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Ymddiriedolaeth Brifysgol GIG
Gwasanaethau Ambiwylans Cymru
Welsh Ambulance Services
University NHS Trust



Ymchwil Iechyd
a Gofal Cymru
Health and Care
Research Wales



Llywodraeth Cymru
Welsh Government



Research, Development & Innovation Department

2024 – 2025
Annual Report

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Executive Summary



Andy Swinburn QAM Executive Director of Paramedicine - WAST

We are several years past the COVID-19 pandemic, and the challenges faced will continue to influence our generation. During this time, research and innovation (R&I) better prepared us for future pandemics and tailored our services to meet community needs. Rapid changes in healthcare access, technological capabilities, international conflicts, and political shifts underscore the importance of high-quality R&I.

Issues of trust in science, and the ethics of artificial intelligence dominate this context. Significant developments in R&I infrastructure and policy in Wales have occurred, with our people at the centre. The PRIORITY project enhances research capacity in nursing and allied healthcare professions, supported by the Health and Care Research Wales Faculty (HCRW).

I contributed to shaping research in Wales through the NHS R&D Framework and the ten pillars of research excellence. We continue partnerships with PRIME Centre Wales, Universities, Trials Units, and international partners. The Wales Innovates strategy aims to create a vibrant innovation culture for a stronger, fairer, and greener Wales. WAST supports the development of researchers, clinicians, and leaders across disciplines. Our R&I office ensures research adheres to the highest legal and ethical standards. This report showcases a diverse portfolio, including clinical trials, end-of-life care, drones, and artificial intelligence, reflecting our Clinical Strategy's ambitions.

Lastly, a heartfelt thank you to our people, partners, and communities who dedicate their time and efforts to R&I, improving the care we provide.



**Professor Nigel Rees QAM –
Assistant Director of Research &
Innovation**

It has been another year of developing and delivering world class R&I, and it continues to be an immense privilege to work with exceptional colleagues providing the highest standards of care to our communities. R&I continues to help us understand and address many of our clinical, societal and economic challenges, and whilst we continue to be a dependable site for the delivery of R&I conceived elsewhere, our ability to develop our own R&I across the organisation continues to grow.

WAST leads the UK ambulance sector in developing and sponsoring our own studies, and R&I leaders are emerging across our service, in areas such as Remote Care, Digital, Quality, Advanced Practice, People Services, Leadership and Management and Frontline Care. I am proud of the support our team continues to provide, which alongside the wider opportunities now available through HCRW, academia and the NHS Wales infrastructure, constitutes a thriving and vibrant R&I environment which is improving health care across our communities.

R&I at its heart relies on acceptance from patients, recruitment of participants and delivery in front line services, which I am pleased is occurring through the highest standards of safety, trustworthiness and ethics. The R&I we conduct is of international significance, and I would like to thank all of those who have contributed to R&I, which continues to make an immeasurable impact in the lives of many people in Wales and across the world.

Introduction

Research, innovation and evidence-based practices are fundamental to improving the quality of healthcare provided to our population. Healthcare organisations that are actively involved in research see improved health outcomes and lower mortality rates, not just for patients participating in research, but for everyone. This is enshrined in the Duty of Quality which came into force in April 2023 as part of the Health and Social Care Act 2020 [1] and calls for a positive culture of continuous improvement through research.

The WAST Clinical Strategy *Delivering Clinical Excellence in Wales* [2] supports high-quality R&I that is responsive to our populations care needs, and the need to translate evidence-based findings into our models of care. The positive influence of this strategy is being realised through growth in the scale and breadth of R&I WAST is now engaged in. This strategy also reflects how R&I provides opportunities for staff, including development and enhanced job roles which helps with recruitment and retention, as well as developing leaders and critical thinkers.

