Emergency Medical Retrieval & Transfer Service Cymru

&

Adult Critical Care Transfer Service Cymru

Annual Report

1 April 2022 – 31 March 2023

GIG CYMRU NHS WALES
Gwasanaeth Casglu a Throsglwyddo Meddygol Brys
Emergency Medical Retrieval & Transfer Service

ACCTS
Gwasanaeth Trosglwyddo Gofal Critigol Oedolion Cymru
Adult Critical Care Transfer Service Cymru

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Director's Foreword

The EMRTS service has continued to work with our partners the Wales Air Ambulance Charity, the Welsh Ambulance Services NHS Trust and Swansea Bay University Health Board to deliver a high standard of pre-hospital Critical Care to all areas of Wales 365 days a year. We have attended over 3000 patients and delivered Critical Care interventions on scene before transferring them to hospitals to begin the process of recovery. Our patient liaison nurses have been in contact with many of our patients and their families and it is wonderful to hear stories of recovered patients getting back to their lives.

One of the requirements which the service needs to perform is a regular review of how we are performing and whether we could do more to deliver equitable and high quality Critical Care to as many as possible. Having examined our service data we have presented our findings to our delivery assurance group and commissioners. Our performance service data was then examined and a data modelling exercise performed independently. The results and potential service development proposals followed. As a result there has been a public engagement process on potential options for service improvement. This has allowed our commissioners to gather information from many sources before considering how we might proceed. The outcomes of this process will help us determine our service strategy for the foreseeable future.

The charity has now provided us with a new fleet of Volvo Rapid Response Vehicles. They are to be seen in a new livery delivering the clinical services from all bases and will soon have replaced all of our ageing Audi vehicles. As the charity has entered into a new aviation contract we will continue to operate in the excellent H145 helicopters which are ideal for our clinical work.

Our ACCTS Cymru service which delivers inter-hospital Critical Care transfer has also taken delivery of high specification transfer vehicles. This service, which has existed for two years, is described in more detail in this report. It has rapidly become established as a high quality transfer service which is so important to an effective Critical Care network. In addition to transfers between hospitals in Wales a number of much longer and complex transfers have been successfully carried out.

Our most important assets are our staff. I am delighted that we have an amazing number of highly qualified professionals applying for our Critical Care Practitioner (CCP), Doctor and Retrieval & Transfer Practitioner (RTP)transfer roles. Having been selected and trained they have also achieved an impressive array of additional qualifications and degrees.

We have partnered with several universities to carry out research projects which may help us, and others, to improve the delivery of clinical care. Currently the area of accurate and rapid dispatch is an area that we have identified as important and partnered academic departments to progress.

Thanks to the generous donations of the public and the support of the NHS we have a service which, despite many challenges in healthcare generally, is not only performing well but delivering more every year as we approach a decade of operation

Professor David Lockey,
National Director EMRTS Cymru

Message from ACCTS Cymru Clinical Lead

ACCTS Cymru team are pleased to sit alongside our EMRTS colleagues. We have recently reached the two-year anniversary of our service launch in South Wales some three years after the project team started this journey and we continue to make strides forward in professionalising transfer medicine in Wales.

The mission statement of ACCTS Cymru is to provide uninterrupted provision of high-quality Critical Care irrespective of a patient's position on their clinical journey, allowing seamless transition between hospitals and Critical Care units. ACCTS Cymru has already become an essential and embedded part of safe and effective delivery of intensive care in Wales.

During 2023 we have seen the arrival of our bespoke dedicated intensive care transfer vehicles, designed around the complex needs of the critically ill and shaping the design of future vehicles for transferring the critically ill across the UK.

During the last 24 months our partnerships with the wider transfer fraternity continue to blossom. In our short existence we have already begun to present our approach to training on the international stage and have shared our clinical experiences with at international conferences and educational meetings.

During the period covered in this report we continue to exceed our predicted operational demand and facilitate the transfer of those who were sometimes historically deemed "Too sick to transfer". This has reinforced the clinical benefits of recruiting high-quality clinicians from within and outside Wales alongside an evidence-based, effective and well-governed operating model.

The ACCTS Cymru leadership team will continue to develop ACCTS Cymru as a vanguard of transfer medicine.

Dr Mike Slattery
ACCTS Cymru Clinical Lead

Governance Structure

EMRTS Cymru has developed a robust system of organisational and clinical governance. The service is hosted by Swansea Bay University Health Board (SBUHB) and is commissioned by the Emergency Ambulance Services Committee (EASC).

The organisational governance structure consists of an EMRTS Delivery Assurance Group (DAG) which sits as a subcommittee of EASC. The DAG is responsible for the delivery, direction and performance of the Service.

The EMRTS Cymru National Director is accountable to the DAG for the delivery and performance of the service and to the SBUHB Chief Executive for organisational and clinical governance.

Internal governance is led by the EMRTS Clinical and Operational Board which is attended by senior EMRTS personnel and support services and manages clinical and operational issues relating to the service.

