Service Evaluation of the Adult Critical Care Transfer Service (ACCTS) Cymru

2024

NHS Wales

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2021-2024

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Glossary of terms

Secondary Transfer
This is a transfer of a patient from one healthcare facility to another (interhospital transfer).

Retrieval
The use of expert medical teams to assess, stabilise, package and subsequently transport a patient from one healthcare facility to another. The aim is to replicate the delivery of initial critical care to the standard achieved in hospital emergency departments.

Time Critical Escalation of Care

Patients who require transfer to specialist care for immediate (within 1 hour of arrival) life, limb or sight-saving intervention.

Urgent Escalation of Care

Patients require transfer to a hospital that has specialist facilities to treat and manage their condition. Undertaken within 4-12 hours

Planned/ Elective Transfer

Note significant regional variation. Will include non- urgent escalation of care, repatriation and capacity / equity of care transfers. Time to be arranged

Intensive Care Society (ICS) levels of care

Ward Care

- Patients whose needs can be met through normal ward care in an acute hospital
- Patients who have recently been relocated from a higher level of care but their needs can be met on an acute ward with additional advice and support from critical care outreach
- Patients who can be managed on a ward but remain at risk of clinical deterioration

Level 1 – Enhanced care

- Patients requiring more detailed observations or interventions, including basic support for a single organ system and those 'stepping down' from higher levels of care
- Patients requiring interventions to prevent further deterioration or rehabilitation needs that cannot be met on a normal ward
- Patients who require ongoing interventions (other than routine follow up) from critical care outreach teams to intervene in deterioration or support escalation of care

- Patients needing a greater degree of observation and monitoring that cannot be safely provided on a ward, judged on the basis of clinical circumstances and ward resources
- Patients who would benefit from Enhanced Perioperative Care

Level 2 – Critical Care

- Patients requiring increased levels of observations or interventions (beyond level 1) including basic support for two or more organ systems and those stepping down from higher levels of care
- Patients requiring interventions to prevent further deterioration or rehabilitation needs, beyond that of level 1
- Patients needing two or more basic organ system monitoring and support
- Patients needing one organ systems monitored and supported at an advanced level (other than advanced respiratory support)
- Patients needing long term advanced respiratory support
- Patients who require Level 1 care for organ support but who require enhanced nursing care for other reasons, in particularly maintaining their safety if severely agitated
- Patients needing extended post-operative care, outside that which can be provided in enhanced care units: extended postoperative observation is required either because of the nature of the procedure and/or the patient's condition and co-morbidities
- Patients with major uncorrected physiological abnormalities, whose care needs cannot be met elsewhere
- Patients requiring nursing and therapies input more frequently than available in level 1 areas

Level 3 – Critical Care

- Patients needing advanced respiratory monitoring and support alone
- Patients requiring monitoring and support for two or more organ systems at an advanced level
- Patients with chronic impairment of one or more organ systems sufficient to restrict daily activities (co-morbidity) and who require support for an acute reversible failure of another organ system
- Patients who experience delirium and agitation in addition to requiring level 2 care
- Complex patients requiring support for multiple organ failures, this may not necessarily include advanced respiratory support

WAST – Welsh Ambulance Services University NHS Trust

TARN – Trauma Audit & Research Network

ICNARC – Intensive Care Audit and Research Network

WAACT – Wales Air Ambulance Charitable Trust

WCCN – Welsh Critical Care Networks

GIS – Geographic Information Systems

JRCALC – Joint Royal Colleges Ambulance Liaison Committee

EASC – Emergency Ambulance Services Committee

WHSSC – Welsh Health Specialised Services Committee

JCC- Joint Commissioning Committee

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Foreword

Dr Mike Slattery – Clinical Lead

It is with great pleasure that we present the Service Evaluation of the Adult Critical Care Transfer Service (ACCTS) Cymru. This document encapsulates a comprehensive assessment of the ACCTS Cymru, which has been pivotal in enhancing critical care transfer services across Wales. The inception of ACCTS marked a significant milestone in the realm of critical care in Wales, embodying a commitment to delivering equitable, timely, and high-quality care to critically ill adults in need of transfer between healthcare facilities.

Since its establishment in 2021, the ACCTS has operated with the primary objective of bridging the gaps in critical care transfer services, ensuring that patients receive the highest standards of care during transfers. This service was initiated in response to a directive from the Chief Medical Officer to develop a National Transfer Service for Critically Ill Adults, a task that has been both challenging and rewarding.

This evaluation spans the initial years of ACCTS's operation, offering an in-depth analysis of its performance, challenges, and achievements. Through mixed methodology, we have assessed various aspects of the service, from clinical outcomes and stakeholder satisfaction to financial sustainability and equity of care.

The findings presented reflect the collective efforts of a multidisciplinary team committed to providing high quality care to patients in transfer.

We thank all the healthcare professionals, administrative staff, and stakeholders who have played a role in the development and success of ACCTS. Your support and collaboration have been vital in realising the vision of a seamless and effective critical care transfer service for Wales.

As we look to the future, the insights gained from this evaluation will guide the continued rapid evolution of ACCTS, ensuring that we remain responsive to the needs of our patients and the healthcare system.

We are confident that with ongoing dedication and innovation, ACCTS will continue to set new benchmarks in critical care transfer services, ultimately improving outcomes for the people of Wales.

1. Executive summary

- The ACCTS Cymru was established in 2021 to provide a dedicated and professional service for the transfer of critically ill adults between healthcare facilities in Wales and beyond.
- The service is commissioned by the Joint Commissioning Committee (JCC) (formerly EASC) and hosted by the Emergency Medical Retrieval and Transfer Service (EMRTS) Cymru, with the aim of improving the quality, safety, and equity of critical care transfers.
- This evaluation covers the first 32 months of the service's operation, from August 2021 to April 2024, using a mixed methodology to assess the service's performance, outcomes, and impact.
- The evaluation found that the service has met and exceeded its commissioned aims and objectives, as well as the relevant national and international standards and guidelines for critical care transfer.
- The service has delivered 1355 transfers, of which 54% were for specialist care, 33% were for repatriation or capacity, and 13% were for time-critical or urgent care.
- The service has demonstrated a high level of clinical quality and safety, with only 3.4% of transfers experiencing a critical incident, and no adverse events attributable to the transfer process.
- The service has enhanced the equity of access to critical care and specialist services for patients across Wales, regardless of their location, and has facilitated timely and seamless transfers for patients with complex and diverse clinical needs.
- The service has contributed to the health gain of patients and the healthcare system, by providing active and focused care during transfers, reducing delays and interruptions in care, and freeing up critical care beds and resources.
- The service has provided value for money, by operating within its allocated budget, and by generating cost savings for the health boards and the ambulance service, as well as potential benefits for patient outcomes and hospital length of stay.
- The service has enhanced the clinical and skills sustainability of the critical care workforce, by recruiting and training a multidisciplinary team of transfer specialists, and by providing education and support to the wider critical care community.
- The service has fostered collaboration and innovation, by working closely with various stakeholders, networks, and partners, and by developing and implementing novel solutions and best practices for critical care transfer.
- The evaluation also identified some areas for improvement and development, such as enhancing the top cover and coordination arrangements, expanding the service hours and coverage, exploring the utility of non-medical transfer roles, progressing clinical network involvement, formalising patient feedback and aftercare, and conducting a longitudinal academic evaluation.
- The evaluation concludes that the ACCTS Cymru has been a transformational and indispensable service for critical care transfer in Wales and recommends that the service continues to receive support and funding to maintain and improve its performance and impact.

2. Introduction

This paper seeks to provide an assessment of the delivery of the ACCTS project against stated and commissioned aims. Through mixed methodology, it assesses delivery of the initial first year and sets out a plan for a longitudinal evaluation of the service. Such evaluation is required by the commissioner and as a service evaluation is conducted by the health body. It is presented to members of the Delivery Group (DAG) and JCC (formerly EASC) for consideration.

The Service Review of the Adult Critical Care Transfer Service (ACCTS) Cymru covers the period 2021 - 2024

The Launch of ACCTS Cymru, marked a transformative period for adult critical care transfer services across Wales. Historically, such transfers were managed on an ad-hoc basis, often lacking the dedicated resources, structured process and consistent oversight required to ensure the highest standards of patient care.

Recognising this critical gap across NHS Wales, driven by a directive from the Chief Medical Officer, took a proactive stance in early 2019 providing funding and support to establish a dedicated adult critical care transfer service for Wales.

The advent of the COVID-19 pandemic significantly accelerated this initiative, compelling the NHS to adopt innovative, agile, and flexible approaches to healthcare delivery. In response to the urgent need for a coordinated and reliable transfer service, a temporary critical care transfer service was rapidly established. This quick implementation allowed us to gather invaluable insights and feedback, which subsequently informed the creation of ACCTS Cymru.

The journey from conceptualization to the launch of ACCTS Cymru over 12 months was a significant achievement, particularly for a project of this scale. The unwavering support and collaboration we have received has been pivotal to our success.

Our dedicated Leadership Team has shown extraordinary commitment, often working beyond regular hours and making significant personal sacrifices.

The service has the primary mission is to deliver a high-quality transfer service for critically ill and injured patients across Wales, irrespective of location ensuring equitable access to specialist services and timely transfer closer to home an essential element of road to recovery.

ACCTS Cymru has been instrumental in shaping the UK national transition to professionalised transfer medicine. As we move forward we will continue to collaborate with colleagues nationwide

to ensure NHS Wales remains at the vanguard of transfer medicine whilst sharing these improvements in critical care transfer for all.

This evaluation utilises a mixed methodology to assess the delivery of the ACCTS project against its commissioned aims. It seeks to provide insights into the service's effectiveness, clinical outcomes, stakeholder satisfaction, and strategic alignment. Additionally, this report sets out a plan for a longitudinal evaluation to continuously monitor and improve the service. The findings and recommendations are presented to members of the Delivery Assurance Group (DAG) and the Joint Commissioning Committee (JCC) for their consideration and further action.

Hosted by the Emergency Medical Retrieval & Transfer Service (EMRTS) Cymru both services have a common goal of removing the existing gaps in critical care transfer and enahancing the overall healthcare delivery system in Wales.

We hope that this detailed review of our service, evaluating its performance from inception in 2021 through to 2024 will provide a flavour of the challenges that have been overcome, and the milestones that have been achieved. It reports a commitment to advancing the quality of critical care transfer for critically ill patients in Wales.

3. Background

The Adult Critical Care Transfer Service aims to provide transport for adult patients between intensive care units within and outside Wales.

The ACCTS went live in South Wales in August 2021, and in North Wales in October 2021. It operated from Cardiff Heliport and a new purpose-built hub on the Ysbyty Gwynedd site in Bangor, North Wales. The service was created in response to a request from the Chief Medical Officer in 2019 to implement a "National Transfer Service for Critically Ill Adults". The initial implementation plan and request can be found in the appendices.

The service is hosted by the Emergency Medical Retrieval & Transfer Service (EMRTS) Cymru, which in turn is a hosted body of Swansea Bay University Health board (SBUHB). Commissioning arrangements are via the Joint Commissioning Committee (JCC) (formerly by the Emergency Ambulance Services Committee (EASC)). The authors wish to thank the Wales Air Ambulance Charitable Trust for support in accommodation at Cardiff Heliport and latterly The Dafen airbase.

The COVID 19 pandemic provided a challenge to the implementation of the service, but also allowed early elements of the service to be tested and delivered to support the wider system at the time. Modifications were also made to the service infrastructure to cater for changes in practice.

Scope of the service

The high level scope of the service was to undertake level 2 and 3 intensive care transfers, primarily for non-time-critical patients. However it was recognised early during the project phase that the initial proposed model would not meet demand, provide a sustainable service or present value for money. In order to address the unmet need and further improve the equity in access to services, some modifications were made. This aimed to maximise the clinical care that could be delivered within the financial resources available.

The modifications included an on-call model in North Wales, as early data analysis showed a significant proportion of activity was found to be outside of the planned 08:00-20:00 operational hours. Service provision was also extended to cases falling outside of the initial clinical remit expanding to include patients requiring uplifts of care and time critical transfers co-ordinated with EMRTS teams freeing up EMRTS teams to provide prehospital critical care at the point of illness or injury. With adequate workload predicted in South Wales and an overnight EMRTS service, the South Wales operating hours remained as planned, however to support EMRTS in broadening access

to prehospital care, the scope of clinical care was expanded to facilitate access to timely transfer and access to specialist care when EMRTS resources were delivering patient care.

Thus, across Wales, ACCTS carried out transfers of adults for the following reasons[1]

1. **Repatriation/Capacity:** Supporting the transfer of patients between units to allow strategic management of intensive care beds across the network.

2. **Uplifts of care:** Supporting movement where services or clinical needs are not met locally.

3. **Time-Critical Transfer:** Supporting EMRTS in the movement of patients who require intervention in the event of primary EMRTS teams being unavailable.

The scope is depicted alongside that of the wider EMRTS service in the Figure 4.

[1] Operational Standard Operating Procedure, Overarching guidance for TCC providing support to the ACCTS Service providing intensive care transfers.

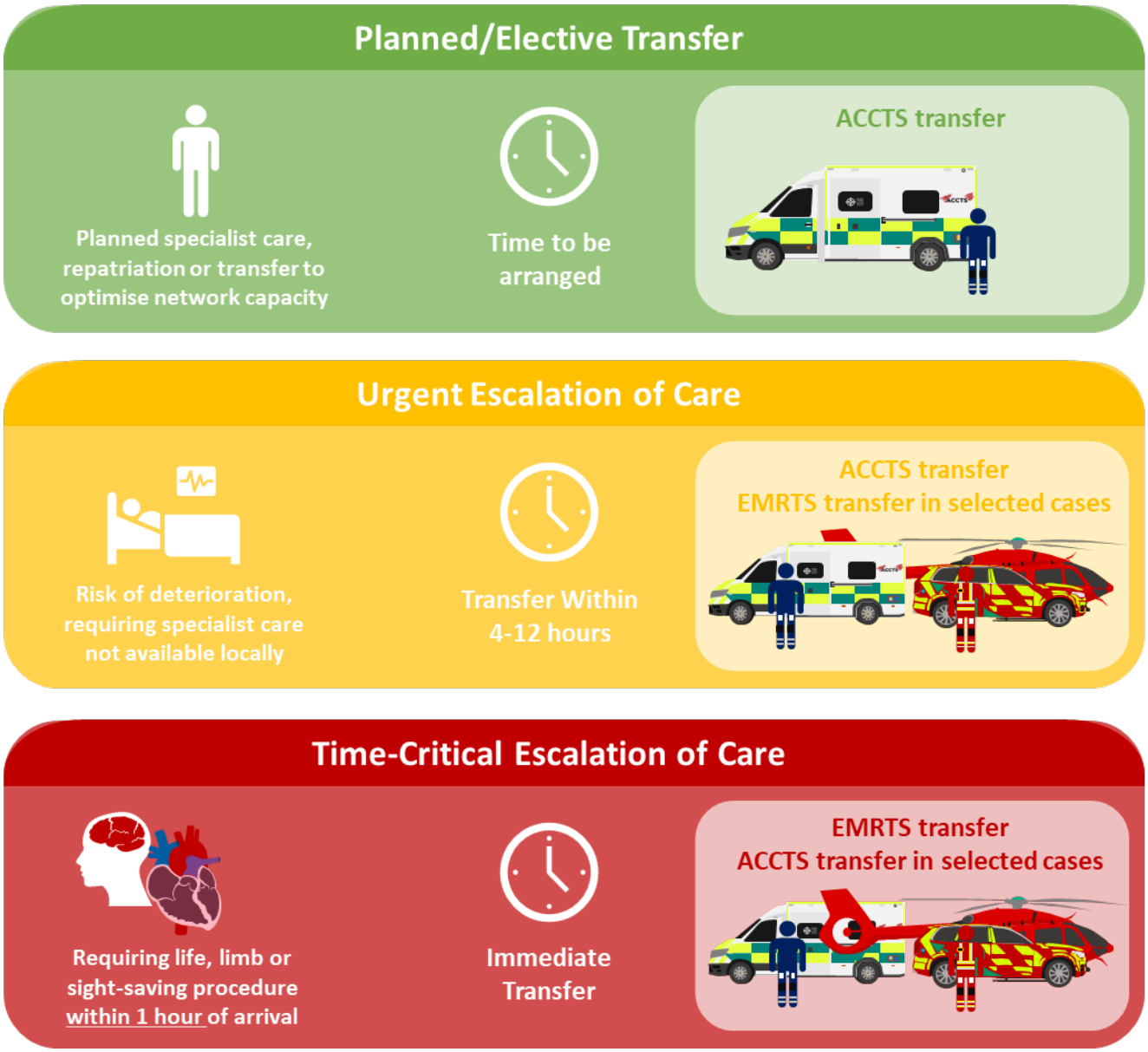


Figure 1 Scope of service.

Commissioning

The service is commissioned by the JCC (formerly EASC)

The service has a commissioning intention[2] relevant to the ACCTS with three components, reflecting the strategic priorities of the JCC.

EMRTS Commissioning Intention 2 – Adult Critical Care Transfer Service Implementation

- **CI2a Service Delivery** – The ACCTS team will continue to manage ongoing service delivery and will ensure robust performance management with a focus on outcomes, value, quality, and safety of service delivery.
- **CI2b Engagement-** Building on established relationships, continue to engage with all stakeholders to review and strengthen the service model(s) implemented to maximise the clinical outcomes, value, quality, and safety of service delivery.
- **CI2c Evaluation and Review-** Undertake evaluation and review relating to the implementation of the ACCTS, reporting on lessons learned, service activity and providing the required assurance regarding the realisation of anticipated outcomes and benefits going forward.

CI2c is fulfilled through this report.

In addition the wider EMRTS has a commissioning intention to undertake ongoing service evaluation.

[2] https://easc.nhs.wales/commissioning/emrts/emrts-commissioning-intentions-2022-23/

Strategic drivers

Welsh Government

Since the original project work, it was identified that two additional Welsh Government drivers were relevant. These are the 6 goals for Urgent and Emergency Care, 2021-2026[3], which has the desire to provide 'Right care, right place, first time'. Also, the Care of the critically ill: quality statement[4], which details six quality attributes of services for people who are critically ill in Wales:

- Equitable
- Safe
- Effective
- Efficient
- Person-centred
- Timely

The NHS Wales Quality Delivery Plan (QDP)

GOV.WALES, Written Statement - Critical Care Capacity (12 July 2018) (gov) .

Designed for life

Care of the Critically ill Quality statement

NHS Wales Critical Care Service Specification. 2023

NHS Wales Planning Framework 2022-2025

[3] Welsh Government Published: 4 February 2022
[4] Welsh Government Published: 7 October 2021

NHS (including clinical networks)

In addition, NHS England set out a service specification for "ACCTS" nationally[5] setting out requirements for English NHS Trusts. Finally, a number of clinical networks, and condition specific frameworks are emerging, all with complex transfer requirements as care is centralised, including but not limited to;

- Major Trauma Networks, including South Wales Trauma Network, and North West Midlands & North Wales Trauma Network
- Severe Acute Respiratory Failure centres
- Cold site elective surgery
- Centralisation of Intensive Therapy Units
- Cardiogenic shock frameworks[6]

Guidelines for the Provision of Intensive Care Services (GPICS)

FICM Core Standards for Intensive Care Units

ICS – Shock to survival

Clinical futures FICM

Enhanced Care Services implementation guidance.

The care of critically ill patients is becoming increasingly complex, with a growing number of small and large units forming clinical networks both across Wales and nationally. Safe effective patient transfer system is central to the functionality of these networks. Several documents have informed and shaped the creation, implementation, and ongoing development of Wales national transfer service. These documents integrate a mix of strategic, operational, and clinical drivers,

[5] NHS England Published: April 2024 https://www.england.nhs.uk/wp-content/uploads/2021/06/Adult-critical-care-transfer-service-specification-2023-v0.6-FINAL.pdf
[6] https://ics.ac.uk/static/8d541809-af1e-4e46-89c0d4382fd41bc6/Shock-to-Survival-Reportfinal.pdf

Key themes are described below

Optimising Critical Care Capacity and network flow to Specialist care

Critical care units in Wales are often un resourced and challenged to surge and seasonal clinical demands. The COVID19 demonstrated the potential for discrimination in the care of patients outside a critical care foot print. These challenges are often more acute with centralisation to deliver high volume and effective care.

Delays in admitting and discharging critical care patients compromise patient care both in terms of accessing clinical expertise as well as intervention.

The ACCTS Cymru transfer service must address the rapid movement of patient's between hospitals as a step up of care but also timely and responsive repatriation to the local hospital.