The Life Sciences Vision [3] has an overarching clinical research ambition to:

“Drive value creation for industry and patients through faster, cheaper, better-quality and more diverse clinical research, delivered through a digitally enabled and pro-innovation clinical research environment, with research embedded across the NHS as a core part of effective patient care.”

It has been recognised that in order to realise this vision and the full potential of the NHS workforce, R&I needs to be core to care delivery and embedded in everyday practices and roles at all levels. In 2024 the PRIORITY project [4] was commissioned by Wales’s Chief Nursing Officer, Chief Allied Health Professions Adviser and Director of Health and Care Research Wales and has developed an action plan to increase capacity and capability for undertaking and using research in the nursing, midwifery and 13 allied healthcare professions.

High quality R&I is also a key enabler for NHS Wales to deliver 'A Healthier Wales' strategy and long-term plan for health and social care [5]. Achieving the improvements outlined in this strategy requires collaboration across many groups, health care organisations, statutory bodies and industry. The "Wales Innovates" strategy [6], launched in February 2023, provides a framework for driving innovation in Wales, and has a focus on creating a stronger, fairer, and greener Wales through a vibrant innovation culture and collaboration across sectors.

In 2024, WAST acquired University Trust Status, and from 1st April 2024 changed name to the Welsh Ambulance Services University NHS Trust. University Trust status. University Trust status is unique to Wales and based on a robust assessment of a broad range of evidence across the three criteria of Research and Development, Training and Education and Innovation. This newly acquired status brings with it a range of opportunities and responsibilities which are monitored through the Trusts Academic Partnership Committee. WAST also recently appointed its first Health and Care Research Wales's Board champion, nominated by WAST to ensure research is on the radar at Board level and that the profile of research is increased amongst staff and patients.



Figure 1 - Research Excellence Model

Health and Care Research Wales (HCRW) funds high-quality research for the benefit of the NHS, public health and social care, and provides learning and support to enable researchers to tackle the complex health and social care challenges of the future. WAST has collaborated with HCRW and a wide range of stakeholders including NHS organisations to develop the NHS Research and Development (R&D) Framework [7]

launched in the Welsh Health Circular (WHC/2023/026).

The HCRW Framework presents the features of a research supportive NHS organisation, which have been organised under ten pillars [Figure 1] along with cross-cutting themes [Figure 2] underpinning these pillars. WAST has a longstanding reputation for the development, delivery and dissemination of internationally significant R&I. However, WAST as with other providers of healthcare are faced with many challenges and opportunities to improve care through R&I which requires continuous learning and improvements in the pursuit of excellence. As a supportive NHS organisation, WAST embraces each pillar, as they all play an important part in ensuring that research is integrated into services and is contributing to the whole system, thereby achieving excellence.



Figure 2 - Cross-cutting themes which underpin the ten pillars of a research supportive NHS organisation.

This annual report presents R&I activities that the Trust have engaged in between 2023-2025 and is organised across the ten pillars of research excellence of the NHS R&D Framework.

Highlights

- WAST recently appointed Hannah Rowan as its first Health and Care Research Wales's Board champion nominated by WAST to ensure research is on the radar at Board level and that the profile of research is increased amongst staff and patients. Hannah was recently joined by Professor Hayley Hutchins who has been appointed as our Academic Non-Executive Director for a four-year term which commenced on 11 November 2024. Hayley sits on the board, but also on other committees of the Board.
- Three studies led from Wales have been presented as evidence to the COVID 19 Pandemic enquiry [9-11].

- The Paramedic 3 Trial [12] successfully delivered and published in the New England Journal of Medicine, which is the second highest quality medical journal in the world. PARAMEDIC 3 will influence international resuscitation guidelines and policy. WAST staff were co-authors of this paper.
- The 999 R.E.S.P.O.N.D. 2 study led by WAST was successful for a funding application to NIHR HS&DR of £714,463.52.
- Wales Health Drone Innovation Partnership winning partners of UKRI Future Flight SBRI: Enhancing medical supply chain resilience. WAST contributed to a UK Drones sector delegation with UKRI and Birmingham University Future Flight Social Insight program to Four nations Parliaments:
 - UK Parliament Senedd round table exploring How can we ensure future flight technologies are successfully adopted in the UK?
 - UK Parliamentary reception at Houses of Commons. Future Flight Technologies: How can the UK maximise growth opportunities whilst keeping the public on board? Programme at the University of Birmingham.