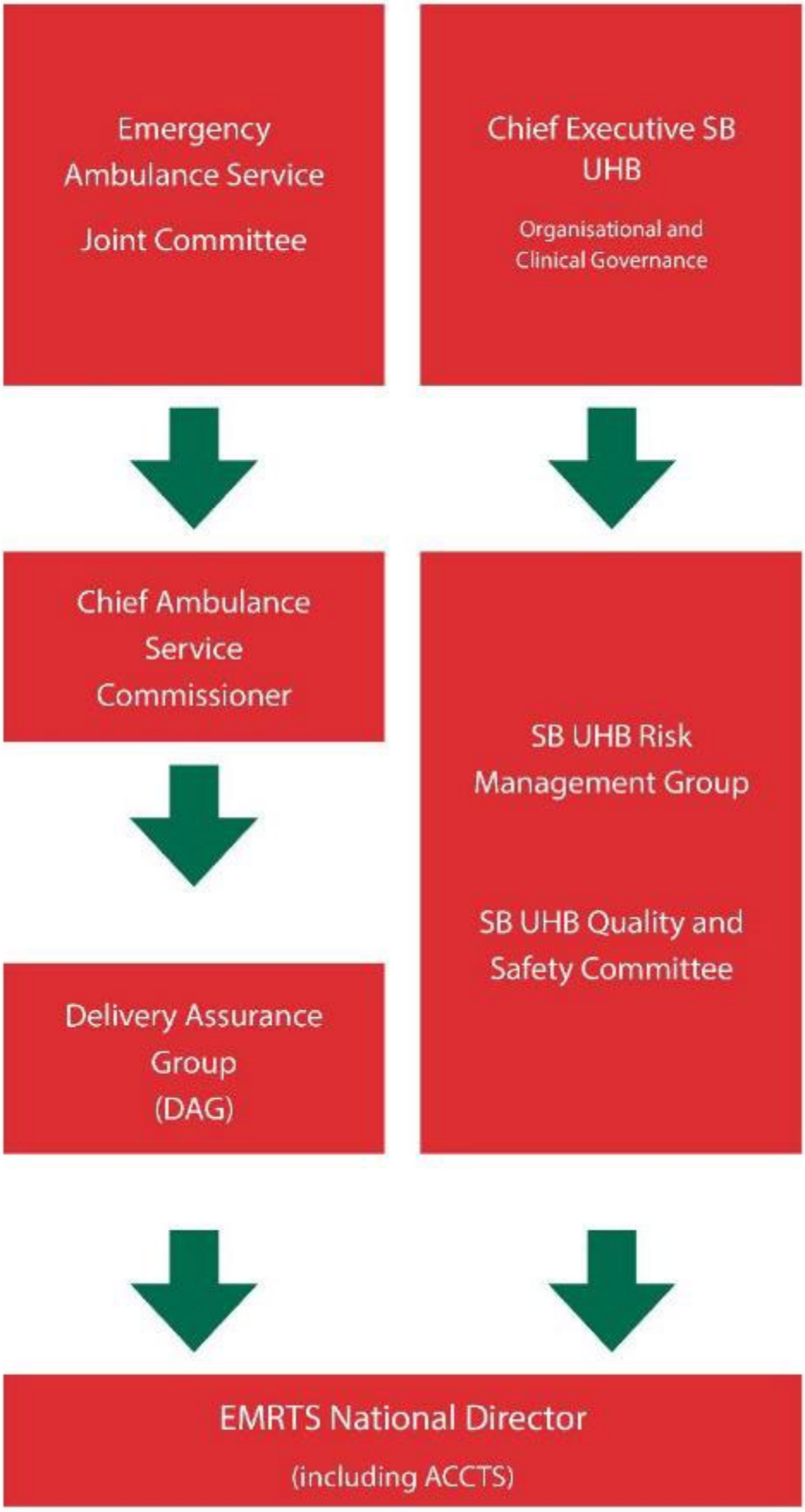
The Board meets on a bi-monthly basis and is supported by the work of several specialist sub-groups.

There are a number of supporting documents underpinning the organisational governance of the service as follows:

- National Collaborative Commissioning Quality and Delivery Framework - namely CAREMORE.
- Terms of Reference for the EMRTS DAG.
- Collaboration Agreement between SBUHB, the Wales Air Ambulance Charitable Trust (WAACT) and the Welsh Ambulance Services Trust (WAST).
- Memorandum of Understanding between SBUHB and other Welsh health boards and trusts.
- Service-level agreement between EMRTS and SBUHB for accessing support services.
- Terms of Reference for the EMRTS Clinical and Operational Board.

An External Clinical Advisory Group (ECAG) was established at the inception of the service in 2015. The ECAG provided benchmarking of clinical standard operating Procedures and independently reviewed significant adverse events, reporting their findings back to the Clinical and Operational Board.

A new External Clinical Advisory Panel (ECAP) has now been established in place of the ECAG. The new expert panel provides ad hoc advice on specialist issues when requested and input to Clinical Governance Days when relevant issues are being presented.


Emergency Ambulance Service Joint Committee
Chief Executive SB UHB
Organisational and Clinical Governance
Chief Ambulance Service Commissioner
SB UHB Risk Management Group
SB UHB Quality and Safety Committee
Delivery Assurance Group (DAG)
EMRTS National Director
(including ACCTS)

The Emergency Medical Retrieval & Transfer Service Overview

Our Mission

To provide advanced decision-making and Critical Care for life or limb-threatening emergencies that require transfer for time-critical treatment at an appropriate facility.

Our Vision

EMRTS Cymru has been developed to provide the following services to Wales:

- EMRTS Cymru delivers improved equity of access to pre-hospital Critical Care for the people of Wales.
- EMRTS Cymru delivers health gains through early interventions (provided outside normal paramedic practice by EMRTS Cymru) and by direct transfer to specialist care centres. This aims to improve the functional outcomes of patients and increase the number of patients considered by national models to be 'unexpected survivors.'
- EMRTS Cymru delivers downstream benefits to smaller and more rural hospitals across Wales. More patients are taken directly to the most appropriate centre which results in significantly fewer secondary transfers. These would

previously have depleted hospitals of specialist personnel (such as anaesthetists) created an additional cost for the Welsh Ambulance Service, and pressures for the Welsh Ambulance Service and delayed time to definitive care in specialist centres.