To maximise effectiveness, and deliver smooth transitions across the critical care pathways, the ACCTS Cymru must be integrated into the broader critical care system.

This integration will facilitate seamless transitions between different levels of care and provide access to follow-up and rehabilitation services, thereby supporting a critical care clinical network enabling high quality critical care from point of injury to transfer home.

Enhancing Patient Outcomes and Experience

Delayed transfers and overcrowded facilities increase risks and stress for patients. A well-coordinated, patient-centred transfer service with comprehensive handover procedures can improve patient outcomes and satisfaction by reducing these risks and ensuring continuity of care during transfers.

National Standards and Best Practices

Wales was one of the first to publish and deliver a clear set of standards that underpin the safe transfer of the critically ill. ACCTS Cymru is continuing this journey. Aligning with standards set by professional bodies such as the Faculty of Intensive Care Medicine (FICM) Whilst producing guidance

that reflects the Welsh heath care system aspiring to exceed the standards rather than meet. Alignment to NHSE guidance enables Data Collection and Benchmarking and continuation to the national understanding of transfer and how to develop further

Workforce Support and Sustainability

Staffing shortages and burnout among critical care staff are significant issues. Developing a dedicated team of trained professionals for the transfer service. Improves the clinical environment and experience by supporting effectively and reduce the burden on existing critical care teams. This approach will support workforce sustainability and improve job satisfaction and retention among intensive care professionals. Since launch ACCTS Cymru has continued to attract into Wales to increase the pool of staff exposed to NHS Wales.

Complex Risk Assessment and decision making as a gateway to equity

As the complexity of intensive care and the aligned clinical services necessitates clinical centres of excellence. Distance is an immovable reality people of Wales, most marked in rural populations. The distance traditionally becomes barrier as the severity and burden of critical illness increase. This limits access to complex networks and interventions driving inequity to those who may need it most.

ACCTS Cymru must therefore develop and foster existing operational and strategic relationships with centres of excellence. This combined with providing quaternity sites with confidence in the safe high-quality care we deliver irrespective of locations. Where barriers remain ACCTS must on ensuring access continues to improve through developing the clinical skill, operational platforms, and harness technologies to provide remote advice to both referrers as well as transfer specialist. Central to this is providing intensive care clinicians who are experts in transfer responsible for acting as a central coordinator of care and focused on delivering appropriate patients irrespective if physiology.

EMRTS Service Review

During the evaluation period the host service underwent a comprehensive independent review[7] as a result of a proposed service development in response to the Wales Air ambulance Charity strategic review. The recommendations approved on the 23rd of April 2024 by the JCC and relevant to this evaluation are the consolidation of the Emergency Medical Retrieval and Transfer Services currently operating at Welshpool and Caernarfon bases into a single site in North Wales. Within the proposal enhancements to hour of darkness operations, and improved ability to respond by road and air as well as an extension of hours to cover peak periods in the regions until 2am all have relevance to the operation of the ACCTS. This includes potential for more time critical retrievals to be undertaken by the teams operating in the new configuration, as well as a reduction in requirement for time critical retrievals, through enhanced attendance at the primary 999 call, and bypass of local hospitals. The proposed service changes are anticipated to take place during 2026, pending detailed planning and mitigations to be put in place in response to concerns raised during the process.

[7] https://jcc.nhs.wales/the-committee/meeting-dates-and-papers/april-2024/2-3-emrts-service-review-jcc-report/

1 September 2019

Deputy Chief Medical Officer for Wales instructs the Chief Ambulance Services Commissioner to work with EMRTS to prepare an implementation plan for a critical care transfers service

GIG CYMRU NHS WALES
Pwyllgor Gwasanaethau Ambiwlans Brys
Emergency Ambulance Services Committee

2 September 2020

ACCTS project phase commenced: Clinical lead, service manager and project support officer commence the development of a transfer service

3 March 2021

ACCTS interim service – ACCTS physicians with EMRTS CCPs provide transfer service to support COVID-19 pandemic response

4 August 2021

ACCTS South go-live: 12-hour physician-led service from shared EMRTS base at Cardiff Heliport

5 September 2021

ACCTS Critical Care Coordination expands to 7-day cover, in response to demand for weekend transfers

6 October 2021

ACCTS North go-live: 12-hour physician-led service from bespoke transfer hub hosted by Ysbyty Gwynedd, pilot overnight transfer service also launched, providing 24-hour urgent uplift of care

7 December 2021

EMRTS Support: Dedicated additional ambulance and ACCTS CCTA to support EMRTS teams in transferring patients to hospital

8 February 2022

Monthly clinical governance days commence as part of robust educational & quality assurance processes

9 May 2022

ACCTS Critical Care Coordinator shift extended to 12 hours, supporting both teams for all of their commissioned operational hours

10 April 2023

Three bespoke intensive care ambulances are delivered to the service, operating from Cardiff and Bangor, the first of their kind in the UK

11 October 2023

Pilot 24-hour service trial at Bangor hub concluded. ACCTS North returned to 12-hour service with out-of-hours insights to inform future service development

12 March 2024

Pilot twilight service commences from Dafen at the request of Swansea Bay Health Board, providing an additional physician-led team for 2 days per week, from 2pm to 2am

Figure 2 Service Timeline including key milestones

4. Aims and objectives.

The aim of this evaluation is to assess delivery of the service against commissioned specification and mission statement. Specific areas that will be addressed include;

1. Assessment of service delivery against objectives

2. Evaluation of clinical outcomes/adverse events

3. Stakeholder satisfaction

4. Strategic alignment

5. Examples of innovation or best practice

In addition a longer term evaluation plan will be set out, to assess areas that require a larger volume of longitudinal data.

5. Methods

In the absence of any pre-determined evaluation criteria, the closest relevant published standards are the established measurable benefits as defined during the EMRTS service development and subsequent service reviews have been used as a framework to evaluate the service where applicable.

The recently completed service development review[8] of the EMRTS also re-affirms the priorities and are included here:

REF	OBJECTIVE	
1	Health Gain	Improving quality of care and patient outcomes. Meeting a high proportion of unmet demand. Addressing the main peak of unmet demand. Meeting forecast changes in demand
2	Affordability	Given the long-term revenue assumptions, there should be an explicit reference to reducing revenue costs.
3	Clinical & Skills Sustainability	Reducing service and workforce vulnerabilities. Demonstrating workforce solutions that are flexible and robust to a range of future scenarios. Achievable in terms of recruitment.
4	Equity	Effective population coverage. Geographic equity. Standardisation of clinical practice 24/7.
5	Value for Money	Demonstrating the least costly way of generating the anticipated benefits.

In terms of a service specification, the earliest published report outlining the case is the final report of the Welsh Government task and finish group on critical care 2021. Since then although not directly applicable to Wales, is the national service specification for ACCTS published by NHS England. Both of these specifications will be considered in this evaluation. The FICM Guidelines for the provision of intensive care services are also relevant to this evaluation. Finally, although undergoing review, the Designed for life guidelines (D4L), the defined standard of care in Wales will be considered. Additionally, discrete service evaluations and audits will be included where relevant to assessment of the service.

[8] EMRTS Service Review - Emergency Ambulance Services Committee (nhs.wales)

6. Results

Variations

A number of practical variations were applied to the initial high level plan. This included changes in the coordination model, a pilot of an on call overnight service in North Wales, additional ad-hoc team provision to support demand, and latterly in response to specific requests, a pilot expansion to cover SBUHB requirements for a defined period, as well as a trial of a novel "Duty Retrieval consultant" (DRC) role. These are outlined here and reflected in the evaluation. Figure 2 illustrates the service timeline with key milestones.

North Wales Night Service Pilot

After reviewing the initial dataset from the Task and Finish Group report, the project team engaged with key stakeholders in North Wales. This was to understand the disparity between the current service offerings and the potential of any new services. Feedback consistently highlighted the need for an overnight service to facilitate time-critical transfers throughout the 24-hour period.

The retrospective data provided to the team indicated the likelihood of out-of-hours, time-critical transfers occurring approximately once every 14 days. To optimize both cost-effectiveness and clinical utility, the team decided to trial a 24-hour on-call system for all ACCTS team members. It is noted the generous support of BCUHB in provision of on call accommodation, and base infrastructure to facilitate this.

Over two years, there was a progressively increasing demand for twilight and overnight transfers.

The increases in night work made it difficult to reliably deliver the commissioned daytime service. Staff require mandatory rest periods, and this became progressively more difficult.

ACCTS Cymru has been actively collaborating with stakeholders to consider expanding the night service provision. This expansion would work in conjunction with EMRTS to enhance the overall efficiency and reach of the service. A summary of year 1 North data is included in Figure 3.

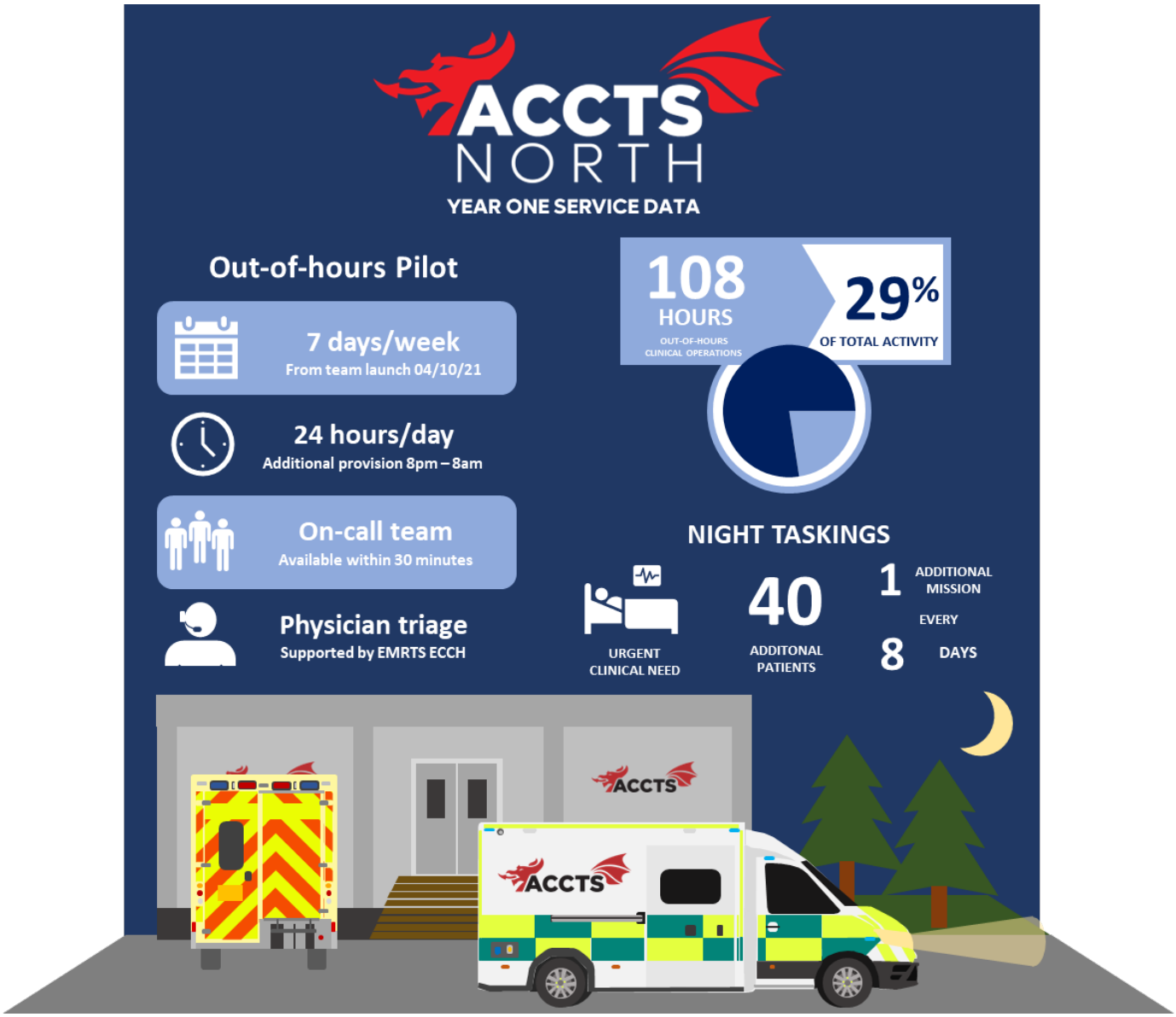


Figure 3 North Year one summary

Following the COVID-19 pandemic, healthcare systems have centralised some acute services and developed a hub and spoke model within health boards. This reconfiguration has led to the limitation of care escalation at remote sites, with a new focus on rapid identification, stabilisation, and transfer of patients requiring escalated care. The movement of patients, for various reasons ranging from planned procedures to life-threatening emergencies, necessitates a diverse set of resources and teams to provide tailored responses based on clinical need. ACCTS in partnership with EMRTS and the Welsh Ambulance Service attempt to ensure that the right team is provided to the right patient at the right time.

To support this reconfiguration, Swansea Bay Health Board commissioned an additional ACCTS team two days per week 14:00-02:00 from the 4th March 2024 for an initial six week trial period to ensure patients within the health board have access to specialist transfer teams, supporting its multi-site model. This resource, initially a trial, is available to support transfers within South Wales, based on the clinical needs of each patient. The new ACCTS team based in West Wales aims to shorten times between referral and arrival at the patient's bedside and reduce times and increase availability from the core service provided from Cardiff.

At the time of writing the two day pilot was extended beyond the initial 6 week period at the request of SBUHB. The model included extended coordination shifts to support the additional hours, and also a new role in the form of the remote Duty Retrieval consultant.

Duty Retrieval Consultant (DRC)

The introduction of the Duty Retrieval Clinician (DRC) role within the Acute Critical Care Transfer Service (ACCTS) Cymru marks a significant improvement in the coordination and management of critically ill patients in Wales who require transfer. The key driver behind this initiative is the provision of high-quality critical care by design, from referral to definitive care, which the DRC role successfully delivers.

DRCs can provide clinical advice to both referrers and ACCTS team members, focusing on interhospital transfers and thereby reducing the burden on EMRTS top cover consultants. This allows top cover consultants to concentrate on offering high-quality, contemporaneous advice to primary teams, delivering expert prehospital care to the sickest patients at the point of injury or illness without being distracted by the complex demands of intensive care transfers. Furthermore, DRCs are

available to address clinical and transfer-related issues remotely, ensuring continuous support and expert guidance.

In addition to their clinical responsibilities, DRCs play a role in reviewing transfer data for audit, governance, and service development purposes. By working closely with the ACCTS Coordinator, they ensure that transfer requests are managed efficiently and that resources are prioritised effectively, ultimately benefiting patient care. This seamless integration and coordination across various stages of the transfer process provide high-quality critical care that a key aim of the DRC role.

All DRC doctors are senior intensive care clinicians whose clinical focus is on delivering intensive care within the hospital. This homogeneity fosters the use of a common language and a deep understanding of the critical care community in Wales and beyond.

Strategically, this role aligns ACCTS with other UK models, where the NHSE specification for Adult Critical Care Transfer Services emphasises effective supervision and high performance to ensure safe and efficient transfers. Alongside their clinical role, DRCs uphold rigorous standards through clinical governance, including audits and reviews, ensuring continuous service improvement and adherence to best practices. This ensures that patients in Wales receive uninterrupted critical care regardless of their location.

The DRC role is an essential component of a high-functioning transfer service. It underscores the critical importance of supporting prehospital care and celebrates its contributions to achieving excellence in patient care and operational efficiency within ACCTS Cymru

Clinical & Operational data review

Summary activity data covering the first 32 months of operation are reported (16th August 2021 – 30th April 2024). In addition, and in greater depth a focused clinical review of the first 12 months of activity is conducted by clinicians involved in the direct care of patients, conducted under approvals from the host health board Joint Study Review Committee (JSRC)[9] whom agreed the project can considered service evaluation non-research, therefore, a R&D and NHS REC application is not required.

Electronic patient records for all transfer missions conducted from 16 August 2021 to 15 August 2022 were considered in the clinical review, a summary of which is displayed below. An initial evaluation by clinical staff characterised any intervention required, delay or adverse event. Highlighted records underwent a second review by a senior transfer physician to further characterise any unexpected events in transfer. Such adverse events were subcategorised into clinical, equipment or logistical problems.

Service activity

During the first 32 months of operation, the service has received 1514 referrals, and completed 1355 transfers. This equates to an average of 508 transfers per year, which is a 12% increase on maximum case predicted demand from the early project stage (450 cases per annum).

The category of transfers requested are summarised in Figure 4.

RTCategory	2021	2022	2023	2024	**Total**
Planned/ Elective Transfer	113	284	277	89	**763**
Time Critical Escalation of Care	21	92	72	24	**209**
Urgent Escalation of Care	76	185	207	74	**542**
Total	**210**	**561**	**556**	**187**	**1514**

Figure 4 Referrals by year and category. (16th August 2021 – 30th April 2024)

[9] Transfer medicine in the professional era – Development of a commissioned adult critical care transfer service within the Welsh Critical Care Network, SBUHB JSRC, 5th October 2022

Referrals

All daytime referrals were made through the duty coordinator, via an initial call to the Critical Care Hub. Data was recorded on an interim scheduling system (SharePoint, Microsoft Ltd), prior to being imported into the all Wales scheduling system (Forms, Nugensis Ltd). All phone calls were made on recorded lines, initially via the consultant connect system and latterly Smart Numbers, enabling flexible working. A summary of the telephony data is included in Figure 4 and Figure 5 revealing an average of 4 calls per day, with a peak time of 10am. The call connect rate was 94.6% at first contact. It should be noted that the period also includes small numbers of calls relating to overruns, and the twilight pilot outside of the normal operating hours of 08:00-19:59 daily.

	2021	*2022*	*2023*	*2024*	*Total*
Incoming Calls	**466**	**1389**	**1452**	**559**	**3866**

Figure 5 Incoming calls to coordinator by year

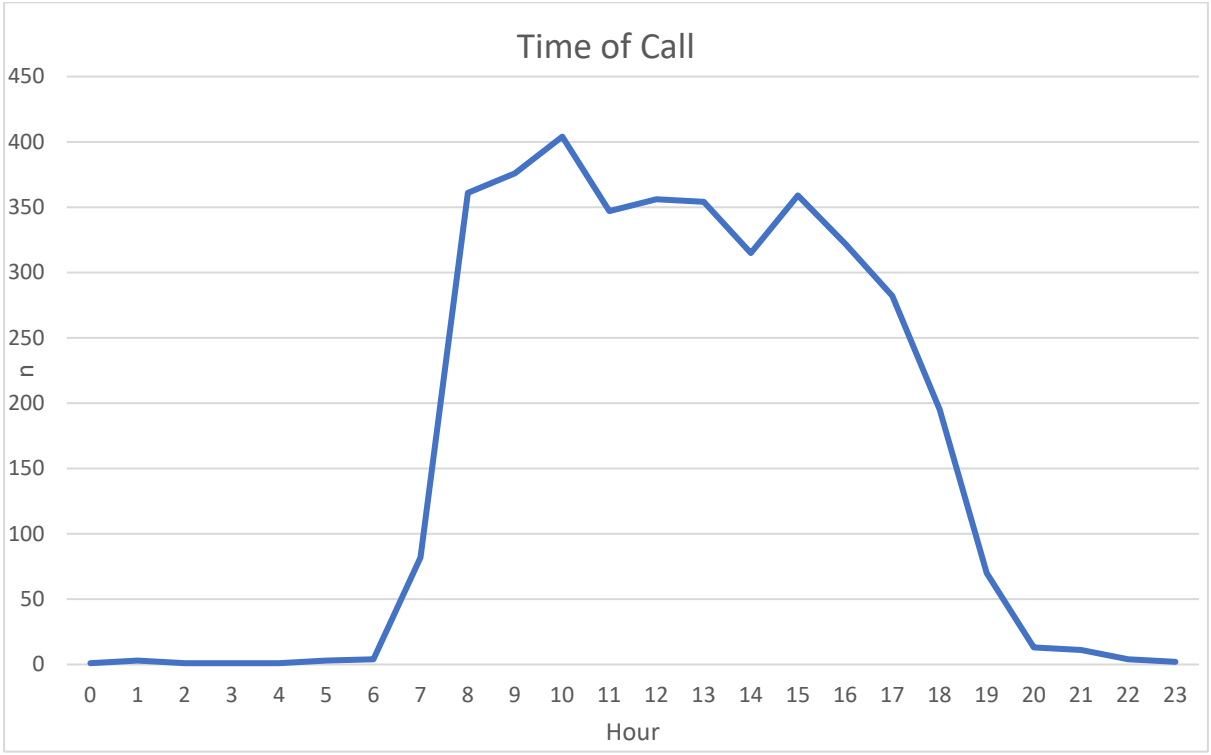


Figure 6 Time of incoming calls to coordinator

Completed transfers.