Strategy and high-level policy:

Delivering Excellence [13], the Trust's long term strategic framework sets out an exciting future vision for the organisation up to 2030. The strategy articulates the organisational ambition to shift away from being perceived as a 'traditional ambulance and transport service' to becoming a trusted provider of high-quality care, ensuring patients receive the 'right advice and care, in the right place, every time', with an increasing emphasis of managing and resolving more care closer to home. This strategy was co-produced with our people, external stakeholders and the wider public, following a period of developmental engagement sessions. The strategy sets out a clear ambition for the organisation to continue to build on the strong research foundations to ensure that the organisation is at the 'forefront' of research

opportunities and development to drive forward clinical and organisational improvements. This is captured in the key deliverable below:



Enhance our research alliances with industry and other leading research stakeholders. Aligning research with future case mix and population health to ensure that the care we provide is clinically safe and in line with evidence based practices.

Figure 3 - Long Term Strategy 'Delivering Excellence' – Research Deliverable

to ensure that the care we provide is clinically safe and in line with evidenced based practice.

The clinical strategy is undergoing revision to reflect the changed context WAST now operates within, which will be reflected in dedicated Clinical and Research & Innovation plans currently being co-produced with a wide range of groups and individuals. This includes a two-year service evaluation involving continuous engagement with staff through interviews and workshops at multiple locations across Wales, along with a rigorous process of data collection and analysis. Figures 4 & 5 present some of this engagement and emerging themes.

The WAST strategic approach to R&I is also outlined within Delivering Clinical Excellence in Wales: Clinical Strategy 2020 – 2025 [2]. Progress has been made against this strategy to enhance research alliances with industry and other leading research stakeholders, aligning research with future case mix and population health

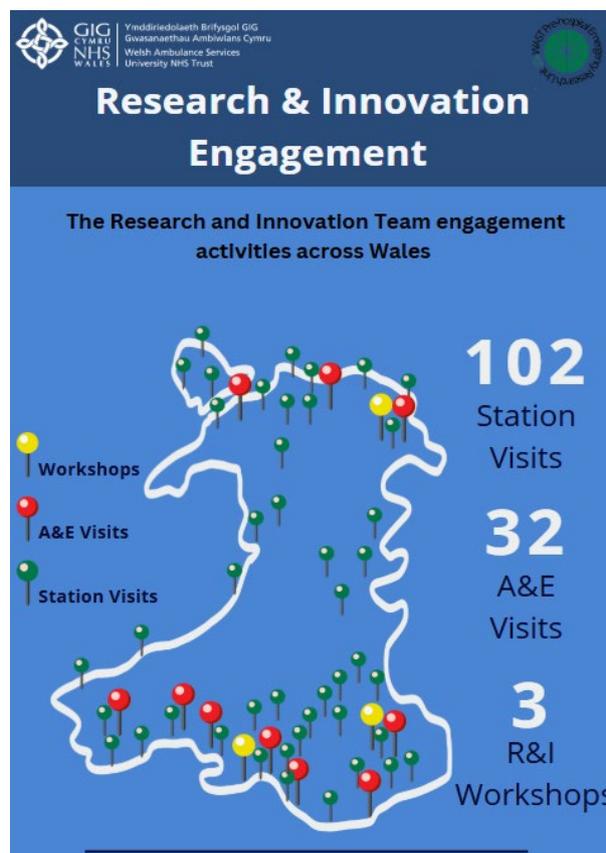


Figure 4 - Research and Innovation Engagement activities across Wales



Figure 5 - Embedding Research in WAST Coding Themes

WAST R&I continue to contribute to high level NHS Wales R&I Strategic developments included in Making research careers work: a review of career pathways in health and social care in Wales [13] and the following range of initiatives are tackling the variety of complex issues revealed by this report, including:

- The HCRW Faculty and relaunch of a range of personal award schemes across both health and social care (including a research training award and a salary replacement PhD scheme)
- The NHS Research and Development (R&D) Framework which outlines what 'research excellence looks like' within NHS organization's in Wales has been published
- The PRIORITY project, commissioned by Wales's Chief Nursing Officer, Chief Allied Health Professions Adviser and Director of Health and Care Research Wales. Developing an action plan to increase capacity and capability for doing and using research in the nursing, midwifery and 13 allied healthcare professions.
- The NHS Wales Innovation Framework and toolkit and newly launched website

Governance and Leadership

WAST has continued to work closely with established partners and groups, along with developing new ones, including:

- The NHS R&D Leadership Group
- UKRI Community Integration of Drones
- Project Thunderbird

- NHS R&D Leadership Group
- Wales Innovation Leads Network
- The Research Management Operational Governance Group
- National Ambulance Services Research Group
- The Primary and Emergency Care Research Centre Prime Centre Wales
- Bevan Commission
- Rural health and care Wales
- Swansea Trials Unit
- The Cross-Party Group on Medical Research
- REASON: Research and Innovation (UKRI) Trustworthy Autonomous Systems (TAS) program. York University

We continue to roll out our distributive leadership approach to R&I, and R&I leadership is occurring across WAST, reflecting our aspirations of embedding R&I. Along with this growing community of R&I, key recent appointments such as the Assistant Director of Digital Innovation & Transformation positions us well to exploit the benefits of new technologies.

We developed a range of resources for conducting research in WAST to include signposting to Health Research Authority guidance such as student toolkit. Prepared through cross directorate collaboration.

Partnership and Collaboration

WAST continues to grow its R&I partnerships and collaborations; some of which are included below:

999 R.E.S.P.O.N.D.



This research Group is a collaboration with WAST, University of Warwick, EMRTS, Wales Air Ambulance Charity Trust, and the University of Bristol.

The group has successfully completed the HCRW funded 999 RESPOND 1 study and continue to disseminate the results. The group has since been successful in securing funding of £799,913.46 from the NIHR HS&DR Researcher led call to

explore the impact of video consultation (VC) as a complex disruption to current communication practices (based on phone calls) on risk negotiation and ECCTs dispatch.

Welsh Health Drone Innovation Partnerships

WAST was a successful partner on the UKRI Future Flight SBRI: *Enhancing medical supply chain resilience*. This was a partnership with Welsh Blood Service and industry partners Snowdonia Aerospace and Slink Tech which is seeking to develop an NHS Drone delivery supply network. WAST also collaborated on the 3D study, which is a National Institute of Health Research funded project exploring the delivery of defibrillators by drones and has been presented in European resuscitation Council Conference.

Rapid, remote video assessment for stroke

A collaboration with the Stroke Network utilising a State-of-the-art platform has been developed which enables stroke clinicians and paramedics to carry out a consultation via secure video conference and decide on the best course of action before a patient reaches hospital.

SAINTS UKRI



WAST was a partner for a successful funding application with York University for an AI Centre for Doctoral Training in Safe Artificial Intelligence Systems (SAINTS). This builds on our collaboration with the ASSIST project of AI in Assuring safe artificial intelligence in critical ambulance service response.

Bevan Commission



Building on previous successful projects, WAST has continued to compete for prestigious opportunities with the Bevan Commission, securing an Exemplar project support to build resilient communities with Connected Support Cymru - Connecting Patients, Clinicians and Services through volunteers and technology. WAST continues to collaborate with the BEVAN commission, through Fellows Steering Group membership and mentorship.