• EMRTS Cymru delivers clinical and skills sustainability in Wales. EMRTS supports consultant and Critical Care Practitioner recruitment into Wales by offering opportunities with the service as a part of the recruitment of related NHS Wales hospital positions. EMRTS Cymru also supports educational activities across NHS Wales.

Our Service

EMRTS offers a 24/7 medical operation across Wales. Services include:

- Pre-hospital Critical Care for all age groups (i.e. any intervention/decision that is carried outside standard paramedic practice).
- Undertaking time-critical, life or limb-threatening adult and paediatric transfers from peripheral centres (including Emergency Departments, Medical Assessment Units, Intensive Care Units, and Minor Injury Units) for patients requiring specialist intervention at the receiving hospital.

In addition, the service provides an enhancement of neonatal and maternal pre-hospital Critical Care, both for home deliveries and deliveries in free-standing midwifery-led units (MLUs), including transferring neonatal teams to distant time-critical cases by air.

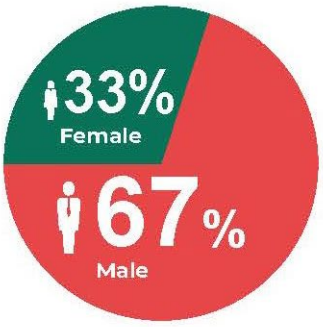
The service provides a multitude of roles at major incident or mass-casualty events and a strategic medical advisor is available 24/7. This advisor is known as a top cover consultant.

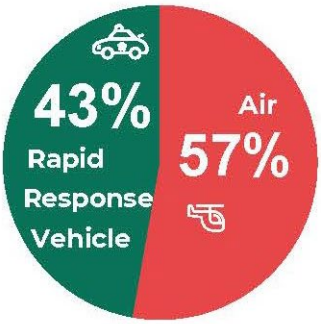
When the Wales Air Ambulance Charity helicopters are unable to fly due to poor weather conditions, EMRTS Cymru has access to a fleet of Rapid Response Vehicles (RRVs). They have been converted into state-of-the-art emergency response vehicles designed to enable the team to reach the scene of a medical emergency, by road, as fast as possible. These vehicles are stationed at all of our operating bases in Wales. Medical equipment has been designed to be interchangeable between the charity's helicopters and the RRVs.

EMRTS Cymru is coordinated and tasked centrally via the Critical Care Hub (CCH) which is based at the Welsh Ambulance Service headquarters in Cwmbran. The CCH also operates 24 hours a day.

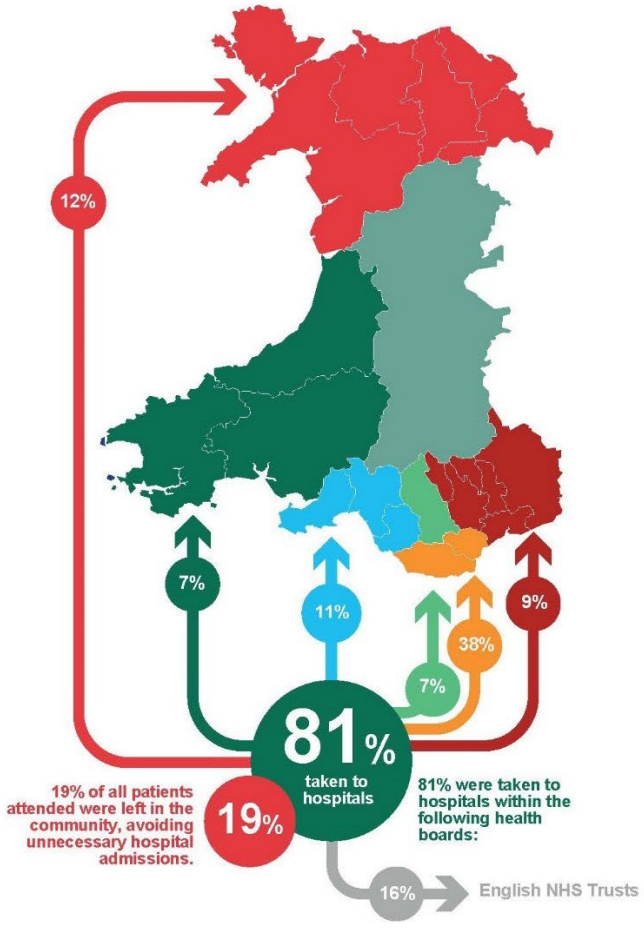
Mission Data

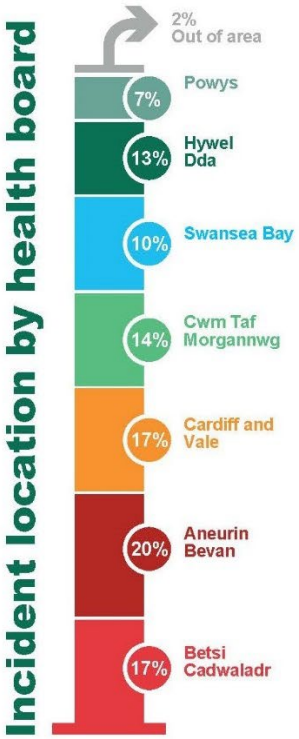
Total number of calls - 3473





Patient Destinations





The Adult Critical Care Transfer Service overview

Our Mission

To ensure seamless, uninterrupted care for critical ill and injured patients in Wales through provision of a professional, high-quality, specialist adult transfer service.