A breakdown of referring health board and the final disposition is included in Figure 7. And a summary of category of transfer by LHB in Figure 8.

ReferringHospitalBoard	Aneurin Bevan	Betsi Cadwaladr	Cardiff And Vale	Cwm Taf Morgannwg	English Trust/Out of Area	Hywel Dda	Swansea Bay	**Total**
Aneurin Bevan	5		23		14			**42**
Betsi Cadwaladr		164			213			**377**
Cardiff And Vale	99		79	48	33	25	30	**314**
Cwm Taf Morgannwg	17		74	76	12	1	14	**194**
English Trust/Out of Area	12	15	7	6		5	5	**50**
Hywel Dda	1		30	2	13	136	23	**205**
Swansea Bay			27	17	14	24	91	**173**
Total	**134**	**179**	**240**	**149**	**299**	**191**	**163**	**1355**

Figure 7 LHB/ Trust matrix (16th August 2021 – 30th April 2024)

ReferringHospitalBoard	2021	2022	2023	2024	Total
Aneurin Bevan	**7**	**16**	**15**	**4**	**42**
Planned/ Elective Transfer	2	4	3	1	**10**
Time Critical Escalation of Care	2	6	6	2	**16**
Urgent Escalation of Care	3	6	6	1	**16**
Betsi Cadwaladr	**40**	**156**	**135**	**46**	**377**
Planned/ Elective Transfer	10	41	49	15	**115**
Time Critical Escalation of Care	8	54	39	10	**111**
Urgent Escalation of Care	22	61	47	21	**151**
Cardiff And Vale	**52**	**137**	**95**	**30**	**314**
Planned/ Elective Transfer	43	106	66	21	**236**
Time Critical Escalation of Care	1	2	4	4	**11**
Urgent Escalation of Care	8	29	25	5	**67**
Cwm Taf Morgannwg	**37**	**64**	**66**	**27**	**194**
Planned/ Elective Transfer	22	39	36	16	**113**
Time Critical Escalation of Care	6	5	8		**19**
Urgent Escalation of Care	9	20	22	11	**62**
English Trust/Out of Area	**8**	**20**	**18**	**4**	**50**
Planned/ Elective Transfer	8	20	17	4	**49**
Urgent Escalation of Care			1		**1**
Hywel Dda	**32**	**58**	**89**	**26**	**205**
Planned/ Elective Transfer	13	26	49	11	**99**
Time Critical Escalation of Care	2	8	3	3	**16**
Urgent Escalation of Care	17	24	37	12	**90**
Swansea Bay	**24**	**65**	**62**	**22**	**173**
Planned/ Elective Transfer	10	22	23	7	**62**
Time Critical Escalation of Care	1	9	5	2	**17**
Urgent Escalation of Care	13	34	34	13	**94**
Total	**200**	**516**	**480**	**159**	**1355**

Figure 8 LHB category (16th August 2021 – 30th April 2024)

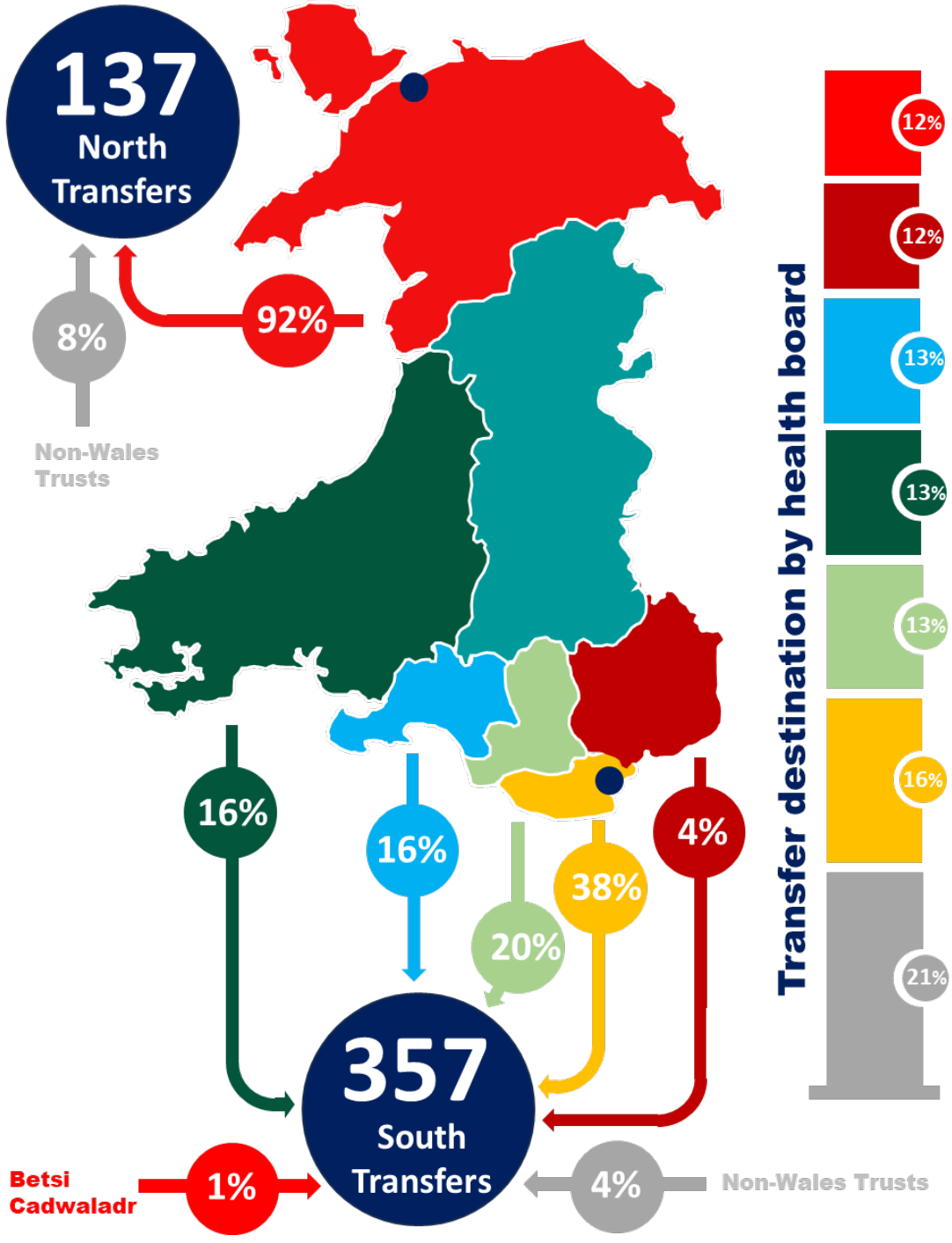
Transfers were completed by teams as detailed In Figure 9. Those recorded as Additional team were completed from the Cardiff base.

TeamActivated	2021	2022	2023	2024	Total
ACCTS South	160	342	339	94	**935**
ACCTS North	39	163	138	49	**389**
ACCTS West (Twlight)				16	**16**
ACCTS Additional Team	1	11	3		**15**
Total	**200**	**516**	**480**	**159**	**1355**

Figure 9 Transfers by Team (16th August 2021 – 30th April 2024)

In South Wales the median job cycle (Call to clear) was 147 minutes, and North Wales 134 minutes.

A detailed clinical review reveals the service has been tasked to 507 interhospital transfer missions within the first year of operation and has completed 494 interhospital transfers. The service has provided an additional transfer team on top of the operational model to support network pressures on four occasions. Additionally, the service has supported seven intrahospital transfers for critically ill patients receiving specialist care outside an ICU and provided a vehicle and driver to four interhospital transfers conducted by local hospital clinicians.



Of the completed missions, 43 were categorised as time-critical, 169 as urgent and 282 as planned. This included 22 transfers as part of the South Wales Trauma Network major trauma pathways. 115 missions were between hospitals within a single health board, and 379 were between health boards. Significantly, 135 transfers crossed the English border, operating outside of the operational area of the WCCN and WAST. A breakdown of origin and destination by health board is shown below.

HEALTH BOARD	TRANSFER ORIGIN	TRANSFER DESTINATION
ANEURIN BEVAN	17	58
BETSI CADWALADR	125	60
CARDIFF & VALE	136	77
CWM TAF MORGANNWG	71	66
HYWEL DDA	59	65
SWANSEA BAY	57	62
NON-WALES	29	106

The following pages include health board specific infographics.

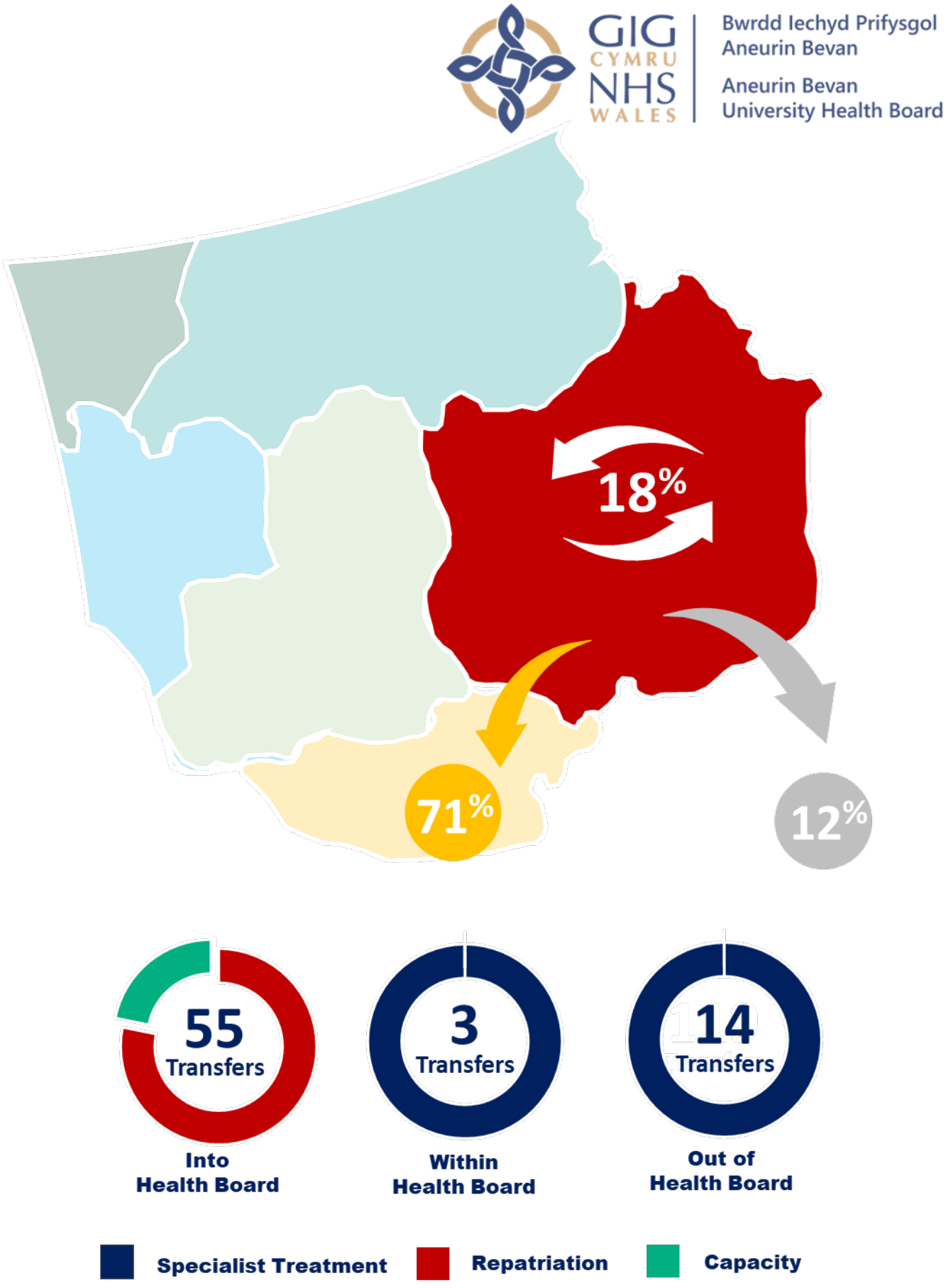
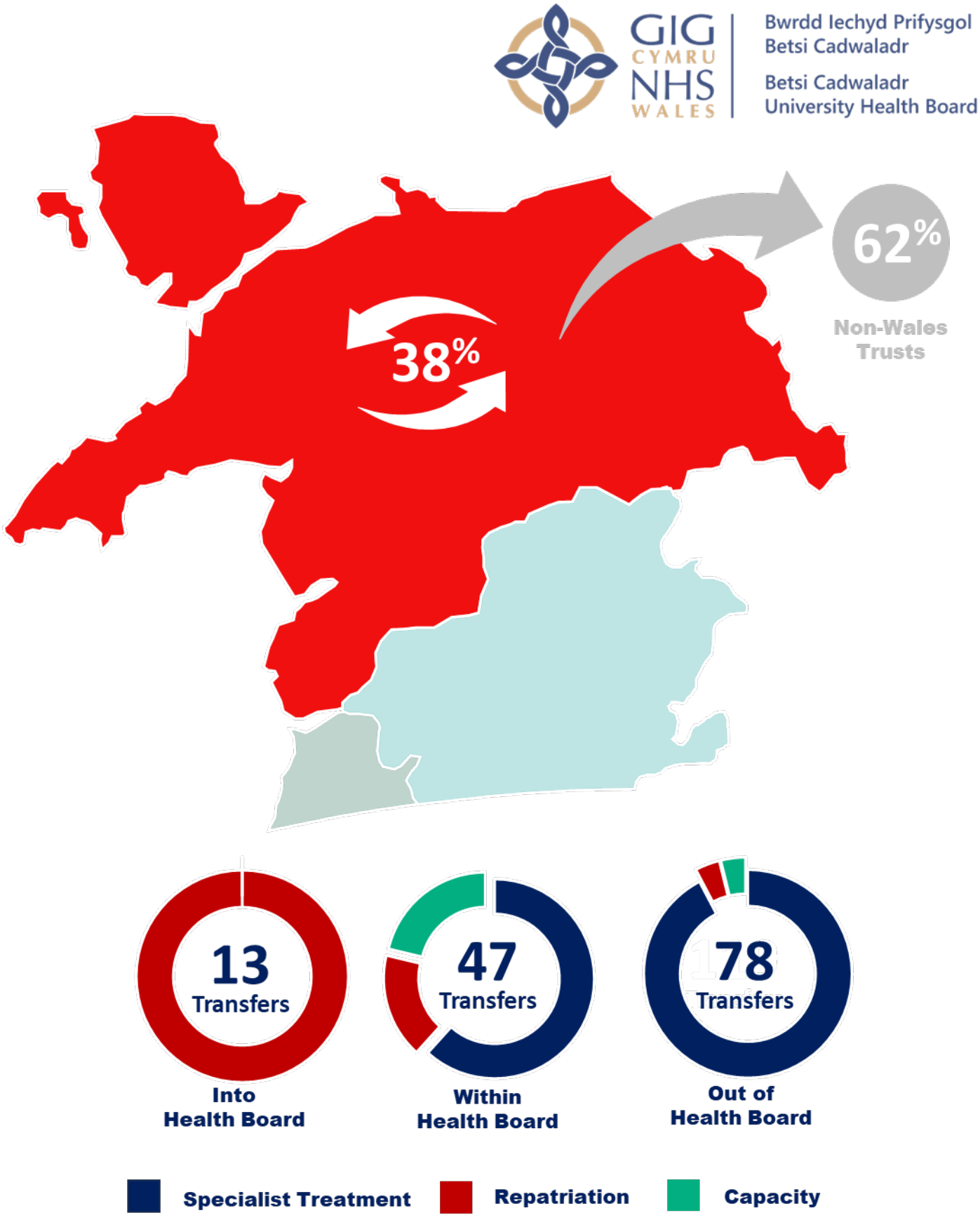