WAST also has a growing number of Research Development Groups collaborating to develop future proposals, some of which are presented below:

PEACE

Protecting Emergency Medical Services (EMS) Staff from Aggression and Violence in Conflict Encounters (PEACE)

This is an international Research Development Group and has conducted PEACE 1 which involved a YouGov Survey of Wales adults' attitudes towards Violence and Aggression in Emergency Medical Services Staff. PEACE 2 which involved qualitative interviews with Emergency Medical Services Staff exploring experiences of Violence and Aggression. Both studies have been published and presented in peer reviewed journals and conferences. PEACE 3 is seeking to conduct mixed methods research to develop and evaluate a complex intervention to tackle Violence and Aggression directed towards Emergency Medical Services Staff.

Out of Hospital Cardiac Arrest Outcomes

This National (UK) Collaborative Project hosted at the University of Warwick Clinical



Trials Unit on behalf of the National Ambulance Service Medical Directors. The project has been funded by BHF and Resuscitation

Council UK with the aims of establishing the epidemiology and outcome of Out of Hospital Cardiac Arrest (OHCA), exploring sources of variation in outcomes and pushing for quality improvements and research for OHCA patients in the UK. OCHAO continues to support, develop and publish resuscitation research of international significance along with epidemiology reports for ambulance trusts in the UK which now includes Wales.

DEPWoc

Drivers and Experiences of Pregnant Women Calling NHS 111 Wales for pregnancy related reasons. This in-development bid looks to explore the drivers and experiences of women calling 111 for pregnancy related reasons and is a collaboration between WAST, Cardiff University, Swansea University and Cardiff and the Vale Health Board.

The ROAD to the ECHO System

The Readiness of Ambulance Data to create the Emergency Care Health Optimisation System (Research Development Group. Co led by Dr Leanne Smith (WAST) and Dr Jamie Miles (University of Sheffield) and has been submitted to the National Institute of Health Research Programme Development Grant award with WAST as Sponsor.

Research Support

The WAST R&I office plays a crucial role in driving and supporting research within WAST, fostering a research-active culture, and ensuring the quality, ethics, and impact of research activities. Working with partners and the HCRW research infrastructure, the R&I office provides guidance, resources and support to researchers throughout the research process, from initial planning to data analysis and dissemination, ensuring that research is relevant, conducted to high standards, and findings are translated into real-world improvements in healthcare.

Through our cross organisational representation, we actively encourage and facilitate research activities within WAST, and create a positive and supportive environment for staff, patients, and the public to participate in research. We have identified in previous years, the need for student research and research in data sciences and have engaged in cross organisational dialogue to develop a suite of resources for researchers and mechanisms for managing student research.

The R&I Office manages research funding, signposts people to training opportunities for researchers, and ensures that research contracts are in place. R&I office takes on the role of research sponsors, ensuring that research projects are properly managed and that ethical and legal requirements are met. We continue to support and facilitate the growth of research activity, building capacity and developing skills within WAST organisations to support research activities.

Research Delivery

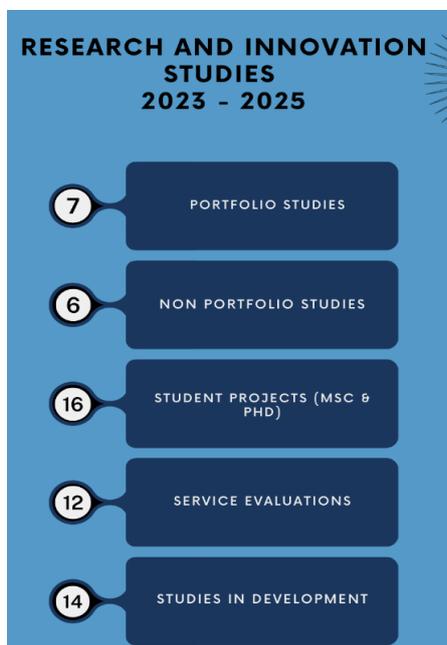


Figure 6 - Research and Innovation Studies 2023 - 2025

We have supported, designed and delivered research across a broad range of topic areas. This includes seven portfolio studies, six non portfolio studies, sixteen student projects, twelve service evaluations, seven PhD's complete, eight active and fourteen studies in development.