Our Vision

ACCTS Cymru's maxim is that Critical Care is a process and not a location. The service aims to ensure equity of access to Critical Care and specialist services for the people of Wales, irrespective of geographical distance or national borders. The service promotes cooperation across the Critical Care units of the health boards and can help to maintain optimal capacity throughout the Wales Critical Care Network. Additionally, the service delivers benefit by reducing demand on anaesthetic & Critical Care departments, Welsh Ambulance Services NHS Trust and EMRTS, by undertaking transfers that would otherwise impact these services.

Our Service

The Adult Critical Care Transfer Service launched in August 2021 as a result of the Critical Care Working Group task and finish report. The report recognised the requirement for safe and high-quality inter-hospital transfer to be an essential part of Critical Care delivery in Wales. Prior to the services launch, Critical Care transfers were undertaken on an ad-hoc basis by medical and allied health care professionals from referring hospitals utilising front line ambulances. This ultimately resulted in increased pressures on the medical teams, both in hospital and prehospital, by depleting already stretched resources.

The service can provide varying levels of care from complex treatment and interventions to lower acuity Critical Care transfers between hospitals. It has three funded ambulances operated by two transfer duty crews covering the breadth of the Principality. ACCTS Cymru is able to provide this service by recruiting high calibre clinicians who have all undergone a robust selection process and have delivered critical and intensive care in previous roles.
The predicted workload was initially estimated at 420 transfers each year. This number was exceeded within ten months of launching the service.

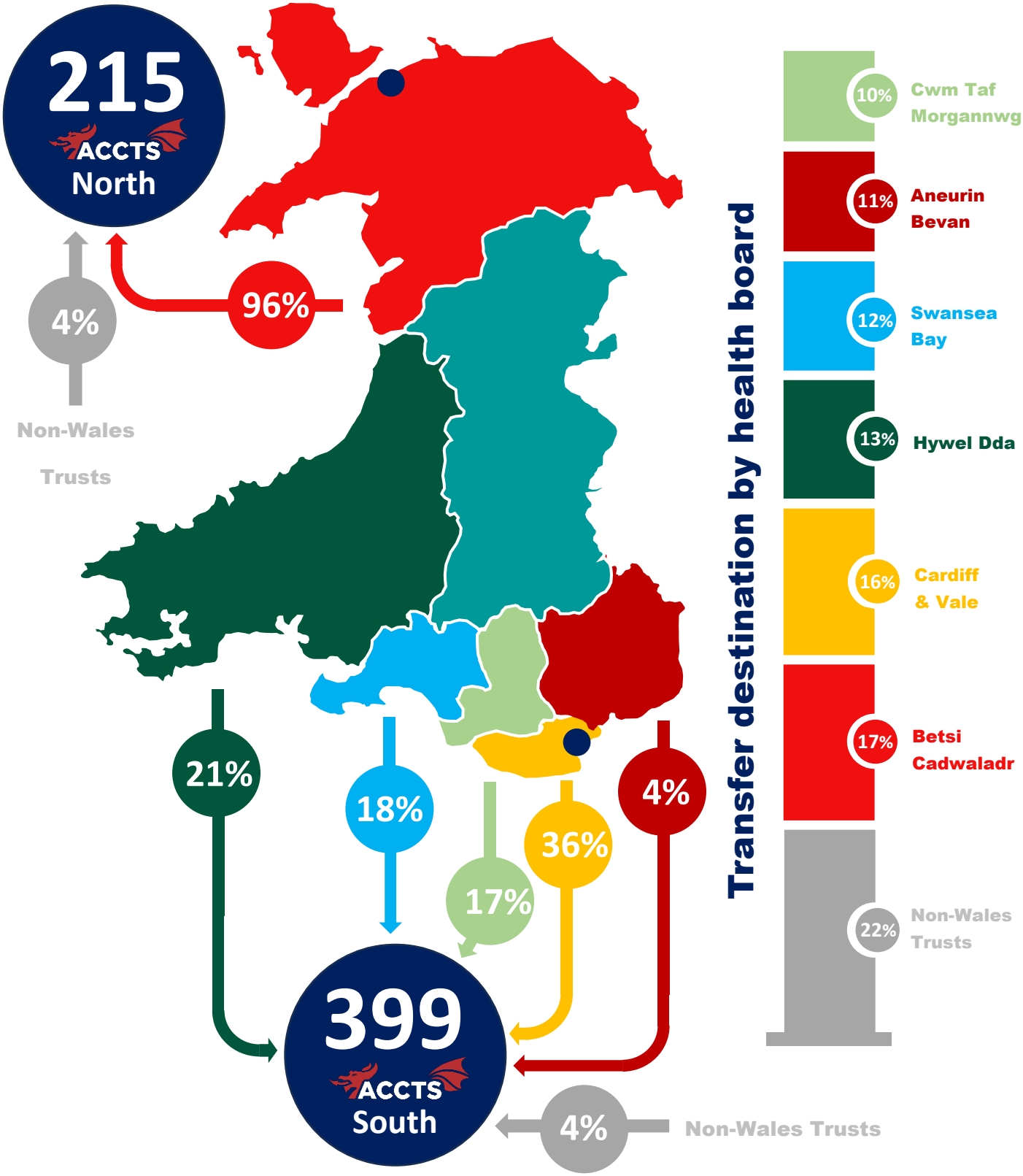
During the period covered in this report, ACCTS Cymru undertook 150% of the predicted workload from historical modelling.
As a national service we have supported the movement of patients to specialist care as well as timely repatriation so that patients can receive the treatment they need near their loved ones. We work across all health boards in Wales as well as expediting access to quaternary care in NHS England for services not available within Wales.

Almost half of the patients transferred by ACCTS Cymru were critically unwell and required mechanical ventilation. This patient group require the skills and training of a dedicated specialist team to move them safely.