Figure 11 Year 1 Clinical Review Infographic - ABUHB



Review Infographic - BCUHB

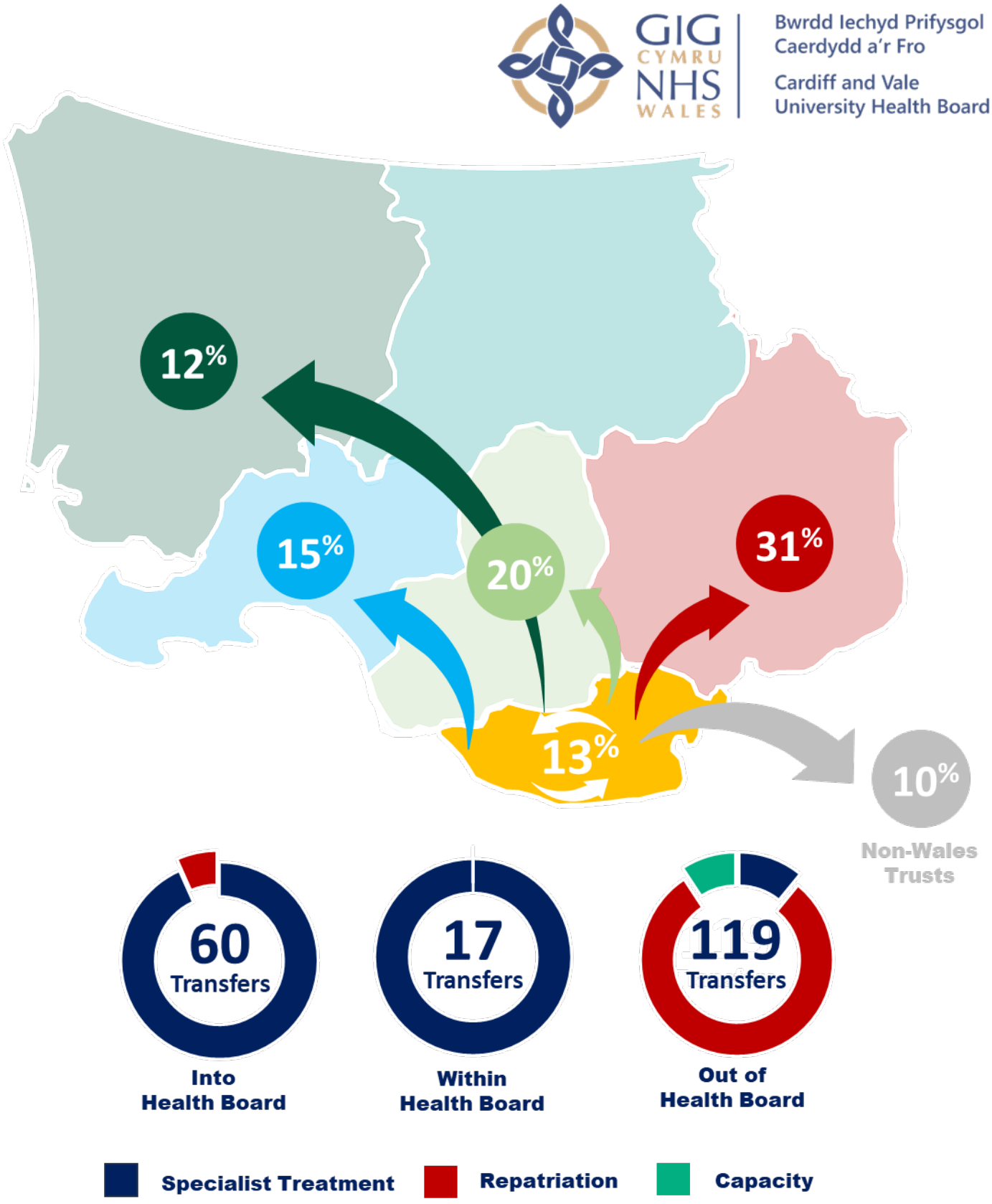


Figure 13 Year 1 Clinical Review Infographic - CAVUHB

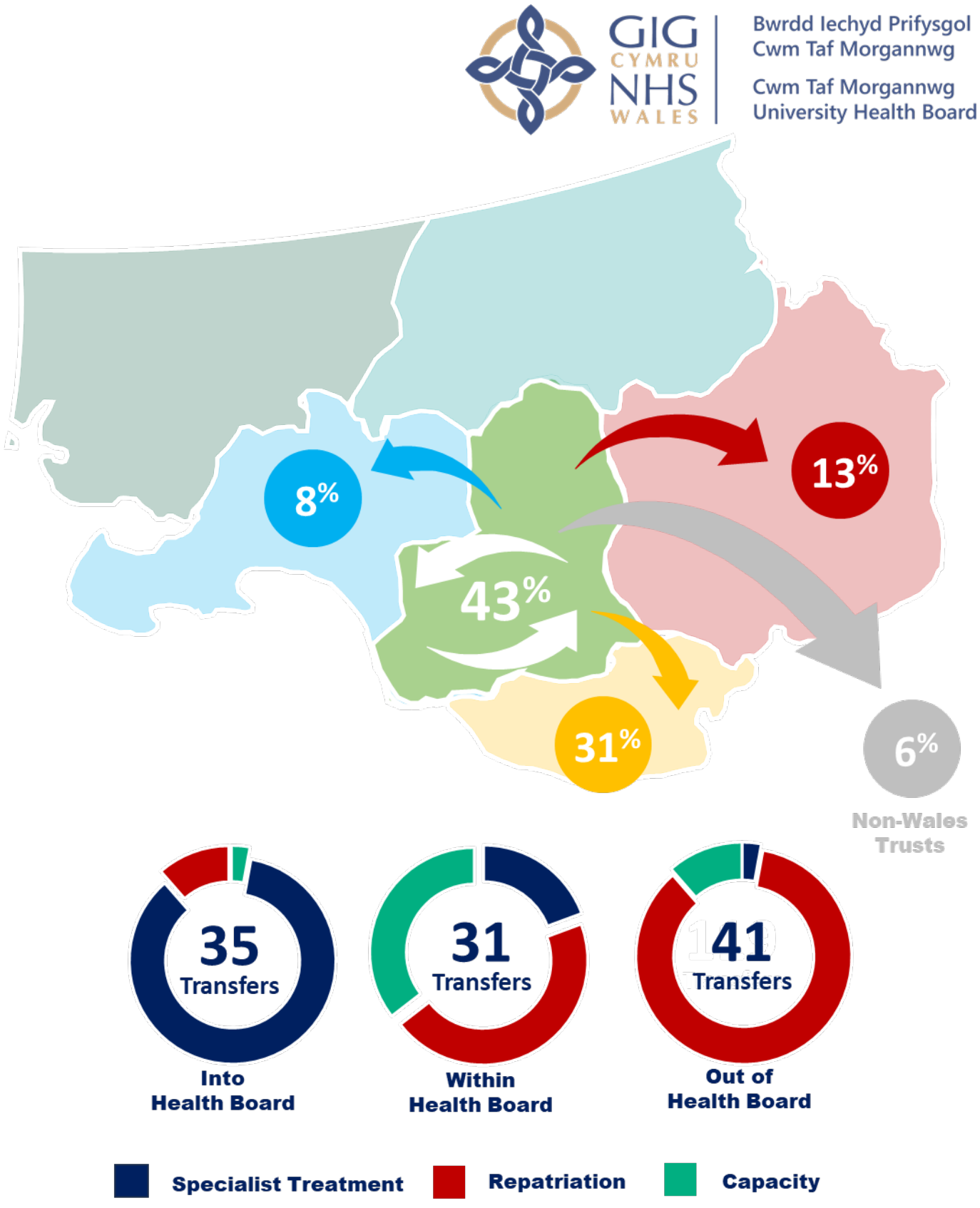


Figure 14 Year 1 Clinical Review Infographic - CTMUHB

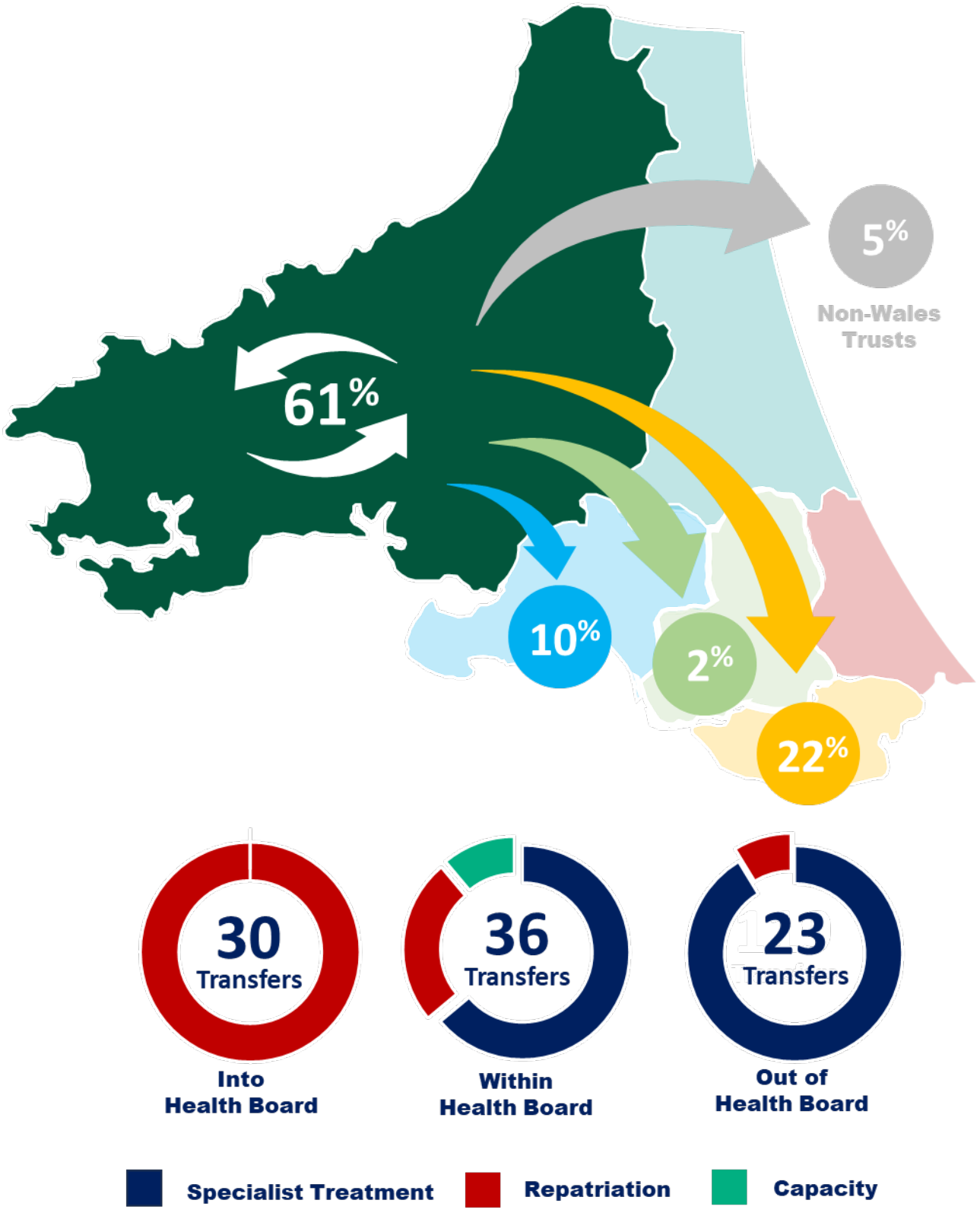


Figure 15 Year 1 Clinical Review Infographic - HDUHB

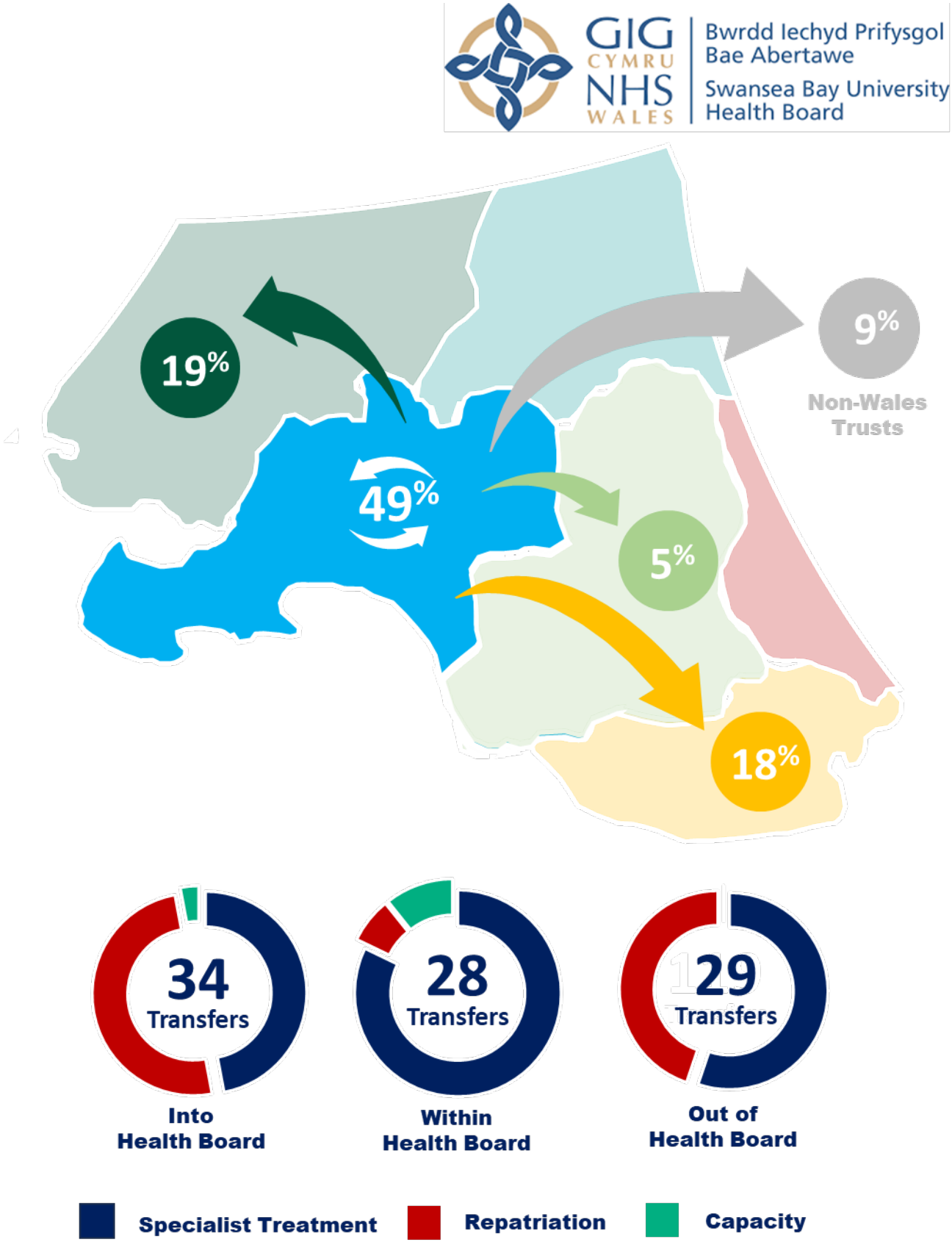


Figure 16 Year 1 Clinical Review Infographic - SBUHB

Unmet need

Whilst the activity data demonstrates utilisation of the service, it is important to also determine the full demand (missions carried out + unmet need). In order to do this additional datasets were considered including reports via the national incident reporting systems (OFW DATIX), the WAST control dataset, and data available from health boards at regional and national meetings. Whilst it is beyond the scope of this initial evaluation to review this information in depth, it provides a helpful guide to the potential demand, and when combined with utilisation, unmet need of the service.

The data is used to define what unmet need there is by time and geography. It will also consider broadly patient groups and emerging pathways that may be potential service users.

EMRTS Secondary cases will also be considered here, due to the interchangeability of the services ability to provide time critical services.

Total Demand

A total demand model was created combining any incident logged in the WAST CAD for a transfer between hospitals, for the whole period which included reference to critical/ intensive care. This allows the total demand profile for the patient group to be ascertained and some visualisation of how the various agencies served these patients during the evaluation period. Caution should be taken with the absolute numbers presented; however trends and proportions are felt to be representative of actual activity.

In this dataset the following labels are used

- ACCTS – Formal ACCTS team transfer
- EMRTS- Formal EMRTS team transfer (road or air)
- Other flight- Search and rescue, or English air ambulance transfers
- WAST road- transfers undertaken with a WAST vehicle, staffed by WAST staff and hospital clinical teams.

During the period the pan Wales total demand included 2239 transfers, of which 82% were at night, and 23% in the day. 59.1% were undertaken by the ACCTS, 21.3% by the EMRTS, 19.3% by WAST/ hospital teams, and the remaining 0.3% via other air providers. A breakdown of the demand by LHB,

year and time period is included in Figure 17 and Figure 18 below, and by service delivered during time period in Figure 19. Overall trends by month are shown in Figure 20.

LHB	Day	Night	**Total**
Aneurin Bevan	185	95	**257**
Betsi Cadwaladr	408	124	**509**
Cardiff and Vale	405	49	**441**
Cwm Taf Morgannwg	283	76	**346**
Hywel Dda	322	89	**385**
Swansea Bay	238	80	**301**
Total	**1841**	**513**	**2239**

Figure 17 Total demand by LHB and time period.

Year	2021			2022			2023			2024			**Total**
LHB	Day	Night	**Total**	Day	Night	**Total**	Day	Night	**Total**	Day	Night	**Total**	
Aneurin Bevan	27	17	**41**	81	43	**113**	54	25	**74**	23	10	**29**	**257**
Betsi Cadwaladr	47	13	**55**	163	64	**215**	140	41	**176**	58	6	**63**	**509**
Cardiff and Vale	69	7	**73**	165	17	**175**	128	24	**149**	43	1	**44**	**441**
Cwm Taf Morgannwg	47	14	**57**	102	28	**126**	97	27	**119**	37	7	**44**	**346**
Hywel Dda	51	14	**60**	103	32	**125**	129	35	**155**	39	8	**45**	**385**
Swansea Bay	37	15	**48**	95	35	**122**	76	21	**93**	30	9	**38**	**301**
Total	**278**	**80**	**334**	**709**	**219**	**876**	**624**	**173**	**766**	**230**	**41**	**263**	**2239**

Figure 18 Total demand by LHB and time period, split by calendar year.

Service	Day	Night	**Total** ▼
⊞ ACCTS	1293	111	**1371**
⊞ EMRTS	339	202	**495**
⊞ WAST Road	249	224	**447**
⊞ other flight	3	3	**6**
Total	**1841**	**513**	**2239**

Figure 19 Demand met by service

Service (groups)	pc
ACCTS	61.2%
EMRTS	22.1%
other flight	0.3%
WAST Road	20.0%
Total	**100.0%**

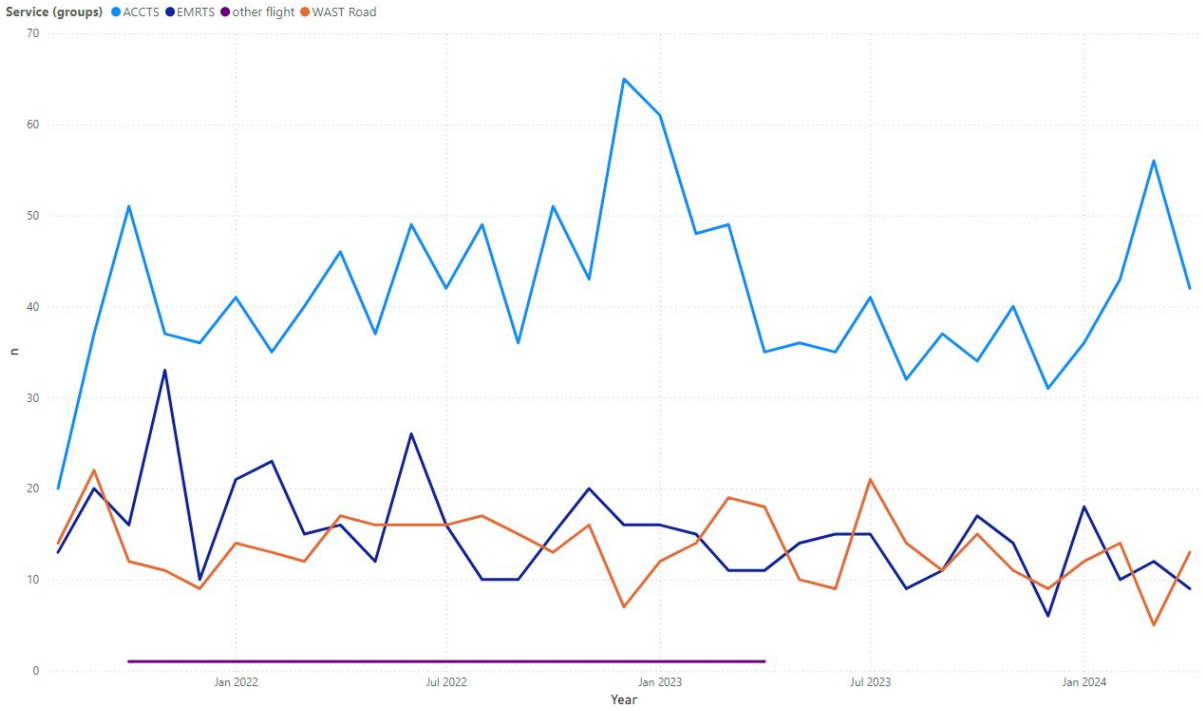


Figure 20 Total Demand by month

This data reveals that whilst the majority of critical care transfers are now undertaken by the EMRTS/ ACCTS, there remains a consistent "unmet need". This unmet need during the period for the ACCTS is between 449 – 911 cases depending on whether the EMRTS cases are included or not. With various changes taking place during the evaluation period, including changes to night provision in North Wales, it is best to take a more recent period to determine the residual unmet need for the purpose of future service planning such as a 12 month period ending in April 2024. The headline figures can be used to determine what demand there is for periods not formally covered in the current service specification. For example over 12 months there are 12 cases per month on average requiring transfer overnight and not formally provisioned for aside from time critical via EMRTS and existing requirement for hospitals to provide an escort on a WAST ambulance (Figure 21). Within the day shift there is also a residual unmet need of 72 cases (i.e. those that WAST undertook). one significant impact of the current situation is the element of overrun, where a crew undertake a transfer that takes them beyond their planned shift end time. By way of example a review of service records reveals 123 overruns during the most recent 12 month period. These often then result in a reduced service the following day due to staff requiring rest if on consecutive shifts.

LHB	Day	Night	**Total**
Aneurin Bevan	57	26	**77**
Betsi Cadwaladr	139	27	**164**
Cardiff and Vale	121	18	**137**
Cwm Taf Morgannwg	93	24	**115**
Hywel Dda	126	33	**151**
Swansea Bay	74	19	**91**
Total	**610**	**147**	**735**

Figure 21 12 month total demand (May 2023 - April 2024)

Critical Care Network Audit

The all Wales Transfer audit database was also interrogated (August 21 -> March 23) and revealed a small number of transfers being conducted by hospital teams (Figure 22). Theses cases are included within the WAST counts above, as these transfers utilise WAST vehicles. Of note the transfer database has ceased to exist as it transitions to EMRTS/ ACCTS, and so data available is limited at the time of writing. In addition it is felt it underreports compared to the WAST dataset due to the changes in the data collection during the transitional period such as no active management of the paper form collation or data entry following dissolution of the CCN. At the time of writing work is underway to formally transfer Information governance responsibilities and restart the audit and incorporate legacy data.

WCCN Transfers

LHB and reason	Av Annual
Aneurin Bevan University Health Board	**7.2**
No ICU Bed	0.6
Tertiary Referral	6.6
Betsi Cadwaladr University Health Board	**9**
No ICU Bed	0.6
Tertiary Referral	8.4
Cardiff and Vale University Health Board	**6**

No ICU Bed	1.2
Repatriation	1.8
Tertiary Referral	3
Hywel Dda University Health Board	**18.6**
No ICU Bed	5.4
Repatriation	0.6
Tertiary Referral	12.6
Swansea Bay University Health Board	**6**
Tertiary Referral	6
Grand Total	46.8

Figure 22 CCN audit Average transfers by LHB and reason

Capacity

Patient transfers carried out for ITU capacity reasons

A standalone capacity audit was undertaken between December 22 and October 23, which revealed that most of this type of transfer took place during normal working hours, and that most transfers occurred due to units exceeding their commissioned capacity, rather than difficulty in staffing beds. It also revealed some regional variations such as the efficiency of ABUHB's dedicated transfer team that operates between sites. The capacity audit has become a work stream of interest as it has demonstrated there is variation in escalation policy (including surge area use), recording capacity issues and key personnel involved between each health board. The full report can be found in appendix 4.

Delivery against service Specification

The evaluation reveals that the service has met its original specification and other national specifications, each detailed below. It also reveals that the service closely aligns with and addresses the quality attributes defined by the Welsh Government for services provided to critically ill individuals in Wales.