R&I activity is reported to the R&I Office and captured through mechanisms, such as the WAST R&I tracker, HCRW and NIHR Clinical Research Portfolio Management Systems. Reporting is then shared with a range of groups such as the Academic

Partnership Committee internally, and National Ambulance Steering Committee, HCRW and Welsh Government externally.

Finance

We continue to develop, deliver and disseminate R&I within the NHS in increasing financially challenging times, where resources are scarce, and every penny counts.

We have a longstanding reputation for a highly efficient and effective approach to R&I, recognising and optimising the value of our organisation, workforce, and relationships we foster with others to realise our full contribution to health care.

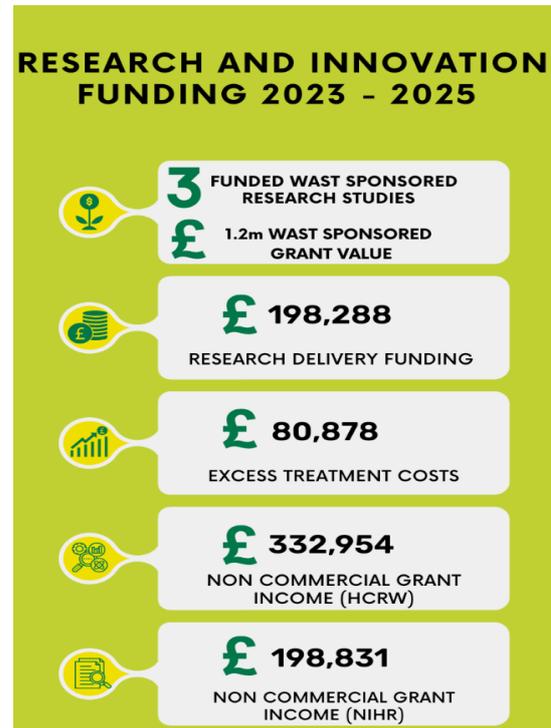
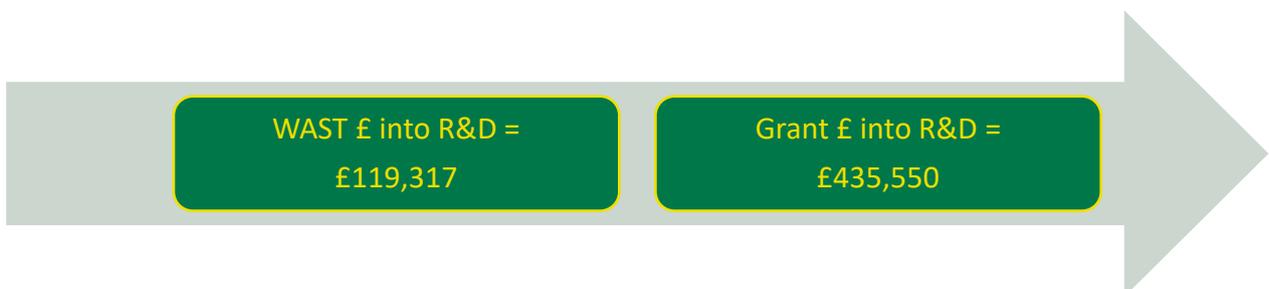