Over 250 patients were moved as emergency transfers from local hospitals to specialist centres where the facilities to treat specific patients were not available. Almost 350 patients were moved back closer to home to continue their journey to rehabilitation and recovery or were moved between intensive care units under extreme pressures to ensure all patient received the safest, most equitable Critical Care possible. 62 transfer missions commenced outside of standard operating hours, and a total of 121 transfers were completed outside of standard operating hours.

The data presented only provides a flavour of the work carried out by ACCTS Cymru teams for the people of Wales. The ACCTS Cymru Service Evaluation due to be published later this year will provide an in depth review of the service.

Transfer Missions



347 Planned

176 Urgent

91 Time-Critical

Research

The year has seen significant academic successes. ACCTS Cymru staff have presented posters nationally at a number of conferences, on topics including transfer of major trauma patients, potential viability of ECPR in Wales, and practitioner led transfer. Numerous projects have supported non-medical research practice, with several RTPs and CCPs amongst represented authors.

The service was awarded the Ed Major prize at the Welsh Intensive Care Society meeting, was selected for an international oral presentation at the Academy of Medical Educators conference, and is due to present work on coordination of Critical Care transfers at the European Society of Intensive Care Medicine conference in Milan. ACCTS Cymru staff have co-authored a paper reviewing UK prehospital ultrasound practice and the service is supporting a fellow in the prestigious Bevan Commission exemplar programme, looking to find solutions to equitable acute stroke care in Wales. Multiple conference abstracts and formal manuscripts are planned for Autumn 2023 as longer-term research work between ACCTS Cymru and EMRTS comes to fruition.

ACCTS Case study

A middle-aged gentleman was referred to ACCTS Cymru South team for transfer to a hospice. The gentleman was normally fit and well and lived an active work, family and social life but had become acutely unwell. A diagnosis of progressive sporadic Creutzfeldt-Jakob disease was made. The patient had previously expressed very clearly and firmly to his family he did not wish to die in hospital.

The referral was received by the coordinator and an MDT arranged for the following day. A meeting of all key clinical representatives via teleconference took place with the ACCTS Cymru coordinator, an ITU consultant, a palliative care consultant, hospice manager, ACCTS Cymru clinical lead and the ACCTS Cymru retrieval and transfer physician who would be undertaking the transfer. This ensured that we could support the care of a ventilated patient in a hospice setting and also facilitate sensitive conversations about existing family relationships with the in-hospital team to ensure a smooth transition.

The ACCTS Cymru clinical team were able to transfer the patient to hospice with no adverse events. Having close monitoring by a dedicated transfer team allowed end-of-life care to be delivered effectively in transit. Existing subcutaneous infusions continued for transfer and pain relief and sedatives were given intranasally to top up existing medications during the road journey which avoided any further invasive procedures. On arrival at the hospice we met with the hospice manager and a palliative care consultant and a smooth transfer of care was made to the hospice team.

A dedicated transfer team with extensive preparation with retrieval and transfer coordinator was able to connect all members of the clinical team caring for this patient , easing concerns for the hospital team transferring a patient on a palliative pathway which is not something routinely done for adult Critical Care patients. It provided a seamless transfer of care to a non-hospital area for a Critical Care patient to clinicians and specialists from the palliative care field. The opportunity allowed a person to die in line with their previous wishes, whilst easing concerns of all professionals involved through thorough preparation and collaborative working with clinicians, hospice staff, ACCTS Cymru team and family members.

Transfer Education

Supporting Training

Morriston Anaesthetics Transfer Attachment

CCP & PHEM Trainee supervised transfer practice

2 FICM SSY ICM Trainees hosted 50:50 with hospital

Academy of Medical Educators international conference

Praised for 'Gold Standard' Multidisciplinary Residential Training

Bangor University Transfer & Retrieval MSc

6

Practitioners Supported

Specialist Training Days

Paediatrics

Trauma First on Scene

Coordination

Mechanical Cardiac Support

The Wales Air Ambulance Charity

Our services are delivered via an important partnership with the Wales Air Ambulance Charity

What is the difference between EMRTS Cymru and the Wales Air Ambulance Charity?

Wales Air Ambulance is a charitable trust which relies entirely on the generosity and support of the Welsh public to help keep the helicopters in the air and Rapid Response Vehicles on the road.

The charity does not receive direct funding from the government and does not qualify for National Lottery funding.

EMRTS Cymru, a part of NHS Wales and supported by Welsh Government, supplies a highly trained NHS Critical Care team.

This partnership between the NHS and the Third Sector demonstrates the benefits of cross-sector models, and the important role charities can play in the provision of healthcare.

What is the Wales Air Ambulance Charity?

Launched on St David's Day 2001, the Wales Air Ambulance Charity is the official air ambulance service for Wales. The Charity relies entirely on donations to raise £11.2

million each year. This funds four helicopters across Wales and the service's fleet of Rapid Response Vehicles. It is the largest air ambulance operation in the UK.

Income generation ranges from community fundraising, legacies and corporate support, to a national retail and trading operation as well as a Lifesaving Lottery.

The service has attended over 47,000 missions since its inception.

The Charity's Mission

To deliver lifesaving, advanced medical care to people across Wales, whenever and wherever they need it.

The Charity's Vision

To improve the lives of patients and their families by being a world leader in advanced, time-critical care.

For more information about the Wales Air Ambulance Charity, visit www.walesairambulance.com

Financial Statement

EMRTS Cymru met its financial target in 2022/23 by delivering a surplus of £0.117m against its revenue funding allocation of £7.915 million.