Task and finish group on critical care

Annex 6 of the Welsh Government report recommended that two teams be created, North and South Wales covering the period 08:00-20:00, 365 days per year. This equates to 8760 hours of service provision per year. The original proposal is broken down and assessed below.

Recommendation	Outcome	Comments
North Wales team 12 hours	12 hours + Overnight on-call	Model expanded to 24 hours through on call rota, due to evidence from re-analysis of data
South Wales Team 12 hours	12 hours achieved	
Dedicated Vehicle	Achieved (2023)	Delay in procurement due to international situation, mitigated through hire/ loan of vehicles
Dedicated Driver	Achieved	Directly employed, instead of via WAST
Dedicated medical escort	Achieved	
Dedicated second escort	Achieved	Development of Retrieval & Transfer Practitioner Role (RTP)

Dedicated specialist equipment	Achieved	
EMRTS ASD Support	Achieved	24 hour cover, now called Critical Care Hub (ECCH)
EMRTS Top Cover consultant support	Achieved with further or work	Involvement in Time critical + use of aviation assets Trial of Duty Retrieval Consultant
WCC&TN Audit transfers	Due to Go live Q2 24/25	Delay in procurement of system, and dissolution of network, IG delays.
EMRTS Governance	Achieved	Embedded in governance process
Managerial support	Achieved	Service manager in post
Administrative Support	Achieved	Administrator appointed
Repatriation coordinator	Achieved	Expanded to 12 hours/ 7 days to meet demands of role, utilising rota of RTP's. Bespoke Transfer scheduling system implemented.

The NHS England transfer service toolkit includes an assessment matrix "**Key elements of an adult critical care transfer service" The ACCTS Cymru has been assessed against these criteria as follows in** Figure 4**.**

Area	Elements	Assessment
Commissioning and hosting	• Services should be commissioned at regional level and should align with patient pathways and Critical Care Networks • Services should consider alignment with existing neonatal and paediatric services and work to develop areas in which resources can be shared • Hosting should occur through an NHS Acute Trust with experience delivering adult critical care.	Achieved, within context of NHS Wales excluding paediatric/ neonatal services.
Stakeholders and users	• Services interact with regional networks for trauma, neurosurgery, burns, renal, stroke, vascular and other specialties. It should support and expand upon existing referral processes including electronic solutions and automatic acceptance policies • Services must provide timely and equitable access to all patients within scope and have escalation protocols for when patients cannot be transferred as well as agreed surge plans for pandemic or similar situations • Time-critical patients are in scope of services. Services must have formal agreements with NHS Ambulance Service Trusts to meet the needs of these patients if they cannot be transferred by the ACC transfer service.	Achieved

Dedicated switchboard function	• Single point of access for all adult critical care transfers within a region • Efficient call handling and call conferencing • Call recording • Alignment with paediatric and neonatal services' resources should be considered as this may be more cost effective • Must have access to a directory of hospital and department contact details.	Achieved
Co-ordinating consultant	• All referrals should include consultant discussion to confirm suitability for transfer as well as offering clinical and regional logistical advice • Remote clinical advice to the transferring teams • Should have access to regional dashboard of critical care bed capacity via DOS.	Achieved through a combination of referring/ receiving unit consultants, and access to EMRTS Top cover consultant. Trial of dedicated duty retrieval consultant as part of service improvement.
Transfer team staffing	• All staff must be qualified, trained and experienced as described in the National Model. Junior staff will require training and experience before a formal sign off process • Service has a named Lead Consultant and Lead Practitioner • Each operational shift must have: • Duty Consultant who is involved in every referral and should be available to accompany any transfer if required • Hub Coordinator whose role includes 24/7 call handling • Team Doctor / Advanced Critical Care Practitioner • Team Practitioner / Advanced Practitioner • Vehicle driver / technician • Seconded or permanent dedicated staff are required to deliver high	Achieved

	standards of care, consistency of practice, efficiency and overall safety.	
Education and training	Services must collaborate with Critical Care Networks and regional providers of transfer training to coordinate and deliver standardised multidisciplinary transfer training across the region • Services must operate an outreach education and governance programme with all hospitals within their region.	Achieved
Data collection & documentation	• Clinical observation and record keeping during transfer must be of the same high standard as that provided within Critical Care Units • Services should utilise an electronic database and must submit a minimum dataset for all adult critical care transfers performed in each region • Regular audit, reporting and clinical governance must occur • Incident reporting and investigation mechanisms must be in place • Quality indicators should be reported regionally and nationally.	Achieved, pending publication of quality indicators when agreed.

Figure 23 NHS England Toolkit assessment matrix

Designed for Life

The Designed for Life guidelines outline the minimum standards required for transfer of the critically ill adult. Last updated in 2016, they are currently undergoing a review, but the principals are still relevant to this evaluation as the represent the current national standard. The areas assessed include equipment, process and staff competencies.

Area	Standard	Assessment
Equipment	Full ICU monitor, ventilator and transfer equipment according to minimum monitoring guidelines.	Compliant- standard equipment available for all transfers
Process	The patient must be accepted by the consultant of the receiving unit before the transfer can take place.	Compliant through Coordination/ SOP
Staff competencies	Doctor	Compliant- enforced via JD/ PS
	ACCP	Compliant- enforced via JD/ PS
	Assistant	Compliant- enforced via JD/ PS
	Driver	Not defined in standard, but meets accepted standards including Blue light training.

Where applicable the service meets all relevant standards.

In respect of the soon to be published guidance "re-designed for life" the service also meets all relevant standards.

Guidelines for the provision of intensive care services [10]

[10] https://www.ficm.ac.uk/standardssafetyguidelinesstandards/guidelines-for-the-provision-of-intensive-care-services

Thes guidelines from the Faculty of Intensive Care Medicine provide the following relevant standard to the ACCTS;

Standard	Assessment
Appropriate equipment must be available to undertake a safe transfer and to manage complications/adverse events which may occur during a transfer. All equipment used for patient transfers must conform to the relevant safety standards, be regularly serviced, and checked immediately before use.	Compliant
All staff involved in a patient transfer must be trained, competent and familiar with the use of equipment. Patients must only be transferred by staff members of appropriate seniority who have been formally trained in the transfer of critically ill patients. Air transfers should only be conducted by staff who have received specific training and experience. The makeup of the team transferring the patient should be determined by how sick the patient is, and how much support they require. Protocols should be in place to manage likely or serious adverse events which may occur during a transfer.	Compliant
Where patient transfers result in a change of team managing the patient during or following a transfer, an appropriate and documented handover must be undertaken between the teams to ensure good continuity of care. This should include providing copies of the clinical record.	Compliant

Financial

The service was provided with a £1.7 million annual budget allocation and expenditure matched this during the first year pro rata. Post year 1 this budget has remained fixed at the same level.

Measurable Benefits

Ref	Objective	
1	Health Gain	Improving quality of care and patient outcomes. Meeting a high proportion of unmet demand. Addressing the main peak of unmet demand. Meeting forecast changes in demand
2	Affordability	Given the long-term revenue assumptions, there should be an explicit reference to reducing revenue costs.
3	Clinical & Skills Sustainability	Reducing service and workforce vulnerabilities. Demonstrating workforce solutions that are flexible and robust to a range of future scenarios. Achievable in terms of recruitment.
4	Equity	Effective population coverage. Geographic equity. Standardisation of clinical practice 24/7.
5	Value for Money	Demonstrating the least costly way of generating the anticipated benefits.

Equity

001/Access to specialist care not available at patients nearest acute hospital

Number of patients transferred to specialist care

265 patients were transferred in order to access specialist care, accounting for 54% of all interhospital transfer activity for the year. 94 patients (35%) were transferred to another site within the same health board, while 171 patients (65%) were transferred outside of the health board to access the necessary specialist care. 57 of these patients (22%) had care needs within the scope of practice defined by JRCALC, while 78% had additional clinical needs not manageable by a paramedic-led team. In 18 cases ACCTS were tasked to a transfer due to unavailability of an EMRTS team.

A detailed breakdown of transfer for specialist care by originating health board is as follows:

LHB	n
Aneurin Bevan	16
Betsi Cadwaladr	102
Cardiff and Vale	29
Cwm Taf Morgannwg	38
Hywel Dda	41
Swansea Bay	38

A number of case studies illustrate the enhanced equity, providing timely and safe transfer to specialist services.

Case study of Massive Postpartum Pulmonary Embolism
Background
After having an emergency caesarean section for twins in Hywel Dda, a young first-time mother was found to have critically low oxygen levels due to a blood clot in the lungs. She was referred to Cardiff for an emergency clot retrieval procedure by the cardiology team. The patient had had a second obstetric operation for a major postpartum haemorrhage and subsequently was dependent on a ventilator for support with her breathing. A CT scan revealed this to be due to a large blood clot in the lungs, placing strain on her heart and inducing a state of shock where her cardiovascular system required support in the intensive care unit to keep blood flowing to her organs. Her condition deteriorated as blood flow to her heart and lungs became increasingly compromised.
Action taken
South Wales team mobilised from base to hospital and utilising telemedicine to conference with intensive care specialists in the receiving hospital, along with point-of care testing equipment on the ACCTS ambulance, the team were able to optimise support to the patient's heart and lungs Additionally, they were able to conference with the EMRTS critical care hub to arrange support and blood products from an EMRTS team should haemorrhage occur en-route.
Changes in process observed
Prior to the introduction of ACCTS Cymru patients such as this young woman, when taken critically unwell in rural areas, could be labelled as too sick to transfer. The combination of recent haemorrhage with a large blood clot obstructing the heart is a challenge to manage medically, requiring specialist interventions available only in large cardiothoracic centres. The combination of a dedicated intensive care team, equipment for complex ventilation and testing, and a coordinator to allow the team to remain patient focused made this transfer possible. The immediate mobilisation of the team, rather than waiting for an available ambulance allowed for transfer before the patient's condition deteriorated irreversibly.
Outcome
The ACCTS team were able to stabilise the patient sufficiently to allow transfer to the tertiary centre in Cardiff, in spite of her deteriorating condition. She benefited from the multidisciplinary management of cardiology and intensive care specialists, and after a period of support was weaned from the ventilator and was able to return to her local hospital to her babies and subsequently home.

Case study of teenage myocarditis related to COVID-19
Background After developing rare inflammatory complications of COVID-19, including life-threatening heart failure, a 16 year old boy was transferred to Harefield Hospital London, for potential advanced mechanical support for his heart.
Contracting COVID-19 in spite of vaccination, the boy presented to hospital with fever, malaise, headaches, diarrhoea and vomiting. After deteriorating with shock and multi-organ failure he was found to have a fraction of expected heart function, secondary to a rare inflammatory syndrome seen in children with COVID-19. He was transferred to Morriston Hospital while awaiting a bed in Harefield Hospital London, the nearest centre to offer advanced mechanical support therapies and heart transplantation.
Action taken
Given the complexity of the patient's condition and the long-distance transfer, an ACCTS consultant physician led a team to transfer the patient directly from Morriston to Harefield by air, moving swiftly before he could deteriorate further. A Wales Air Ambulance Charity helicopter and a senior practitioner from EMRTS were made available to support aviation aspects of the ACCTS transfer.
Outcome
The synergy between ACCTS Cymru and the support of the WAA allowed timely transfer to specicalist care, to allow timely investigation and access to world leading experts in cardiovascular care. Ultimately this patient did not require transplantation because of the early and expert medical treatment that he received at Harefield.
Changes in process observed
Traditionally patients like this would require remote advice from specialist centres, often waiting until the patient was sick enough to require mechanical support requiring the initiation of mobile ECMO (Heart lung machine). Patients like this young boy might be considered too sick to transfer until the severity made it essential. Professional and specialised transfer teams in the form of ACCTS Cymru provide critical care irrespective of the patients location facilitating long distance moves in safe and efficient manner.

Case study of Palliative care case (CAV)
Background
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.
Action taken
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.
Outcome
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.
Changes in process observed
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.

Cardiac Repatriation
Background
A elderly patient from southeast Wales required aortic valve replacement and coronary artery bypass grafting, a University of Wales hospital Llandough. Unfortnately he developed difficulties after the operation getting of the mechanical ventilator. This required him to have a tracheostomy be slowly weaned off the mechanical ventilator. However it was difficult for his familty to visit and support his long stay in the intensive care unit.
Action taken
He was referred to ACCTS Cymru who were able to enable early repatriation to his local hospital intensive care unit to faciliate ongoing multidiscplinary weaning.
Outcome
The ACCTS team were able to transfer the gentleman closer to home, whilst maintaining his weaning program in transit.
Changes in process observed
Traditionally patients would be weaned completely from the ventilator at the cardiac unit, this meant significant challenges for patients and there families to travel significant distance. Prolonged stays on specialist units also limit the capacity to admit new patients for elective and life threating surgery. ACCTS Cymru though repatriation has maximised flow and capacity through units

Case study of complex ventilation (ABUHB)
Background
A patient underwent a routine gynaecological diagnostic procedure, in recovery she developed rapid airway complications requiring emergency intubation, due to the patients body habitus and emergency nature of the reintubation she sustained a significant injury to her trachea (wind pipe) this meant that the ventilator was pushing air into the tissues both within and outside her lungs. Local teams were able to place two different breathing tubes into her airways to avoid the injury and allow her to receive lifesaving support from the ventilator. The repair of the injury required transfer to a specialist centre in central London.
Action taken
South Wales team mobilised from base to Grange university hospital, given the distance and complexity ACCTS provided a Consultant in Intensive care medicine with extensive experience in interhospital transfer. To assess and optimise the patient with a view to transfer by road.
Outcome
The ACCTS team was able to transfer the patient with two different ventilators without critical incident and physiological compromise. This patient avoided ECMO and underwent airway stented and made a uneventful recovery. The ACCTS team collected her from specialist care and brought her home to her family. To our knowledge the is the first case of its kind.
Changes in process observed
Traditionally a patient that requires the transfer with 2 different ventilators via two different airway devices would have required the deployment of a specialist ECMO team to place the patient on a heart lung machine for safe transfer. Which utilises a scarce resource and is associated with morbidity and a small risk of death. This is one of very few dual ventilator transfers performed in the UK

002/Timeliness of access to specialist care for all patient groups

The service aims to provide and enhance timeliness of access to specialist care, with the following case study illustrating such benefits.

Case study of a patient with a penetrating neck wound
Background
After an assault, a patient presented to his local hospital with a large kitchen knife embedded deeply in his neck. With key blood vessels, airway structures and nerves at risk of damage, he was conveyed across the border to Stoke major trauma centre for specialist management with the knife still in place The patient was stabbed multiple times in an altercation with a large kitchen knife, with penetrating wounds to his chest and the back of his neck, where the knife remained lodged. Deteriorating with agitation possibly representing concealed bleeding he was anaesthetised by the team at Wrexham Maelor to allow his injuries to be managed safely. A sucking chest wound was managed with a seal and the patient was positioned on his left side to avoid inadvertent movement of the knife, making all care more challenging.
Action taken
North Wales on-call team mobilised overnight to Wrexham. Using their specialist equipment, they were able to secure an IV cannula using ultrasound, and safely package the patient for his ongoing journey using a vacuum mattress. By liaising with top cover the team were able to change the initial triage decision from a local vascular centre to a major trauma centre, to allow better holistic care of the patient following his trauma. The team were also able to rendezvous with specialist practitioners from EMRTS at Welshpool en route, to allow blood transfusion in transit if necessary.
Outcome
The patient received timely specialist care for their injuries, and had experts available during the transfer period, incase of deterioration.
Changes in process observed
Historically the transfer would have required a local team to travel with the patient, and they may not have had the specialist skills, knowledge and equipment available to them. The patient may have had a delayed transfer, or risked a poor outcome during transit.

In addition feedback received from stakeholders includes reference to this benefit;

"The transport is provided by ACCTS - we don't have to wait for hours for an ambulance….. It takes less time to organise a transfer with ACCTS than in the past when we had to coordinate the transfer with welsh ambulance services. There was often a delay of hours and then if it was later in the day, there was a risk the team would not get back in time for the end of their shift."

-Interim Clinical Director CAV

"I like the fact that they attend the morning SITREP meeting as this allows discussion and planning of transfers early in the day.

I am of the generation that remembers the hassle to try to arrange an ambulance and staffing to facilitate these transfers which caused many a headache!"

-Senior Nurse, ABUHB

A high level analysis of ambulance control data also supports an improvement of timeliness. The baseline data pre-ACCTS reveals that cases referred to specialist care has a median of 45 minutes wait for ambulance arrival. Post ACCTS, this fell to 27 minutes. The total time from call to destination also improved by 13 minutes. This analysis does not take into account regional variations, or urgency of request due to limitations in data linkage within the current resource for this evaluation.

Period	ToC to arrival of transporting resource	ToC to Destination
Pre ACCTS	45	104
Post ACCTS	27	91
Difference	18	13

Figure 24 Pre/ Post ACCTS ambulance times (TOC : Time of call)

A more detailed analysis by triage category and clinical condition, with case controls may be advantageous if evaluation is extended for a longer period, and would require linkage of the legacy Critical care network audit data, with Welsh Ambulance CAD and PCR data.

003/Enhanced perception of equity by health care professionals, LHB representatives and patient representatives

The service has received the following formal feedback during the evaluation period.

"As a general comment, I believe that ACCTS has been transformational for our services, and has become an indispensable part of the healthcare economy of North Wales.
I have personally seen the difference that ACCTS has made to patients in this healthboard, especially those for whom transfer has been necessary to access the acute services that are not offered on all three sites (vascular and cardiac)."

-Clinical lead YGC, BCUHB

Ad-hoc feedback examples

"Just wanted to send my thanks for such a great service from ACCTS yesterday in transferring a patient with acute severe asthma from UHL to UHW at short notice. Hannah who was coordinating over the phone was incredibly helpful and timely in getting back in touch to confirm and the team were so highly professional and courteous. It made what could have been a challenging transfer run very smoothly and was so appreciated."

-ICM Anaesthetics registrar

"I just wanted to pass on my thanks to your duty team in the North today, who undertook 2 transfers from the YGC site… One of the patients was incredibly challenging, but was really well managed by the duty transfer team. They gave him the best possible chance to go for his definitive therapy, but sadly the situation developed such that we ultimately opted to palliate locally. A difficult case, managed professionally and calmly throughout, with the patient's best interests in mind at all times."

-Consultant in ICM, BCUHB

"I cannot thank staff enough as they saved my life in getting me to the Heath Hospital. They were very caring and helpful as well as knowing their job. I would like you to thank them for me please, and we know what the outcome would have been had they not treated me"

-Cardiac patient

"I would like to thank very much all the Transfer Team who transferred me safely in your specialised ambulance …. I would not be here today without your expertise, Care and kindness"

-patient transferred from North Wales to specialist care in England

"As both network lead , clinical consultant and in my role as a Duty Retrieval Consultant for SPRINT (ACCTS from South London and Kent , Surrey , Sussex) I have interacted with the Welsh team

on numerous occasions. There is a hugely positive dynamic and responsive culture , this facilitates a " mobile icu" capability that delivered a risk assessed but safe , responsive transfer by a dedicated expert skillset . This service is designed at its core to push through inequity barriers and ensure the best outcomes by placing the critically ill in the right place for best outcomes. There is no regionality, politics simply patient centred innovation and excellence"

- Dr Chris Langrish, Consultant SPRINT , SLACCN Lead , ECMO

In addition to ad-hoc feedback, the service is actively engaged in a pilot patient experience quality improvement project, which seeks to meet recommendations by ICS on the Transfer of Critically Ill Adults 2019[11] which recommend

"...there should be future research into the impact of transfer on patients and their relatives. There should be a particular focus on understanding patient and relative experiences, to enable future improvements in practice aimed at minimising distress potentially caused by transfers."

[11] Intensive Care Society | Transfer of the critically ill adult (ics.ac.uk)

The project will conduct telephone interviews with an adapted structured interview questionnaire adapted from NWTS[12] and DEPICT[13] studies.

in addition, pending the results of the pilot formalised mutual arrangements will be made with the wider EMRTS aftercare team to formalise feedback and aftercare arrangements. A suite of patient information materials and public facing website are also being developed based on feedback from the clinical governance process.

