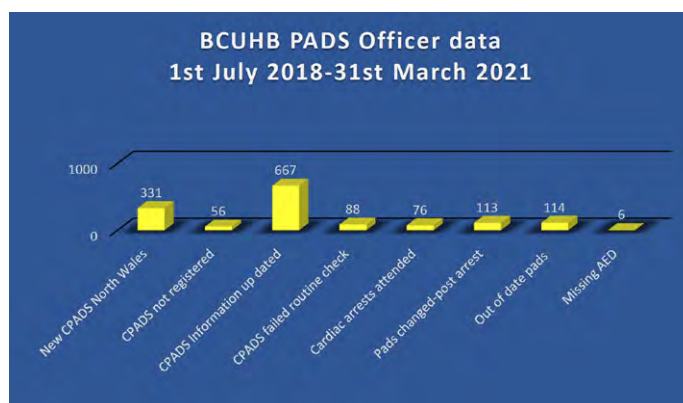
In all 315 CPAD sites have been reinstated and made rescue ready, this has been achieved by finding 88 non rescue ready CPADs during the "Treasure Hunt" and routine checks. 113 AEDs have been re activated following a cardiac arrest and 114 CPAD sites have had out of date pads replaced.

## Information update to CAD and BHF Circuit;

Thanks to the "Treasure Hunt" a staggering 667 pre-existing CPAD sites have had their information updated onto the CAD and BHF Circuit.

## Cardiac Arrests attended;

Remembering that early CPR and defibrillation is the key to Return Of Spontaneous Circulation (ROSC) following a cardiac arrest, the North Wales PADS Officer has attended 76 cardiac arrests during his working day.





## **Collaborative work/ CPR Training**

This has been hindered significantly in the last 18 months due to the pandemic. But prior to this With the support of WAST, BCUHB and local organisations such as Achub Calon Y Dyffryn and St John, 4,017 people in the community received face to face CPR training, but many more have received on line training. Added to this each year we have co-ordinated “Shocktober” in North Wales on behalf of WAST, teaching some 2,000 children CPR during the month of October.

With the support of WAST and Save A Life Cymru 40 Primary schools had a defibrillator donated to them and a collaborative partnership with St John ensured that every school was offered free CPR/AED/ First Aid training.

## **Lost AEDs**

The data has highlighted 6 missing AEDs the majority of which have been taken by the emergency services following an OOHCA. The North Wales PADS Officer is currently piloting a system to ascertain the most effective way of managing an AED once it has been utilised in the community.

## **Treasure Hunt**

The treasure Hunt was a huge success in highlighting unregistered CPADs and those not rescue ready, it also allowed a significant amount of data to be uploaded to the CAD system. The Treasure Hunt video was also aimed at educating the general public about defibrillators, their location and how to use them and having been viewed over 16.4K times, has successfully raised the profile of the CPADs.

Educational videos

Does CPR really work?	9K Views
How did you die?	17K Views
Treasure Hunt video.	16K Views
Don't ignore Chest pain it could be a heart attack.	28K Views

Combined, all our bilingual educational videos have been viewed over 300k times, including; Performance CPR at home, What is a Heart Attack?, What is a Cardiac Arrest?, How to perform CPR

## **Donations**

Cadwch Curiadau- Keep the Beats has been part of the North Wales NHS charity Awyr Las Charity for the last 12 months, during this time we have received over £20,000 in donations all of which has been put back into the North Wales' community to support the OOHCA project.

## **Ongoing projects;**

KTB has secured funding for rural defibrillators in high risk areas to be made available with 24hr access, including places like Snowdon and Moel Famau.

KTB is currently working with Tata Steel with a view to placing 20 AEDs on site.

The North Wales PADS Officer is also working with Network Rail and Gwyn Y Mor on a couple of very large projects that will be completed by the end of 2021.

## **New projects:**

KTB new video release due during "Shoctober" 2021 aimed at primary school children.

KTB Educational trailer/ outdoor classroom launch due this summer; this facility will also allow for outside teaching of CPR to the community as well as being an educational resource. This facility will also support screening of the general public for Atrial Fibrillation, with the facility to perform an ECG.

## **Work outstanding for the final year**

The North Wales Project has highlighted that the BHF circuit is extremely proficient at managing CPADS, ensuring that non rescue ready CPADS are removed from the system and only re-instated once the problem has been resolved. Unfortunately the guardians (allocated person responsible for each CPAD) are not always quick to respond to a request to assess their CPAD site once it has been used and address any issues, leaving the CPAD unusable and off line for longer than we would like. For this reason, the project is currently exploring, the possibility of compiling a data base of volunteer emergency care staff, who understand better the urgency of re instating CPAD sites and can offer support to the PADS Officer.

This would then

- Reduce unnecessary travel for the PADS Officer.
- Ensure CPAD sites are off line for a short period of time only.

## **CPADs post use**

Currently WAST clearly document that an AED has been retrieved and CPR is in progress etc. but there is no status of the AED post event i.e. 'Not used' 'put back in cabinet dirty' 'taken to ambulance station' etc. exploring this type of documentation with WAST may reduce the volume of work associated with reinstating a CPAD site following an activation.

## **Prevention**

Prevention of an OOHCA is a very important part of education in schools and in the community. Health promotion is easy to achieve as part of any CPR session, especially when discussing causes of an OOHCA and life style changes to prevent it, including, the importance of exercise, healthy eating, mental stress, obesity and smoking which can all lead to a Heart Attack or Stroke and an OOHCA.

Printed name

Date

Signature