The surplus arose primarily as a result of the Covid-19 pandemic and global supply chain issues – it will be carried forward into 2023/24 to support the ongoing delivery of the service. EMRTS Cymru also received £0.4m of capital funding from the Welsh Government which was used to replace equipment and other assets. The Wales Air Ambulance Charitable Trust is funding Rapid Response Vehicle purchases to increase the response capability of Critical Care Teams. EMRTS Cymru would like to thank the charity for their support as we continue to work collaboratively for the people of Wales.

EMRTS Education and Training

The EMRTS service provides Critical Care delivered by a variety of operational teams that consist of Critical Care Practitioners and pre-hospital emergency medicine doctors. The ability to effectively carry out interventions that present uncommonly but require high skill levels is of utmost importance and we have developed, bespoke training programmes to train and maintain our staff skills. Using our internal and external faculty, we have created high fidelity simulation in which EMRTS clinicians complete scenarios in flight suits with replica training kit and equipment that require complex and surgical interventions. Immersing our clinicians in this type of training allows us to continue to provide the best pre-hospital critical care to our patients. The EMRTS Skills Course (ESC) is imbedded into the training calendar and all staff have the opportunity to attend. We have also developed a two day Ultrasound Course to support clinical decision making and supporting on-scene management plans for our patients.

In addition to training our own staff, we have also created a new Critical Care Practitioner Fellowship[2] (CCPf) programme that allows clinicians who are employed within a Wales Health Board, to gain experience with our pre-hospital care teams for a 12-month period. This programme offers exposure, experience and a learning opportunity to the non-doctor clinical workforce and give insight into working within this specialised field. The CCPf is a volunteer scheme but feedback from previous candidates have been extremely positive.

"This fellowship has allowed me to gain a much greater insight into the provision of Critical Care and how Critical Care teams can support me as a WAST clinician. As for improvements I can't really think of anything, it's been a great opportunity so far and really enjoying it".

"Thoroughly enjoyed the fellowship, I now have a more holistic view and appreciation of the operation of EMRTS and strengthened working relationships with colleagues. The fellowship has greatly enhanced my knowledge and skillset as a practitioner, and I have relished in the challenges and diversity of the role. By far one of the best opportunities and a privilege to utilise and adapt my skills developed in intensive care in providing Critical Care in the prehospital field."

Utilising modernisation in the workplace we have assigned all practitioners and dispatchers within the service access to an electronic Portfolio system which allow staff to capture competencies in the workplace including wider training opportunities in an easier and faster format.

November 2022 was the first EMRTS/ACCTS Cymru seminar[3] which was a 2-day event and hosted guest speakers from Australia, America and Scandinavia to present specialised topics pertinent to the pre-hospital and transfer environments. This event showcased EMRTS/ACCTS Cymru at an international seminar that attracted speakers from these different countries. Subsequent service wide events will alternate across Wales to accommodate staff that work within the various operational bases promoting inclusivity for all staff in attending these events.

Other bespoke training was a neonatal and paediatric day[4] that was mirrored across north and south bases to accommodate all staff, we used a combination of internal staff and colleagues from outside agencies to help deliver maternal emergencies in the pre-hospital environment.

All the practitioners within EMRTS complete Level 7 education and the final year of the MSc Advanced HEMS practice [Bangor University] will allow these clinicians to autonomously administer blood component therapy. Together with Level 7 education

the practitioners and our Critical Care doctors all have to successfully pass the prestigious Diploma in Immediate Care, Royal College of Surgeons, Edinburgh exam.

We are looking forward to supporting the educational and training needs of our teams including developing all the above courses during 2023/24 so we can continue to deliver the best Critical Care in the pre-hospital and retrieval environments.

PHEM Training

Pre-Hospital Emergency Medicine (PHEM) is a sub-speciality training curriculum of Anaesthesia, Emergency Medicine and Intensive Care Medicine. It aims to provide training to the level of a consultant practitioner in emergency response, primary scene and secondary emergency transfer. PHEM training primarily relates to training in the area of medical care required for seriously ill or injured patients before they reach hospital or during emergency transfer to hospital. It represents a unique area of medical practice which requires an intense focused application of a defined range of knowledge and skills to an exceptionally high level.

EMRTS is the principal Health Education and Improvement Wales (HEIW) approved Local Education Provider for PHEM in Wales. Wales has hosted PHEM training since 2013 and trainees have worked with EMRTS since its inception.

We are proud to be able to offer our trainees an almost unique experience with access to a vast range of opportunities. This last year has seen the formal inclusion of ACCTS Cymru training time that has allowed the trainees greater exposure and experience in the secondary emergency transfer.

Trainees also spend time in Community Emergency Medicine with the well-established Physician Response Unit run in partnership with the Grange University Hospital.

Completion of PHEM training requires coverage of an extensive curriculum and constant assessment along the way. As Training Programme Director I am exceptionally grateful for the dedicated and enthusiastic education team led by Chris Connor. This team have ensured the trainees have had a wealth of opportunity and education throughout the last year, including surgical skills courses and simulation

consolidation days. We have also run partnership days with other national air ambulance and Critical Care services.

We have had excellent success in the National Formative Assessments that trainees are required to complete – both at a Diploma and Fellowship level. I am sure this is set to continue. Again, this is down to the hard work and dedication of both the trainees but also the trainers within EMRTS.

August sadly sees us say goodbye to our current exceptional cohort of trainees. It has been a pleasure to train and work with these individuals. We are, however, looking forward to welcoming three new trainees to the service in the coming weeks.

The next year looks to be exciting and promising, and we look forward to continuing to deliver high quality PHEM training to our future consultant colleagues.

Laura Owen

Training Programme Director
Consultant in Emergency Medicine and Pre-Hospital Emergency Medicine

EMRTS Service Review 2023

Pre-hospital Critical Care in Wales is provided under a joint agreement between NHS Wales via EMRTS and the Wales Air Ambulance Charity Trust. It is commissioned by the Emergency Ambulance Services Committee.