Despite largely positive feedback, some suggestions for improvement were received to further enhance equity from the clinical lead for Wrexham Critical care as follows

1. Centralisation of the base: Establish a centralised base that can respond to calls from all sites within a similar time period. This would enhance coordination and efficiency in service delivery. Additionally, it would facilitate the recruitment of skilled practitioners from across North Wales, thus improving training and resource availability.
2. Local Lead: Appoint a Local Lead who is co-employed by Betsi. This individual would focus on addressing the specific needs and requirements of the health board, thereby enhancing communication and collaboration between all stakeholders.
3. Integrated Training: Provide integrated training for all three sites on transfer procedures. This training should align with various acute speciality curriculums and special study modules to ensure that education and training derive maximum benefit from the ACCTS service across North Wales.
4. Sharing of Governance, Logistical Data, and Education Resources: Foster collaboration by sharing governance processes, logistical data, and education resources between the ACCTS service and the individual sites. This collaborative effort would facilitate feedback, and continuous improvement, and enable sites to effectively manage transfers as needed.
5. Equitable Service Coverage: Develop a service that offers consistent coverage, regardless of the time of day. This guarantees the safe and professional delivery of critical care during patient relocations

[12] Feedback | North West & North Wales Paediatric Transport Service (nwts.nhs.uk)
[13] Study Summary | DEPICT Study (depict-study.org.uk)

Health gain

007/Critical care intervention or any decision outside standard paramedic practice

870 cases (64%) transferred during the period required the escort of a trained clinician above the current skillset of that available via the Welsh Ambulance Services NHS Trust. Prior to the ACCTS, this would have been provided by hospital staff.

008/Objective improvement in the clinical condition of patients

Whilst improvement in the clinical condition is largely a system wide outcome, and the transfer is only one component, there is anecdotal evidence that the provision of active, and more focussed care during transit, as well as the active coordination of a patients pathway may have a benefit in this area. It is beyond the scope of this piece of work to asses this, but a work package is proposed for a longitudinal analysis using linked multi-source data over five years.

In the interim, an assessment of adverse incidents also provides an insight into the condition of patients receiving the service. Published, accepted rates of such incidents are limited by the paucity of data on UK critical care transfers but are quoted at 6.9% of all transfers, with the majority being clinical incidents and a minority being technical or logistical.

After review of year 1 data, there were 17 critical incidents noted (3.4%) during ACCTS transfers, with 5 clinical events (29%), 5 equipment events (29%) and 7 Logistical events (41%). Of note, 5 logistical events were related to breakdown of loan ambulance vehicles highlighting the challenges prior to delivery of dedicated ACCTS vehicles and 2 were related to operation of WAA helicopters which have limited comparison to the legacy critical care network transfer data quoted.

Longitudinal proposal

Transfer is only one component of care that spans a system involving multiple processes and professionals within Critical Care. There is anecdotal evidence that there may be some improvement in clinical variables whilst attended by a dedicated transfer team, as modelled in ACCTS. This may be due to the active and focussed care alongside the active coordination of the pathway and wider network. There are other, unmeasurable benefits in the alleviation of pressure within a system that will also benefit patients.

However, transfer is not without risk. Risk can be problematic to quantify with different methods possible. Risk may involve the potential for actual harm through complications that occur at a patient level. This could include, but not limited to, skin pressure damage, aspiration or ventilator associated pneumonia, medical device dislodgement or malfunction. Risk could also be classified according to patient characteristics. The best example would be the use of predictive mortality scores (eg APACHE II, ICNARC or SOFA) or actual mortality of patients cared for by ACCTS. Caution should be exercised when using actual mortality because it is unlikely, unless an incident occurs, that mortality would be directly attributable to the transfer process.

It exceeds the scope of the current service review to investigate the detailed benefits and risks as above. A work package is proposed for a longitudinal review using linked multi-source data spanning five years. This proposal is an outline only and would be subject to change at the time of commissioning. The broad areas to be considered would be: system, patient, risk and consequences.

The system component should seek to evaluate the downstream benefit to the wider Critical Care Networks served by ACCTS. The simplest method would be tracking of declared Crticon status by individual units and ACCTS activity depending upon the status.

The patient component should concentrate on the benefit to the patient as a result of ACCTS care. This could include tracking of physiological parameters and degree of organ support required from ACCTS team arrival at bedside to handover at the receiving centre. Advancement in integration of electronic medical devices to better feed into patient records will allow real time data collection for parameters such as drug infusion rates or doses and ventilation parameters. A further benefit would be decreased interruption to care cycles present within Critical Care.

Evaluation of risk would involve quantifying the predicted mortality based upon existing predictive tools. The ICNARC database which receives data from all Critical Care admissions produces a mortality risk based upon the inputted variables. The APACHE II score is also used commonly. The SOFA score used variables that are able to be collected upon receipt of the patient by ACCTS and may be beneficial to track clinical improvement. Other variables such as the P|F ratio allows comparison of ventilation or respiratory parameters.

Consequence is a weighted term but should be actively monitored to ensure the transfer process does not expose a patient to complications above those experienced within Critical Care units. These complications include, but not limited to; skin pressure damage, aspiration, ventilator associated pneumonia, medical device dislodgement. The DATIX reporting system common to all NHS organisations allows for reporting of complications potentially attributable to the transfer process to

be reported and fed back to ACCTS. Reporting systems also exist for hospital acquired infections which would allow identification of any increased disposition following transfer. Comparison can be drawn to reported incidence across Critical Care in the UK.

009/'Downstream' benefits in hospital

The downstream benefits of the service include a reduction in pressure on referring units, whom would have traditionally had to undertake the escort during a transfer often requiring senior clinicians to attend site from home.

The ACCTS operating model provides a dedicated member of staff for clinical coordination. This individual screens transfer requests, undertakes triage and prioritisation. Theis process ensures that the most seriously ill and most urgent patients get moved first. This will improve the time to definitive care but also maximise the unique capacity through optimising flow. After initial referral, the ACCTS coordinator assumes responsibility for communicating with all relevant clinical stakeholders in the patient transfer pathway. This can facilitate freeing up the clinicians caring for the patient to concentrate on organising or delivering patient care.

Detailed later in the document, the savings during the first year equate to a conservative estimate of £693,000 for LHB's in relation to lost theatre time.

011/Enhanced perception of health gain by health care professionals, LHB reps and patient reps

Excerpts of formal feedback received from key stakeholders are included further referencing enhanced perception of health gain across various domains.

"The advent of ACCTS Cymru has transformed critical care transfer for Welsh patients. The service has developed rapidly to meet the needs of its patients and I see its work in all of my roles – as a Consultant in Critical Care in Bristol, in collaborative work with the South West England ACCTS and in their contributions to UK-wide national work. I look forward to continuing to see the service go from strength to strength."

- Dr Scott Grier, Clinical Director, Retrieve ACCTS; National Critical Care Transfer Lead, NHS England

"ACCTS has substantially improved our elective recovery capacity, as we no longer lose key anaesthetic staff to transfer patients."

-Clinical Lead BCU

"During my time as acting service manager and lead practitioner of the Specialist Retrieval and Intensive care transfer service (SPRINT) I was greatly supported by ACCTS Cymru.

From the first invitations to join the initial staff induction I have been continually impressed by the professionalism, teaching, drive and ambition to improve not only the service delivery in Wales but also to push the boundaries in transfer medicine nationally and internationally. This has pushed many in England to follow suit and look to our Welsh colleagues showing what can and should be done within our services for our patients.

Their dedication to education and innovation is inspirational and should be enthusiastically praised and supported.

The process of transfer when co-ordinating multiple complex transfers (even in one day) has been exemplary, their desire to put patients first is honourable and the refreshing. Their desire to not say 'no' but 'how' has been inspiring and a true testament to the strength of the service and its supporters."

-Miss E J Price, Acting Lead Practitioner/ Service Manager of SPRINT

"Thanks for your hard work transferring our patients"

- *HDDA critical care teams*

"The advantages of ACCTS

1. Transfers undertaken by appropriately trained and experienced clinicians

2. Able to help at relatively short notice during working hours, therefore when the receiving unit has a bed the transfer will take place before 'we lose the bed'.

3. The unit doesn't lose it's 'airway trained' staff member and bedside nurse to transfer the patient, thereby improving patient care on the unit."

-Interim Clinical Director CAV

"My experience was excellent and a massive improvement on what existed before ACCTS existed."

-ICM Consultant CAV

*"*Just wanted to send my thanks for such a great service from ACCTS yesterday in transferring a patient with acute severe asthma from UHL to UHW at short notice. Hannah who was coordinating over the phone was incredibly helpful and timely in getting back in touch to confirm and the team were so highly professional and courteous. It made what could have been a challenging transfer run very smoothly and was so appreciated. "

- ICM Anaesthetics registrar CAVUHB

*"*we have occasionally used the service and I think it is excellent.

It allows safe transfers of patients throughout the country and doesn't rely on the staff within each department to free a doctor and nurse when under pressure."

-Senior Nurse, ABUHB

Clinical and skills sustainability

This measurable benefit relates to reducing service and workforce vulnerabilities. Demonstrating workforce solutions that are flexible and robust to a range of future scenarios whilst being achievable in terms of recruitment. The service seeks to increase support fort those working within the current system, through educational interventions and training opportunities, whilst also enhancing recruitment and retention into hard to fill posts across the service and hospitals through attractive job plans.

A key indicator of the benefits includes the high competition ratios for posts when advertised, with up to 30 applicants per post advertised, whether practitioner or medical posts[14].

012/Increased consultant appointments

10 consultants were recruited to the service since inception, and 8 continue to provide direct clinical care sessions. The service has also provided a valuable platform for training, hosting formal transfer modules, and also non training grade doctors as senior clinical fellow posts. Ultimately these doctors may choose to work in Wales as specialists or consultants. It is also evident from the distance some doctors travel to work with the service, that it provides a desirable place to work above and beyond that of the local services available to some individuals. Figure 25 outlines the number of medical staff appointed to the service during the evaluation period.

Group	n
Consultants	10
SSY Modules (Registrars)	2
Senior clinical Fellows	7

Figure 25 Medical Staff Appointments

Formal feedback was received from a current fellow which evidences the draw to work for the service for senior trainees.

"I am a dual trainee in Intensive Care Medicine and Anaesthetics in Yorkshire and have always had a keen interest in Retrieval and Transfer Medicine. As Yorkshire doesn't have a transfer service ofit's own, I was looking for training opportunities in this subspecialty, and that's when I came across this clinical fellowship by ACCTS Cymru that I'm presently pursuing. Having read the job description and interacted with the team during my interview, I felt that training with this organisation would not only enable me to gain the practical and academic knowledge surrounding transfers but also help me understand the organisational aspects of running a transfer service. In addition to an excellent training program, the team were willing to tailor the experience to my needs and expectations. I felt this would give me a significant advantage in my professional career, and so when I was finally offered the post, I was delighted.

I have now been in the service for 10 months and have thoroughly enjoyed my time here. I'm guided by a team of experienced senior clinicians who place great emphasis on training and education. I've got the opportunity to work alongside a multidisciplinary team consisting of RTPs and CCTAs who offer a different but complementary skill set to my own, which has a synergistic effect on the team's performance. A robust induction program at the outset ensured a smooth transition for me into the

[14] Applications via NHS / Trac Jobs for posts advertised 2021 - 2024

team and the relatively unfamiliar retrieval environment. A unique setup within the service in terms of specialised ambulances for transferring critically ill patients, supervision of DRCs, a close relationship with the EMRTS team and a commitment to transfer patients across a whole range of clinical conditions and urgencies, has given me numerous clinical opportunities to develop my knowledge and skills within this subspecialty. Since the case mix varies between the different geographic locations that this organisation serves, the team have gone above and beyond to facilitate my relocation to different bases so that I can get the whole depth and breadth of experience. Training with ACCTS has brought a paradigm shift in my thinking from whether a patient can be transferred or not, to how I can best optimise the patient's clinical condition, the transfer equipment and the environment to safely facilitate the transfer. As I approach the end of my fellowship my mentors are now allowing me to step up into the DRC role to provide me with a well rounded clinical experience and support my transition into consultancy. Recognising my keen interest in quality improvement, the team have provided me with opportunities to initiate new projects and have carefully considered my perspective and allowed me to join the ongoing ones. This has helped me build a strong portfolio of activities beyond just clinical medicine. I'm involved in writing 3 SOPs, am a part of a focussed group developing an MSc in Retrieval and transfer Medicine and am representing the service at a national forum driving research and quality improvement in transfer medicine. I have benefited from close links between ACCTS and various academic universities and industry partners, such that my innovation ideas have developed beyond my individual skill set and can now have a larger impact than I would've ever managed alone. Despite the Welsh Critical Care Network's transfer audit being one of the oldest successfully running audits of its kind, my suggestions for improvement have been welcomed and incorporated, and in fact I've been encouraged to develop and publish my work, which displays a culture of respect for all opinions and striving for excellence within the organisation. The service has helped me in preparing for and funded my DipRTM examination which would give my CV a boost while applying for consultant jobs within this subspecialty. I've been given the opportunity to be involved in writing and delivering simulation scenarios for various events including induction courses, CPD days and interviews for new team members. In collaboration with consultants, fellow trainees and RTPs, I'm setting up a Mechanical Ventilation Study Day for ACCTS, which involves delivering an already established international course, blended with bespoke sessions designed for our team and clinical environment. I'm also organising a clinical governance day for the service. Involvement in these activities has given me a chance to network with professional colleagues across the country, and is also providing me with essential experience in organisation and management. I believe that the knowledge and experience I've gained training with ACCTS would give me a significant edge over my colleagues when I apply for consultant jobs in the near future. Since Yorkshire and Wales share a similar geography, as I go back to continue training in my region I'd be able to help set up a similar service there and extend the skills gained in this fellowship to a wider group of patients. On a more personal note, I've got an opportunity to explore the stunning Welsh landscape that I've fallen in love with. Since the day I joined, I've felt welcomed into the ACCTS family and over time have developed, what will hopefully be, long lasting social relationships with several team members within ACCTS and EMRTS. The fact that I've decided not to completely leave ACCTS at the end of my fellowship year and to continue working part time is testament to this."

013/Increased educational interventions to doctors/ paramedics/nurse practitioners/ midwifes (either opportunistic or structured)

The service has delivered and supported a wide range of planned and opportunistic educational interventions across Wales summarised in Figure 26.

This reveals that in addition to training its own staff, the ACCTS also contributes to the wider training of staff across Welsh health boards which is essential for units to maintain compliance with relevant standards.

Interventions	LHB/ areas	No. of events	No. of staff trained	comments
All Wales Critical Care transfer course	All LHB's ex. Powys	19	380	ACCT's supporting the courses organised by LHB's with Faculty, Kit and equipment.
Induction courses (classroom and simulation based)	All LHB's ex. Powys	8	100	Induction course for new staff ranging from 5 to 10 day residential courses in North and South Wales. Some events include training of PHEM, Anaesthesia and Intensive care trainees, as well as university students.
Training shifts (medical)	BCUHB, SBUHB	n/a	2	SSY placements
Training shifts (AHP)	Pan Wales	n/a	12	Dedicated time to undertaking RTP development framework educational package
Training Shifts (Support)	Pan Wales	n/a	10	CCTA development framework
Clinical Governance meetings	All LHB's ex. Powys	17	n/a	Internal Governance meetings including case reviews, audit, education. Open to all staff

Training sessions	All LHB's ex. Powys			In house subjects covered: Paediatric, Ventilator, IABP, atomiser backpack, TFPOS, Major Incident, bronchoscopy coordination. Regional EM training for PHEM trainees.
ACCTS/ EMRTS Conference	All LHB's ex. Powys	2 days	54	Joint conference, including education and training sessions.
Welsh Intensive Care Society Meetings				*Stakeholder engagement*
Retrieval Conference				Poster presentations on transfer of patients for stroke thrombectomy, practitioner-led critical care transfer and potential for ECPR amongst HEMS cardiac arrest cases from EMRTS records
Bevan Commission				ACCTs continue to conduct research in partnership with WAST evaluating novel delivery of prehospital stroke care
London Trauma Conference				Poster presentation on transfer of major trauma patients and the impact of a transfer service in facilitating additional primary HEMS missions
Society for Obesity and Bariatric Anaesthesia				Oral & poster presentation on the development of a novel bariatric critical care transfer stretcher, allowing equity of access to critical care by design

European Society of Intensive Care Medicine Annual congress		Oral & poster presentation on the integration of a dedicated transfer coordinator and a national sitrep to facilitate planned transfers
British Trauma Society Winter Meeting		Poster presentation on the injuries and care needs of critically ill trauma patients transferred to major trauma centres
Academy of Medical Educators International Conference		Oral presentation on the innovative multidisciplinary, residential induction model employed by ACCTS to develop high performing clinical teams
MSc in Retrieval and Transfer	6	Currently 6 practitioners studying in Bangor University (Started in September 2023)
Dip RTM	5	ACCTS supported medical workforce through the Dip RTM.

Figure 26 Educational interventions

As part of the strategic move to professional transfer medicine, the practical ad hoc exposure as part of training has been replaced by dedicated teams for the majority of transfers. The ad hoc response critical care transfers were often conducted by ad-hoc teams of hospital staff using NHS ambulance service vehicles, leading to issues such as junior doctors handling transfers, a high percentage of out-of-hours transfers, and a notable incidence of critical incidents. This reduced exposure has the potential to multiply the limitations of those systems.

Since its launch the service has formed links with national training leads, ensuring that the needs of the trainees from both doctors and wider MDT professionals, demonstrating the commitment of training the specialists of tomorrow, some of which is highlighted below.

ACCTS Cymru has addressed these issues by offering structured training opportunities and professional support for both junior and senior trainees in anaesthetics and intensive care medicine. A 2023 trainee-led survey within the Welsh School of Anaesthesia revealed significant challenges: 93% of trainees reported reduced exposure to transfers, 54% had not performed a transfer in the past year, and 56% struggled to complete the 'Resuscitation & Transfer' module. Furthermore, 93% of trainees felt they would benefit from a dedicated transfer service attachment.

To meet these training needs, ACCTS Cymru provides:

- Three clinical teams per day for clinical attachments
- Dedicated remote intensive care medicine (ICM) consultant support and Workplace-Based Assessments (WPBAs)
- Bespoke ambulances equipped to accommodate extra team members
- Tailored on-transfer supervision by experienced clinicians
- Monthly clinical governance days featuring case reviews and external speakers

The training opportunities roadmap includes various stages tailored to both anaesthetic and ICM trainees:

- Stage 1: All-Wales Transfer Course, clinical governance days, and clinical observer shifts
- Stage 2: 7-day transfer placements and bank transfer doctor posts
- Stage 3: 14-day transfer placements, Specialist Interest Areas (SIA), Specialist Skills Year (SSY) placements, and Diploma in Retrieval & Transfer Medicine (DipRTM) exam support

Additionally, ACCTS Cymru offers specialist training for experienced clinicians to handle more complex transfer situations, covering topics such as aortic balloon pumps, mechanical support, cardiogenic shock, advanced mechanical ventilation, and the coordination and logistics of critical care transfers.

A unique feature of ACCTS Cymru is its multidisciplinary residential induction programme, which runs over seven days and includes lectures, skills stations, and over 20 high-fidelity simulations based on real transfers and clinical incidents. This programme is available to trainees joining for bank work, Out of Programme Experience (OOPE) fellowships, SIA(Special interest Area), and SSY placements. A shortened version is offered for shorter attachments, and experienced trainees have opportunities to teach as faculty.

In addition to this comprehensive clinical education program for all members of the MDT. The ACCTS leadership team have worked in partnership with the university of Wales Bangor to develop MSc in Retrieval and Transfer Medicine represents a significant advancement in academic training for this field. This postgraduate programme provides comprehensive education and training in the principles and practice of patient retrieval and transfer, aligning with the needs of modern critical care transport services. The MSc aims to equip clinicians with advanced skills and knowledge, enhancing the quality and safety of patient transfers.

This innovative approach to transfer team training has been recognised for its excellence at the Academy of Medical Educators international conference. The continued expansion of adult critical care transfer services, as part of the UK's professional critical care transfer medicine revolution, provides an unprecedented opportunity for training and enhances the safety and effectiveness of patient care. Through regular, reliable access to transfers and expert supervision, trainees can develop their skills in interhospital transfer, setting a benchmark for mutually beneficial regional arrangements between transfer services and training programmes

Affordability

Whilst the operating budget is afforded via the CCIG plan, it is important affordability is considered in the context of creating a sustainable service. The transfer workstream represents a small proportion of the overall CCIG budget, and less than 2% of the critical care budget for Wales, and through collaborative efforts with the EMRTS is able to ensure that as much funding is applied to the provision of direct care as possible In terms of reducing ongoing revenue costs, core service requirements such as the provision of equipment, coordination, and logistics all have mutual benefit for the wider service, ensuring that savings can be made for both the EMRTS and ACCTS day to day.

Value for Money

The provision of critical care is expensive with a level 3 bed day costing £3307, Level 2 £1967 and average mixed cost of £2619[15] and a transfer of care between providers is often an important step in reducing the pressure on this valuable resource, whether specialist or otherwise. The mixed cost of a transfer during the period evaluated in broad terms is an average of £3385. Outside critical care, there are also other costs to consider, including but not limited to the removal of the requirement of a hospital team to undertake a move, and the freeing up of 999 (WAST) or 999 (EMRTS) resources to undertake a transfer. In the longer term, a more efficient pathway may also lead to a reduced hospital stay for patients, and return to work with a wider societal value. The later is beyond the scope of this evaluation.

The largest cost allocation is pay costs and there are efforts made to reduce this through a variety of methods, such as the hosting of formal training placements, with elements of service provision, such as the SSY. In addition, savings are also made through employment of senior clinical fellows who can provide service delivery at a reduced cost to consultant posts. Whilst not currently formally part of the service model, in appropriate cases practitioner led transfers may offer efficiencies.

With reference to the freeing up of 999 resources, a conservative estimate takes the urgent and time critical specialist transfers and assumes that they would have been serviced by WAST of EMRTS (road) in the absence of the ACCTS with a fully absorbed cost of £390[16]. This equates to 85 transfers during the period and has a potential direct economic value of £33,150 and possibly, a larger value to the patients that have had a more timely emergency response as a result (Figure 27). Some early evidence of this is realised in a poster presented to the London trauma conference "Cooperation creating capacity – Integration of HEMS and critical care transfer teams within the Welsh trauma system" which can be found in Appendix 5. In addition, for non-urgent transfers, there is often a cost of employing WAST through overtime arrangements, or third parties such as Voluntary aid or private ambulance services.

[15] 2022/23 fully absorbed representative reference costs, SBUHB Finance
[16] 2021/22 English CRG costs for ambulance see and treat and convey (Transfers not available)

LHB	n	£
Aneurin Bevan	4	1560
Betsi Cadwaladr	42	16380
Cardiff & Vale	12	4680
Cwm Faf Morgannwg	11	4290
Hywel Dda	6	2340
Swansea Bay	10	3900

Figure 27 Year 1 transfers to specialist care freeing up local 999 ambulance.

In terms of freeing up hospital teams, in all cases of transfer at least one, if not two members of staff from the referring unit would have had to escort the patient, and this has a conservative estimate of £693,000 saved to the local heath boards[17].

The system wide effect of staff leaving the hospital can be more significant through alteration of critical care capacity, theatre availability, both on the same day and during subsequent days if a transfer occurs late in a shift assess the potential to affect urgent cancer surgeries and in hospitals and specialist services produced reduce equity of access did bad pressures because inflow and also lack of clinician availability because I'm taking transfer. The latter is particularly applicable to North Wales, with significantly longer distances to specialist care where the average job cycle often exceeds four hours

LHB	n	£
Aneurin Bevan	17	£ 25,500.00
Betsi Cadwaladr	122	£ 183,000.00
Cardiff & Vale	135	£ 202,500.00
Cwm Taf Morgannwg	73	£ 109,500.00
Hywel Dda	58	£ 87,000.00
Swansea Bay	57	£ 85,500.00

[17] 1. Lyons R, Rawlinson D, Lyons J, Fry R, D B, Gabbe B. 2016 Service evaluation of the Emergency Medical Retrieval & Transfer Service (EMRTS) [Internet]. 2016

7. Conclusions and recommendations

The ACCTS have delivered a fully operational service on a challenging post-pandemic backdrop, which exceeded both requirements and expectations within the allocated budget. This evaluation confirms that the original requirements of the CCIG have been fulfilled and if desired by stakeholders it is recommended that a funded programme of work could be established with academic partners in order to provide a longitudinal clinical and health economic assessment of the service, including independent external scrutiny of the data. In addition, it is desirable to provide a longitudinal review of transfers in Wales going back to the start of the national transfer audit. This could be undertaken once data is formally transferred from the former Critical Care Network to the service.

Key recommendations for future service are as follows;

1. **Enhance Top Cover Arrangements**: Shift focus of the senior medical "top cover" arrangements to ensure consistent and intensive care skilled advice is available for all transfers, thereby enhancing the quality and safety of patient care during transfers.
2. **Expand Coordination RTP duration** : Extend the coordination function to a 24-hour service to ensure transfer coordination is managed around the clock, which could help in reducing delays and improving responsiveness.
3. **Formal Night Shift in North Wales**: Establish a formal night shift in North Wales to ensure consistent service availability and mitigate the impact on the day service provision, addressing the unique geographical challenges of the region.
4. **Consider central base in North Wales**, to facilitate the night shift and enhance equitable access to service provision
5. **Explore utility of Practitioner Transfer Roles**: Further develop non-medical transfer roles to provide a multidisciplinary approach to patient transfer and to optimize the use of skilled medical personnel.
6. **Explore an additional South West operational base.**
7. **Expand Hours in South Wales**: Evaluate the benefits of expanding service hours in South Wales, such as introducing twilight shifts, to address the demand during late hours and improve service coverage.
8. **Progress Clinical Networks/Clinical Community Involvement**: steer and engage in the pathway development for emerging clinical networks and conditions to ensure the transfer service is integrated with and supports broader healthcare delivery networks.
9. **Longitudinal Evaluation Funding**: Consider allocating funds for a longitudinal academic evaluation to support continuous improvement by providing data-driven insights into the performance and impact of the transfer service.

10. **Formalise Patient Feedback and Aftercare**: Establish formal mechanisms for collecting patient feedback and managing aftercare to ensure that the service continuously improves and aligns with patient needs and experiences, working in conjunction with the wider EMRTS/ WAA service.

Stakeholders are requested to review this preliminary report and provide feedback to david.rawlinson@Wales.nhs.uk.

Appendix 1 Critical Care Task Finish Group Report and Funding Allocation

Professor Chris Jones

Dirprwy Brif Swyddog Meddygol

Deputy Chief Medical Officer

Stephen Harrhy

Chief Ambulance Services Commissioner

Emergency Ambulance Services Committee (EASC)

stephen.harrhy@wales.nhs.uk

10 September 2019

Dear Stephen,

Critical Care Task Finish Group Report and Funding Allocation

The Minister for Health and Social Services announced an allocation of £15m in July 2018 to support implementation of the recommendations within the Task and Finish Group on Critical Care Report. Welsh Government has previously sought proposals from health boards and advice was provided to the Welsh Government by the Task and Finish Group about how the funding should be utilised. I would like to thank your organisation for their engagement in this process and apologise for the delay in sending out this letter.

Vaughan Gething AM, Minister for Health and Social Services published the Final Report of the Task and Finish Group on Critical Care on 2 July by an oral statement to the Senedd. Assembly Members welcomed the report and Members thanked the Group for their work; I would like to add my thanks to that of Assembly Members for members of the Task and Finish Group's work. Additionally, I am grateful for health boards for releasing and supporting their members of staff to undertake this project.

The Report, Oral Statement and the press notice can be found below:

- Final Report
  https://gov.wales/task-and-finish-group-critical-care-final-report

- Press Notice
  https://gov.wales/welsh-health-boards-receive-share-15m-improve-critical-care
- Oral Statement
  https://gov.wales/oral-statement-task-and-finish-group-critical-care-report
- Copies of the detailed work stream reports/recommendations
  http://www.wcctn.wales.nhs.uk/delivery-plan-for-the-critically-ill (please see links for each work stream at the bottom of the page)

Annex 10, attached, of the report outlines the indicative funding allocations.

Annex 10 - Eng - Allocation of £15m.pc

We recognise the recurrent £15m national allocation can only be a contribution to help implement the recommendations. It is not intended to replace your organisation's own commitments and investment which remain crucial to improving critical care services in future.

I can confirm an indicative allocation of £1.7m to the Emergency Ambulance Services Committee towards the development of a national transfer services for critically ill adults. Your organisation will need to liaise with colleagues in Welsh Ambulance Service and Emergency Medical Retrieval and Transfer Service (EMRTS) to submit the implementation plan as detailed below.

This indicative allocation should not delay the planning, recruitment and establishment of services within your organisation; funding will be released following receipt and sign off of the plan as outlined below.

This funding is allocated subject to the following conditions and rationale:

1. Your organisation submits an implementation plan by 30 November to the Welsh Government for discussion at the Critically Ill Implementation Group (CIIG) meeting in December. These plans should:
   - Demonstrate an understanding of the service required required to deliver the Task and Finish Group transfer work stream recommendations. This should build on the work of the Task and Finish Group.
   - Demonstrate engagement of clinical teams in the transformation/development of services for people who are critically ill
   - Describe the implementation of effective tracking and reporting mechanisms.
   - Describe expected levels of performance resulting from the plan including investment allocation.
   - Breakdown of funding requirements and service model
   - Clearly state timescales for the commencement of the service

2. The implementation plan is built into your organisation's commissioning plan.

3. Once submitted, the reporting against your funding allocation/implementation plan should include progress reports on how you have used your allocation and achievements to date. It should also report any underspend.

4. You ensure suitably empowered representation from your organisation to attend all CIIG meetings.

The implementation plans (to be submitted by 30 November 2019) should be submitted to: PopulationHealthcare@gov.wales.

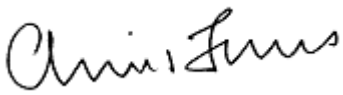
If you have any questions about your allocation please direct these to the above email address.

This letter has been copied to the Wales Critical Care and Trauma Network.

Thank you for your continued support for this important project; the work offers a real chance to change and improve how we offer critical care services in Wales.

I have copied this letter to Jason Killen, Chief Executive of Welsh Ambulance Service NHS Trust, Prof David Lockey, National Director of EMRTS Cymru and Aled Brown.

Yours sincerely



PROFESSOR CHRIS JONES

DEPUTY CHIEF MEDICAL OFFICER

Appendix 2 National Transfer Service for Critically Ill Adults report

Introduction

This report has been prepared in response to the correspondence, dated 10 September 2019, from the Deputy Chief Medical Officer to the Chief Ambulance Services Commissioner asking that the EASC works with WAST and EMRTS to prepare an implementation plan to develop a national transfer service for critically ill adults ("the service").

This report builds on the recommendations of the transfer work stream and provides information relating to the proposed operational model for the service along with funding requirements and timescales.

Background & Strategic Context

The Task and Finish Group on Critical Care: Final Report (Welsh Government, July 2019) set out the case for further improvements across critical care services in Wales. These areas included capacity wasted by delayed transfers of care and a variation in quality of transfer of critically ill patients between hospitals. In addition, it was stated that there are significant delays across a number of tertiary service specialities in patients being repatriated back to their local health board.

Following a meeting between Welsh Government officials and critical care clinical representatives in March 2018, the Minister issued a written statement in July 2018 announcing the establishment of a nationally directed programme for critical care and £15m additional funding for critical care services in Wales from 2019-20.

The correspondence from the Deputy Chief Medical Officer dated 10 September provided confirmation of an indicative allocation of £1.7m to EASC to develop a national transfer service for critically ill adults. It should be noted that this £1.7m focussed on workforce and equipment and did not include costings for training, project management or infrastructure requirements.

With the case for change already accepted and a preferred option recommended option identified it has been suggested that the service could be developed with EASC using the oversight and infrastructure of the existing EMRTS service.

Organisational Context

EMRTS Cymru currently operates a 12 hour service but is currently working towards becoming a 24/7 service, commencing in April 2020. A period of intense recruitment, induction and training is underway as well as the related operational and infrastructure changes that come with a significant expansion project.

The service can be hosted within the EMRTS however it would need to operate as a parallel organisation with ring-fenced funding. The service cannot impact negatively on the collaborative commissioning framework already in place for the EMRTS service and will therefore require additional resources to ensure that both clinical leadership and project management are in place at the earliest opportunity to undertake the required stakeholder engagement, develop the required processes and pathways and implement the service.

The EMRTS team has now considered the work undertaken (included within 'Annex 6 – Transfers' of the Final Report [see hyperlink]) and refined this to reflect the set-up and non-pay costs that are required.

https://gov.wales/sites/default/files/publications/2019-07/task-and-finish-group-on-critical-care-final-report_0.pdf

Organisational Structure

The service will operate as a parallel organisation withinthe EMRTS, under a collaborative commissioning framework with the Emergency Ambulance Service Committee (EASC).

The established EMRTS Transfer & Retrieval Group will manage all clinical and operational matters relating to the new service, reporting to the EMRTS Clinical & Operational Board (COB).

The EMRTS COB reports to the EMRTS Delivery and Commissioning Group for the delivery and performance of the EMRTS, this group includes representatives of all Welsh Health Boards, WG and WAST. The Welsh Critical Care Network will be invited to become a member of this group. The EMRTS National Director is also accountable to the ABMU HB Chief Executive for organisational and clinical governance. The above arrangements will expand to include the new service.

Implementation Plan

The EMRTS has considered the transfer work stream's recommendation for dedicated transfer teams in both North and South Wales for non-urgent transfers in hours in order to manage capacity, to step patients up or down or to repatriate closer to home.

The strategic and operational experience gained in both establishing and then expanding the service from two to four bases during subsequent years has provided the necessary experience to identify key considerations and develop this important new national service.

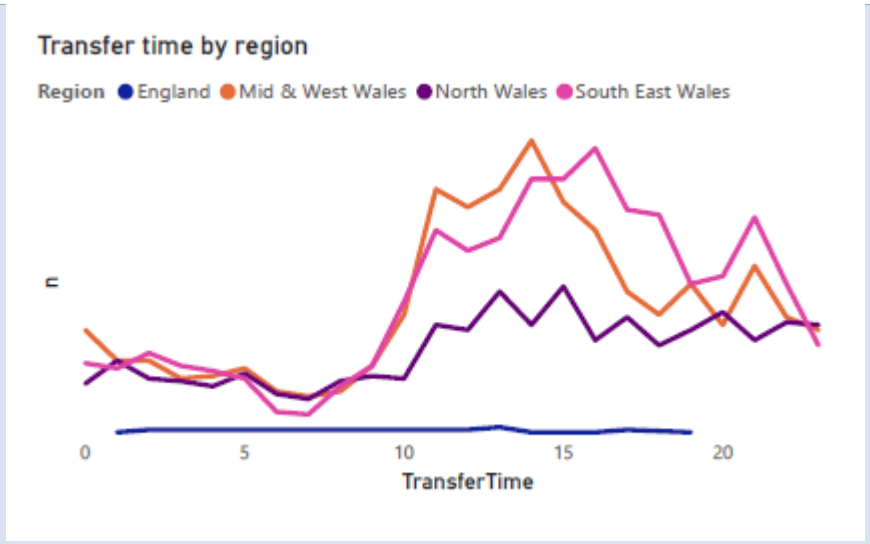
These include:

Organisational

Agreement required with SB UHB as the host Health Board prior to the development of a detailed implementation plan
Commissioner to engage with the Wales Critical Care Network and invite to membership of the EMRTS DACG
Commissioner to hold formal discussions with WAST regarding this service development

Operational

Whilst the recommended option presented by the work stream indicated a service operating on an 0800-2000 the exact hours of operation may need to reflect patient transfer request times.



The following has been prepared, again using Network data to illustrate the number of transfers undertaken over recent years by region:

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
England	33	29	37	46	43	37	24	16	16	19	299
Mid & West Wales	255	245	286	245	221	225	215	140	146	149	2112
North Wales	92	101	128	140	144	130	132	105	103	98	1169
South East Wales	205	253	226	229	224	185	206	158	152	180	1990
Total	**564**	**605**	**655**	**640**	**614**	**560**	**562**	**411**	**407**	**435**	**5391**

In addition to illustrating workload of all level 2 and 3 adult critical care transfers per calendar year, it also reveals the impact of the EMRTS on transfers since 2015, through a reduction in the requirement for secondary transfer

Due to their expertise in the field, it is proposed that EASC would work with WAST on the provision of dedicated, specifically adapted transfer vehicles and suitably skilled urgent care staff. It will be essential for the transfer vehicles to be ring-fenced for this service

The EMRTS Air Support Desk could coordinate transfer bookings and act as the single point of contact, in line with its current role for EMRTS taskings

For time-critical cases, advice will be provided by the EMRTS Top Cover Consultant. This is expected to be an uncommon occurance .

The combination of governance arrangements, central coordination, consultant leadership and performance monitoring will help mitigate the risk of "mission creep" and ensure the resource is ring-fenced for its intended purpose

Work will need to be undertaken to develop robust triage tools and standard operating procedures in line with Designed for Life: Welsh guidelines for the transfer of the critically ill adult

Whilst it is not felt that there is a significant training requirement for new staff (as they are already likely to have completed the required transfer course and have experience of undertaking these transfers), there will need to be a selection process to ensure that this is the case and also a detailed induction programme

Operational bases will be required in both North and South Wales. Options include either location of the operating base on a hospital site or co-located at an EMRTS base or an ambulance station. **Based on the geographical data used for the EMRTS expansion, in the South, both Dafen airbase and Cardiff Heliport would be appropriate options that will be explored further following the appointment of the leads.** **The situation in North Wales is more complex. The Caernarfon airbase and Welshpool airbase provide poor geographical cover by road and these options are therefore discounted. A central location adjacent to the A55 will be required to ensure equity in terms of geographical coverage across the region. Efficiencies could be made through co-location with existing NHS services, and will be explored by the leads during the early stages of the project**

Workforce

High level service principles need to be agreed ahead of approval to proceed, Clinical and Project Lead posts will then need to be appointed to secure the required stakeholder engagement and to implement this new service in line with these principles
An ongoing clinical lead will be required beyond service implementation for governance and leadership
Conversations with Consultants across Wales have indicated that there is very little capacity to resource the transfer teams with ICU Consultants from within Wales. The vast majority of critical care transfers are currently undertaken by registrar level doctors, rather than Consultants, so using this grade of doctor, as an alternative, will be appropriate
Retrieval & Transfer Practitioners will be recruited as trained assistants / second escorts
The service also provides a suitable platform to provide training and experience to clinicians from across NHS Wales, including junior doctors, and WAST staff to support ongoing and future initiatives. There are also examples of advanced transfer practitioners in other systems and there may be opportunities to develop these non-physician roles in this service. This is in line with HEIW strategic workforce plans

Communication & Engagement

By its nature, the service will cross all Health Board boundaries in Wales and will also expand beyond Wales in relation to tertiary care and repatriation. The engagement process will be led by the clinical lead and will include:

- Target Communications Groups
    - Internal – EASC, EMRTS
    - Stakeholders – WAACT, WG, Welsh HBs, WAST, Networks
    - External – general public communications
- Communicate key messages per Group
- Questions and Answers – develop FAQs
- Communications Toolkit
    - Face to face meetings
    - Websites
    - Intranets
    - Social media
    - E-bulletins
    - Press releases
    - EMRTS CG days and CPD events

- Communications plans will be prepared per target group including timetabled actions as part of the communications process
- All official communication will be delivered bilingually

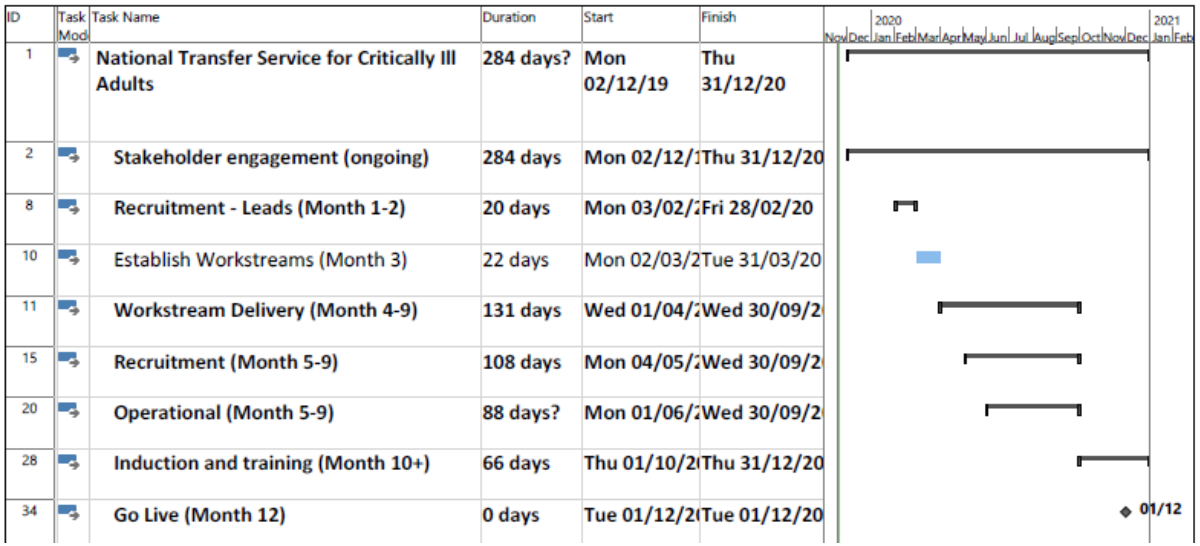
Implementation work streams

The early appointments of clinical lead and project manager will be vital in establishing the following work streams that will be required to develop and deliver on the key aspects of the project:

Referral pathways	Research and audit
Commissioning	Communication and engagement
Handover and information flow	Recruitment, induction and training
Clinical SOPs	Capital and infrastructure
Infectious disease and Infection control	Organisational structures and rotas
Pharmacy	Education and training
Vehicle Design and clinical equipment	

Project Plan

A high-level project plan has been prepared including the key activities and milestones for implementation of this new service.