A service review was completed in 2022, and combined with internal service analysis, as well as computer simulation modelling by independent experts (CSAM Optima Predict) to ensure the best use was being made of resources.

The analysis examined 999 calls where we might have attended but weren't able to because we didn't have resources available. It also indicated its assets, helicopters and Rapid Response Vehicles, and highly skilled clinicians are sometime underused.

This date, broken down into periods of time, geography and seasonality, has been fed into external analytics software that presented a series of projections based on a number of operational models, such as different medical shift patterns and base locations.

The modelling suggests that, with the existing funded resources, several hundred additional patients could be attended each year, and that 88% of total demand could be achieved, compared with the existing model that only meets 72% of demand. It also identified that there is underutilisation of clinical teams within the current service model.

The service has developed from its original two sites at Welshpool and Swansea airports (now Dafen, Llanelli), to also include sites at Caernarfon and Cardiff, with the latter also providing 24/7 care across Wales. The modelling, however, indicated the opportunity to enhance day-time provision with extended after-dark capability, as well as changes to base locations. It suggests options which include:

- Move the Welshpool crews (including aircraft and Rapid Response Vehicles) and co-locate them with the North Wales operation. Two helicopters, two crews, one location. The location in North Wales is under discussion.
- Extend the hours of operation from the above-mentioned base. One crew to operated 8am until 8pm, and the other 2pm until 2am. The two crews in question currently operated 12 hours but this could increase to 18 hours, covering the peak periods of demand. Therefore, patients in North Wales, Powys and Ceredigion with life or limb-threatening illness or injures after 8pm will have a crew based in North Wales rather than relying on the busy Cardiff-based overnight crew.
- Ensure the aircraft are not scheduled for maintenance during peak times, e.g. summer.

Day-time helicopters to become night-vision capable allowing us to operate in the hours of darkness (dawn and dusk during day-time shifts, particularly during winter months with shorter daylight hours.

Over the first part of the year EMRTS, together with their Wales Air Ambulance partners, hosted a series of information-sharing events across the country to highlight the proposals to the public and key stakeholders, and to consider feedback.

As a result of the discussions, concerns were raised by the communities of Welshpool, and more recently Caernarfon, regarding the impact on their air bases, which are highly valued, and any potential changes to bases. People have also said they were worried this would adversely affect rural areas and lead to longer waiting times.

The Chief Ambulance Service Commissioner has been tasked by EASC to lead an independent formal engagement on a national basis – the EMRTS Service Review – to develop options for how the air ambulance service can be further improved for the people of Wales.

Phase 1 of the EMRTS Service Review formal engagement began in March 2023 and focused on listening to comments, queries and gathering of feedback to develop a range of options that would be complemented by data modelling.

Once the options are developed, the Commissioner will go back out to the public as Phase 2 for public comment (expected in autumn 2023) on these that will help the Commissioner arrive at a recommendation and preferred option. The recommended option will then go back to the Emergency Ambulance Services Committee for consideration and final decision.

The formal engagement includes face-to-face public meetings, informal drop-ins, and virtual online sessions with a wide range of stakeholders in the review and will continue to provide feedback throughout the engagement process, ahead of EASC's final decision.

All official papers and updates related to the EMRTS Service Review formal engagement, led by the Commissioner, are available on the EASC website available here.

Patient Liaison – Aftercare

Our jointly funded patient liaison service aims to provide vital post-injury or illness support and guidance for our patients, assisting their recovery and transition back to independent living.

Frequently patients and their family contact us during their recovery to express their gratitude and find out more about what happened to them. Many of them were so critically unwell that they do not recall the events after their injury or illness when we were treating them. As a result of their illness, our patients often have to endure enormous physical and mental challenges after initial treatment and at times they do not feel they have sufficient information about their care or access to help.

The team of two full-time nurses, and an administrator, now reviews over 250 cases per month, and directly contacts 70 relatives and patients, resulting in around 20 appointments per month.

In addition, the team attend an average of 13 multi-disciplinary hospital meetings per month, ensuring those who may benefit most from the service are identified as early as possible.

They also attend regular meetings with charity colleagues to coordinate patient stories and contact.

For more information please visit https://emrts.nhs.wales/patient-liaison/ , email emrts.patient@wales.nhs.uk or call 0300 3000 067.

Case study

Josh Tayman was hiking with a friend near the top of a waterfall at Swallow Falls in Betws-y-Coed when he slipped and fell 50ft into the waters below.

His friend found the twenty-year-old face down in the water and started performing CPR, before a passer-by, who happened to be a doctor, took over.

The CPR continued for ten minutes, before a Wales Air Ambulance with an EMRTS crew, and a land ambulance, arrived at the scene. A difficult extrication from the side of a waterfall followed, with Josh being given a general anaesthetic by EMRTS medics. A breathing tube was inserted into his lungs and connected to a breathing machine.

Due to the mechanism and potential of significant internal injuries and polytrauma, he was given six units of blood products, spinal immobilisation and a pelvic binder was applied. He was wrapped in a warming blanket, packaged and flown by Wales Air Ambulance to the major trauma centre in Stoke. Following a full assessment in the emergency department and full body scans he was transferred to ICU.

Josh, who works as a security guard, had suffered a broken coccyx, a head injury, multiple whole-body bruises and a 4cm wound behind his left ear. He was kept asleep and on the breathing machine for three days in the intensive care unit and was woken up and taken off the ventilator on day four. Within a couple of days he was eating and drinking and walking with the physiotherapists. He was discharged home after only six days in hospital.