ID	Task Mode	Task Name	Duration	Start	Finish
1		**National Transfer Service for Critically Ill Adults**	**284 days?**	**Mon 02/12/19**	**Thu 31/12/20**
2		**Stakeholder engagement (ongoing)**	**284 days**	**Mon 02/12/1**	**Thu 31/12/20**
8		**Recruitment - Leads (Month 1-2)**	**20 days**	**Mon 03/02/2**	**Fri 28/02/20**
10		**Establish Workstreams (Month 3)**	**22 days**	Mon 02/03/2	Tue 31/03/20
11		**Workstream Delivery (Month 4-9)**	**131 days**	**Wed 01/04/2**	**Wed 30/09/2**
15		**Recruitment (Month 5-9)**	**108 days**	**Mon 04/05/2**	**Wed 30/09/2**
20		**Operational (Month 5-9)**	**88 days?**	**Mon 01/06/2**	**Wed 30/09/2**
28		**Induction and training (Month 10+)**	**66 days**	**Thu 01/10/2**	**Thu 31/12/20**
34		**Go Live (Month 12)**	**0 days**	**Tue 01/12/2**	**Tue 01/12/20**

As per the above, it is anticipated that a 12 month set-up period will be required, with the key milestones ahead of service delivery being:

- Capital and revenue funding approval
- Appointment of key set-up posts (clinical leads, project manager, commissioning and administrative support)
- Effective stakeholder engagement
- Appointment of the specified operational posts
- Roll-out of induction and training programmes
- Procurement and commissioning of equipment

A more detailed project plan will be developed by the newly appointed project manager in conjunction with the clinical lead.

Benefits & Risks

Benefits

The benefits of this service have already been set out in the Final Report (2019), see above, including an impact assessment.

Implementation Risks

The key risks to timely implementation include:

Risk	Mitigation
Agreement is not secured from the hosting organisation	It is suggested that early discussions are held with SB UHB
Funding approval is delayed and the required clinical leadership and project management is not in place	The Commissioner and EMRTS will work closely with WG colleagues in order to discuss and agree the funding requirements
Core EMRTS business is impacted by the new service	EMRTS will have overview of the new service and provide governance and leadership. However, there will be a clear separation between the current EMRTS service and the new service, with separate funding. In addition, resources will be required to ensure that both clinical leadership and project management are in place at the earliest opportunity to undertake the important work during the busy set-up period
Data analysis is inaccurate	Service activity will be monitored closely as part of an agreed performance management process
The transfer vehicle and driver is taken offline to address emergency services pressures	Resources are ring-fenced as a dedicated resource to the national transfer service
The tasking process is fragmented	Centralisation of all tasking via the existing EMRTS Air Support Desk
Base facilities are not secured	Part of the early work to be undertaken by the leads will include activity mapping in order to identify the optimal geographic location(s) for the service and to hold the required discussions to secure appropriate base facilities
The required support is not secured	Early appointment of the clinical lead and project manager will ensure that there is timely engagement with stakeholders and that support is in place at an early stage ensuring stakeholder input to the project
The required numbers of staff are not recruited	If the required number of Consultants are not available then Registrar level Doctors will be utilised (in line with Designed for Life, 2016). The Retrieval & Transfer Practitioner roles will be open to both nursing and paramedic groups and, in line with experience gained from previous recruitment undertaken within the service, will also appeal to staff from English health services

No Deanery approval for the required medical staff	Initial indications are that the Deanery and HEIW are supportive and have approached EMRTS with a view to increasing placements with the service

Once appointed, the project manager will develop a more detailed risk register and risk management plan in line with the EASC integrated risk management framework.

Costs

The following project costs have been prepared with Swansea Bay UHB finance colleagues:

Set-Up Costs

Set-Up Costs (12 months)						
Title	**Band**	**WTE**	**£ North**	**£ South**	**£ Service wide**	**£ Total inc VAT where applicable**
Clinical Lead	Consultant	4 sessions p.w.			52,143	52,143
Project Manager	Band 7	1.0 wte			50,199	50,199
Commissioning Support	Band 7	1.0 wte			50,199	50,199
Admin Support	Band 3	1.0 wte			27,034	27,034
IT Project Manager (18 month secondment)	Band 7	1.0 wte			75,299	75,299
Transfer Pathway Practitioner (24 month secondment)	Band 6	1.0 wte			97,682	97,682
Recruitment costs - RTP	-	-	10,578	10,578		21,156
Recruitment costs - Medical	-	-	2,000	2,000		4,000
Training	-	-			24,000	24,000
Emergency driving (course fees and accommodation)	-	-	27,000	27,000		54,000
Induction costs - RTP & Medical	-	-	8,150	8,150		16,300
Supervised shifts	-	-	4,200	4,200		8,400
			51,928	51,928	376,556	480,412

Pay & Non-Pay Costs

Pay Costs (Recurring)	Band	WTE	£ North	£ South	£ Service wid	£ Total
Clinical Lead	Consultant	4 sessions p.w.			52,143	52,143
Service Manager	Band 8A	1.0 wte			60,750	60,750
Medical Escorts	Medical	3 sessions per day, per base	291,200	291,200		582,400
Retrieval & Transfer Practitioner	Band 6	5.68 wte	157,841	157,841		315,682
Repatriation Coordinator	Band 6	1.0 wte			48,841	48,841
Urgent Care Staff "WAST"	Band 3	5.68 wte	87,930	87,930		175,859
Admin Support	Band 3	1.0 wte			27,034	27,034
ASD staff	Included within existing EMRTS establishment					0
Total Pay Costs			536,971	536,971	188,768	1,262,709
Non-Pay Costs (Recurring)						£ Total inc VA
Vehicle costs "WAST"						0
Consumables			71,000	71,000		142,000
ICT/Comms			8,000	6,000		14,000
Remote ASD					8,400	8,400
PPE			3,600	3,600		7,200
Training			5,000	5,000		10,000
Staff travel, accommodation, subsistence			15,000	15,000		30,000
Courier costs			8,000	8,000		16,000
Total Non-Pay Costs			110,600	108,600	8,400	227,600
Commissioning Contingency						209,691
Total Recurrent Requirement						1,700,000

Capital

Capital	£ North	£ South	£ Service wide	£ Total inc VAT
Dedicated Transfer Vehicles *WAST*				0
Electromedical equipment	115,200	115,200		230,400
Kit bags	3,197	3,197		6,394
Radios	9,600	9,600		19,200
PPE	10,800	10,800		21,600
IT Infrastructure	15,600	5,040	60,600	81,240
Trolleys	33,600	33,600		67,200
Vac mats	2,160	2,160		4,320
Training equipment	7,800	7,800		15,600
Base infrastructure	58,800	6,300		65,100
Remote ASD set-up costs			22,200	22,200
Omnicell cabinet	29,100	29,100		58,200
	285,857	222,797	82,800	591,454

**vehicles to be sourced by WAST*

With service delivery commencing 12 months from funding approval and detailed discussions not yet taken place with WG colleagues, it is unlikely that significant expenditure will be incurred in the 2019/20 financial year. Potentially some of the following costs could be incurred in 2019/20 should early approval be provided:

- Clinical lead, project management, commissioning and administration support
- Certain items of medical and training equipment
- ICT infrastructure, systems development and equipment (including radios)
- Kit bags
- Consumables

Conclusion

Having considered this proposal in detail, the EMRTS Clinical & Operational Board is supportive of developing the service with EASC, as a parallel organisation with ring-fenced funding, within the key principles detailed above and using the oversight and infrastructure of the existing EMRTS service.

Annex 6. Transfers - Sue O'Keefe

Each year, in total, there are around 450 critical care (L2 and L3) transfers. This has decreased slightly since the establishment of the Emergency Medical and Retrieval Service (EMRTS), most likely because some patients are going direct to the correct destination in the first instance e.g. major trauma patients going direct to a major trauma centre.

Most critical care secondary transfers are undertaken by the Health Boards, some are carried out by EMRTS but the numbers are low, 10% of all critical care transfers in 2018.

Health Boards find it increasingly difficult to release staff, particularly appropriately trained[18] medical staff, to undertake transfers. Where possible EMRTS will undertake transfers if the patient fulfils certain criteria (critically ill or injured, time critical and requires specialist intervention, or high risk of deterioration).

There is also a fourth (Welsh Air Ambulance Charity) aircraft primarily for children but also available for critical care transfers i.e. not pre-hospital care. However, whilst EMRTS provide a Helicopter Transfer Practitioner (HTP) escort, the sending hospital/HB is still required to send a medical escort. EMRTS are currently funded 08.00-20.00hrs however there is a business case pending for EMRTS 24/7 cover.

The current transfer model is less than ideal with frequent delays (usually due to for example, Welsh Ambulance Service Trust (WAST) and appropriate medical staff availability) and, not infrequently, non-adherence to the Guidelines[1] (15.2% of returned forms that have the grade of staff documented show an inappropriate grade of staff, and therefore level of training, undertaking the transfer).

Service reconfigurations, hospital designations and changes are likely to result in additional critical care transfers. The transfer model for Wales requires enhancing to ensure that patients are transferred as timely and safely as possible.

[18]Designed for Life: Welsh guidelines for the transfer of the critically ill adult.

Critical Care Secondary Transfers and Alignment with EMRTS (assumes

EMRTS becomes 24/7 i.e. Business Case is approved):

The Welsh Government's Task and Finish Group therefore requested the Transfers Workstream to:

- Consider options for the development of a model of transfers for patients who are critically ill (secondary transfers/repatriations)
- Provide advice to the workforce work stream on any potential staff implications or training requirements

Recommended Option:

Dedicated Regional Transfer Teams for non-urgent transfers in hours. Such transfers could be transfers for capacity reasons or repatriations. These transfers do not form part of the core work of EMRTS and, as such, is the primary area that needs addressing to mitigate many of the issues cited above.

NB: EMRTS will not be able transfer all of the time-critical secondary patients due to primary taskings, weather etc., so some of these transfers will inevitably fall to this service too.

The model proposes dedicated transfer teams in two regions (North and South):

- Two regional assets (dedicated vehicles and drivers): 08.00hrs – 20.00hrs, 365 days a year:
- Two regional transfer teams: 08.00hrs – 20.00hrs, 365 days a year:
    - A rota of individuals in each region, staffed as outlined below. A dedicated transfer rota creates an opportunity for quality control and adherence to the standards[1].
    - North (A55 corridor), South (M4 corridor)
- Equipment will be required including trolleys, ventilators, pumps and monitors (not exhaustive), see costings section.
- Hosted by EMRTS (ABMUHB):
    - Road assets and driver provided by WAST under appropriate Memorandum of Understanding (MOU)
    - Hosting arrangements similar to those seen with EMRTS
        - Incident reporting, Workforce, Occupational Health, Management
        - ABMU hold funds: clinicians paid by home health board, ABMU recharged
- Governance arrangements as per EMRTS:
    - Utilising Air Support Desk (ASD) and Top Cover Consultant
    - Clinical and Operational Standard Operating Procedures (SOPs) of EMRTS utilised
    - WCC&TN audit transfers (as currently done)
- Personnel:
    - Emergency response trained drivers x2 regions
    - Medical escort ST3 and above[1] x2 regions
    - Second escort (ODP, paramedic, technician or nurse with relevant critical care experience) x2 regions
    - ASD staff (within EMRTS 24/7 Business Case)

- Additional managerial support (Deputy service manager)
- Administrator to rota coordinate x2 regions' team cover
- Repatriation Coordinator

Impact Assessment:

The impact assessment assesses both the positives and negatives of the proposed model:

Impact – Positives:
No depletion of HB staff (and therefore core activity/list cessation etc.) – positive impact hospital safety and resilience, RTT (referral to treatment) etc.
Dedicated assets with no reliance on WAST frontline – positive impact on WAST primary taskings and therefore improved availability for community response. Positive impact on timeliness of transfers (not waiting for WAST availability)
Skilled/trained personnel due to regularity of undertaking transfers – positive impact on patient safety
Adherence to D4L Guidelines e.g. seniority of transferring escort(s) – positive impact on patient safety
Potential (medical) recruitment opportunities being able to offer staff sessions on transfer team – positive impact on recruitment - Existing or new consultants - Existing or new consultants wishing to progress to EMRTS posts (could make this role mandatory before progression to EMRTS) - Middle grade 'fellow' posts - Offered as an advanced transfer module for anaesthetic trainees (possibly with partial deanery funding) - Offered as an advanced transfer module for ICM trainees (possibly with partial deanery funding)
Developmental opportunities for 'second escort' – positive impact on recruitment
Single governance structure for all critical care transfers in Wales – positive impact on patient safety

Single point of contact for all critical care transfers in Wales – positive impact on patient safety, communication and governance
Additional tier to EMRTS – positive impact on resilience in both assets and manpower, especially in relation to major incident resilience.
EMRTS core business – positive impact on EMRTS core business (does not require a change in EMRTS philosophy which could negatively impact on their recruitment and resilience)

Impact – Negatives:
Costs – negative impact on 'other' critical care services (certainly more costly than 'do nothing' but possibly offset by improved flow, timeliness and patient safety).
Geographical constraints – negative impact on timeliness (NB: EMRTS core/air available for time critical transfers however)
Recruitment: medical (consultant). Most Consultants already fully job planned. Whether they will be prepared to undertake this role remains to be determined.
Recruitment: medical (trainee). If offered as a trainee role, then would require to be negotiated with deanery in terms of job planning, educational opportunities, base hospital etc.
Recruitment: medical (Non Consultant Career Grade (NCCG)). The fellowship role would require significant logistical input including a base for the doctor.
Recruitment second escort – potential negative impact on WAST or hospital Operating Department staffing
Staffing two regions 365 days/year – negative impact on resilience of model
Additional tier to EMRTS – potential negative impact with interface issues

Workforce Requirements:

Personnel	**Grade/Band**	**WTE**	**Costs (Revenue)**
Ambulance driver*	Band 3	5.68	£157,450
Medical escort*	ST3 and above	5.68	£681,032
Second escort*	Band 6	5.68	£267,869
Deputy Service Manager	Band 8a	1	£57,300

Administrator (cross cover with below)	Band 4	1	£26,600
Repatriation Coordinator (cross cover with above)	Band 6	1	£39,300
***Need 7/days per week, 365 days per year cover for two regions**		**Sub Total**	**£1,229,391**

Capital Requirements:

Item	Volume	Costs (Capital)	
Ambulance (lease)	2	TBC	See embed
Trolley	4	TBC but approx. £14k each	£56k + VAT
Vac Matts	4	TBC but approx. £900 each	£3,600 + VAT
Ventilators	4	TBC but approx. £16k each	£64k + VAT
Monitor Defibrillators	4	TBC but approx. £18k each	£72k + VAT
Syringe drivers*	10	TBC but approx. £2310 each	£23k + VAT
Infusion pumps*	6	TBC but approx. £2500 each	£15k + VAT
Blood/fluid warmers	4	TBC but approx. £2950 each	£11,800k + VAT
Blankets	10	TBC	
Suction Units*	4	TBC but approx. £1500 each	£6k + VAT
Video-laryngoscopes	4	TBC but approx. £14k each	£56k + VAT
Transfer Kit bags*	2	TBC but approx. £500 each	£1000 + VAT
Scoops	4	TBC but approx. £800	£3200 + VAT

		each	
Sub Total			**~£311,600 + VAT**

*Requires disposables, not defined or costed (see revenue requirements)

Revenue Requirements:

*NB there will be **significant revenue requirements** in terms of disposables as well: Ventilator tubing, drugs, PPE, blizzard blankets etc. Fuel costs and base hire (e.g. Cardiff airport and Llanfairfechan) will also need to be factored in.*

Total Estimated Costs				
	Revenue costs (Workforce)	Revenue costs (Drivers & lease)	Capital costs	**Total Year 1***
Using EASC/WAST Quotes	£1,072,101 (As above but excl drivers)	£255K (Driver & vehicles x2)	£300-400k (~£373,920)	**£1,701,021**
	Total Revenue Ongoing			
	£1,327,101 p.a.			

Summary of Recommendation:

The benefits of having a dedicated transfer service will be;

- No reliance on frontline WAST assets (therefore minimal delays).
- No depletion of hospital/HB frontline staff; workforce prudency.
- Improving flow for all hospitals but especially the tertiary centres.
- Compliance with Designed for Life: Welsh Guidelines for the transfer of the critically ill adult.
- Another tier to EMRTS, adding resilience.
- Can be used for the critically ill e.g. cardiac/PPCI, vascular etc. (not just critical care).

This does however require further scoping by EASC especially in relation to the potential of aligning or amalgamating this eservice with another e.g. trauma service and/or cardiac.

It is likely that Medical Staffing will be very difficult as most Doctors are already fully job-planned with little scope for additional duties so the key risk here is medical staff recruitment;

a) Anaesthetic consultants in Wales are prepared to re-job plan to take on this work?
b) The anaesthesia STC is in a position to allocate trainees to staff the model?
c) The creation of fellowships for NCCGs can be functionally operationalised?

If the answer to the above is not favourable, then the only likely way to staff the option would involve locum/WLI remuneration (even this this is at risk with the recent taxation laws). This could be actioned as an interim while fellowships are created, and while the deanery/STC reorganise their training programme. This is however a costly service and using locum will increase those costs.

It should be noted that that no model would be able to get to *all* of the patients *all* of the time and that hospital staff will need to retain skills for occasions when they do need to undertake a transfer.

An additional recommendation is that no capacity or non-urgent transfers will be undertaken out of hours (20.00 – 08.00hrs).

Appendix 4 Capacity transfers audit

In order to understand, record and form an organisational response a capacity transfer audit was commenced. Data has been collected with regards to all capacity transfers since 1st of December 2022.

The form is completed by the duty ACCTS coordinator. Details with regards to proposed capacity transfers are taken contemporaneously at the daily sit rep meeting attended by all health boards, subsequently further details may be sought and entered retrospectively to achieve a complete data set.

Between December 2022 and October 2023 there were 27 capacity transfers recorded. The majority of capacity transfers were completed in normal working hours, with the majority occurring before 14.00 (14 cases) only one capacity transfer was done outside the working hours of ACCTS.

The month that the most capacity transfers were carried out was December (11 cases). This was followed by January (6 Cases). Although out data set does not cover a 12 month period, this increase in frequency fits with an increase in acuity in critical care over the winter months.

When looking at whether operational capacity or commissioned capacity were exceeded commissioned capacity was exceeded in all but two cases. This demonstrates that units have adequate staffing in most cases and capacity transfers were not completed due to difficulty in staffing beds.

Capacity transfers were completed from units in all regions, Prince Charles Hospital had 8 patients transferred out for capacity reasons, which probably represents the 3 critical care sites being used flexibly in Cwm Taf Health Board. Glangwili in Hywel Dda Health Board requested 4 capacity transfers which also represents the use of a hub and spoke model for critical care admissions. The University Hospital of Wales requested 4 capacity transfer which may have been required to secure a critical care bed for a patient needing trauma care or neuro surgical care. In North Wales Bangor requested 3 capacity transfers and Glan Clwyd 2. No capacity transfers were requested in Aneurin

Bevan which likely represents the use of their dedicated transfer team to manage flow between the different sites.

When asking for a capacity transfer critical care units were often over capacity by 1 patient on 7 occasions and 2 patients on 4 occasions. There were 10 occasions when units were 3 or more patients over capacity, including 1 occasion when a unit was 5 patients over capacity. Capacity transfers were done twice without patient numbers exceeding commissioned beds. This may represent a lack of critical care nursing staff.

The capacity audit has become a work stream of interest as it has demonstrated there is variation in escalation policy (including surge area use), recording capacity issues and key personnel involved between each health board. During the next year ACCTS will work with the key critical care stakeholders to standardise and support units in terms of capacity transfer decision making, in order to maintain and enhance a patient focused approach to Critical Care.

Appendix 5 Cooperation creating capacity – Integration of HEMS and critical care transfer teams within the Welsh trauma system