He has since been back to meet the medics who helped to save his life.

He said: *"I go hiking a lot, and on this occasion I remember getting out of the car, having a smoke and walking through the woods, and taking pictures. It was more of a gentle stroll to what I am used to. I remember it being a bit slippery, and that's when I fell.*

"it was a freakish accident. It could have happened to anyone. I've no doubt without the help of my friend and the passing doctor, followed by the expertise of the EMRTS medics, I might have died. I'm very grateful to them all".

EMRTS Research

The introduction of the EMRTS was founded on the best available evidence of benefit available at the time. Emergency care, and especially that outside of a hospital is incredibly hard to properly perform research on, and so the evidence isn't always easy to find. We were fortunate to be able to take advantage of the SAIL databank to research the impact of the EMRTS in Wales, and the results have been widely publicised in 2021. These are an improvement in survival for patients who suffer from blunt trauma (e.g. road accidents). Whilst this is greatly encouraging this is only the tip of the iceberg, as we deliver care to so many more patients, and are also interested in how best to deliver the benefits to as many patients as we can. Sometimes this is at the scene of the incident, but it may also be during transfer between hospitals, or even as part of recovery with our ever-evolving aftercare team.

Arguably, one of the most important decisions we make every day is whether or not to send one of the teams to one of the possible 385,000 emergency 999 calls per year. Often likened to a needle in a haystack, this decision could afford someone a chance of a lifechanging intervention, or mean we are not available to them due to going to a different call. We are currently exploring two areas of research in this area, one is how our staff interact with the calls, and the other is whether computers, and specifically Artificial Intelligence could help them with this process.

999 RESPOND ("emerRgEncy diSPatch decisiONs in coviD-19")

We recently started a Health Care Research Wales funded research project looking at risk negotiation in relation to the dispatch of its Critical Care Teams. The research sees us working as a multi-disciplinary team together with Welsh Ambulance Service, Warwick University and Bristol university to explore the process leading to dispatch.

There are over 385,000 "999" calls to the ambulance service per year in Wales, but only a relatively small number of these are so serious in nature that they require the advanced Critical Care skills of the EMRTS team. To help decide which calls to go to, the service has two members of staff working in the Welsh ambulance control room looking at all the 999 calls that come in 24 hours a day.

They can speak to callers, look at notes on the computer system and speak to ambulance crews and first responders that may already be with a patient.

They use this information to decide if they should send a Critical Care Team to help.

It is important that the team is dispatched as quickly as possible to the most seriously ill patients.

However, as a small specialist team, it is also important that they are only sent to emergencies where they are needed. Getting the right information to make this decision in the heat of the moment can be very difficult.

We want to study the way in which the decision to dispatch a cri tical care team is made by the teams in the ambulance control rooms. We will closely study several recent cases where a Critical Care Team was dispatched to an emergency. We will use the computer notes, listen to voice recordings of 999 calls, and study any other information that is available about the incident. We will use scientific methods that look in great detail at how members of the dispatch team work together under pressure to make a decision. This involves examining the words and phrases they use between one another, other ways they communicate, and how they make sense of the rapid flow of information from the 999 call.

Researchers have done this before for routine ambulance work, but we will be the first to look at this in the UK for the Critical Care Teams. The process is normally a challenge; the COVID-19 pandemic and its aftermath added even more complexities in making these decisions. We will be looking at calls before and during the pandemic. We want to see if COVID-19 has changed the way that Critical Care Teams respond to emergency cases. We will be looking at a selection of all 999 calls where a Critical Care team is sent to the scene. This includes people whose heart has stopped (cardiac arrest) or suffered a major trauma (e.g. a car accident).

We hope that we will be able to improve the process of getting Critical Care to the people who need it most. We will use our research to support training for new staff and ambulance staff that work alongside the service and to influence national policy.

Artificial intelligence

The work outlined also complements some research into AI we are undertaking with Swansea University, the Algorithmic Assist project.

What is an algorithm?

In healthcare, the word 'algorithm' is often used like 'procedure' to describe a simple 'step-by-step' guide to addressing a situation. Examples are the basic and advanced life support flow charts published as Resuscitation Council guidelines.

In modern computer science, algorithms have come to describe the different families of computer systems that use their logical steps to have the computer try and learn how to improve its own processing. If the improvement is achieved without a human giving explicit instructions, we call it Machine Learning (ML).

Ultimately, we're seeking to recognise highly complex patterns in data and use the computer to do this with accuracy and speed. The implementation of a ML algorithm does a form of learning that can result in a computer model - a mathematical representation of what it has learned. A good model should be able to give reliably useful responses to problems it hasn’t seen before.

Ben Wilson and his approach

Ben Wilson is the person carrying out the research in the Algorithmic Assist project. His background is in NHS clinical outcomes analysis. And he’s currently studying for a PhD at Swansea University. Ben's background working with clinicians on both data capture and outcomes analysis has made him wary of technological promise that hasn't proved itself to fit into people's working lives.

This means that his starting point in the research is to explore the problems as experienced by EMRTS Critical Care Hub (CCH) staff - rather than starting with an advanced algorithm or complex ML system. The PhD is in ‘Enhancing human interactions and collaborations with data and intelligence driven systems’. This means there is a strong focus in the research on how well any computer-based (or algorithmic) assist tool works to support the human experts who work at the CCH.

ACCTS
Adult Critical Care Transfer Service Cymru
Gwasanaeth Trosglwyddo Gofal Critigol Oedolion Cymru

GIG CYMRU NHS WALES
Gwasanaeth Casglu a Throsglwyddo Meddygol Brys
Emergency Medical Retrieval & Transfer Service