Figure 7 - R&I Funding Infographic

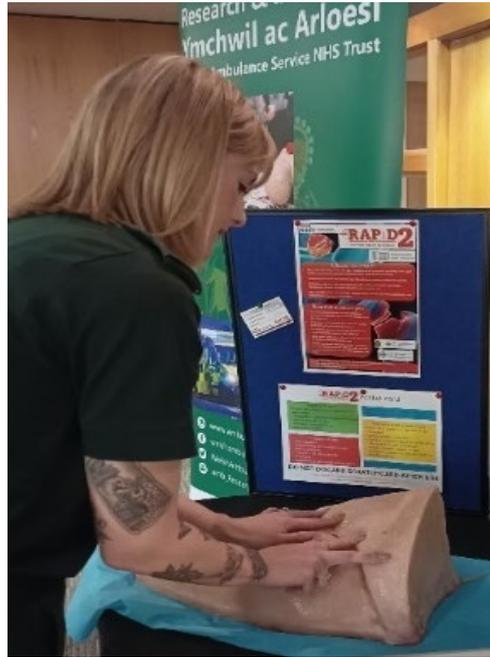
Working with a wide range of highly skilled and supportive finance teams in WAST, HCRW, Universities and industry, we access funding schemes to develop and deliver world class R&I. This requires understanding and making best use of cost recovery models and contractual provisions to ensure good stewardship of public funds and that every pound we spend delivers value for money for our communities.

For the 2024-2025 financial year:



NHS Workforce Capacity and Capability

We continue to grow capacity and capability within the WAST workforce and across our sector. R&I is being embedded right across our organisation ensuring it is core within care delivery by including as reflected in professional career frameworks and roles within WAST from undergraduate executive level. We continue to actively grow the number of Chief Investigators through the Research Development Groups mentioned and our Principal Investigators across a wide range of specialisms. Two new principal



Investigators are being formally supported and developed through HCRW and NIHR Associate Principal Investigators schemes.

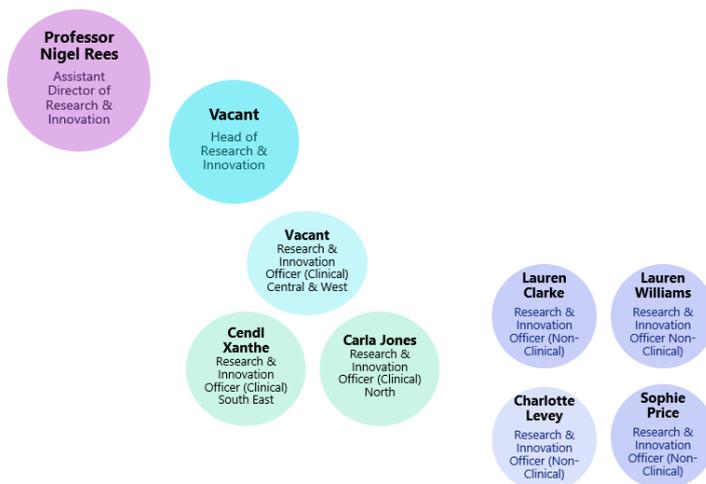


Figure 8 - Research & Innovation Team

We continue to grow resilience, expertise capacity and capability in our R&I office which now includes substantive Assistant Director of Research & Innovation, Head of Research & Innovation (currently vacant) and Research Officers (Non-Clinical). This team expands to deliver specific studies and

includes clinical and non-clinical research officers on a fixed term basis due to the fluctuations in activity and funding. These roles serve as excellent development opportunities and previous post holders have progressed into senior research and clinical roles across WAST, NHS Wales industry and wider.

A wide range of RD&I active individuals and groups are emerging across WAST. This includes an Advanced Paramedic Practitioner (APP) Research, Innovation, Audit and Development (RIAD) group aimed at supporting the capacity, confidence and capability of APP's undertaking research as part of the four pillars of Advanced Practice. WAST has also made wider commitments to RD&I through support for PhDs, creating Advance Practitioner Job Plans that include requirements to build on the Research Pillar and, completing lower tier research to demonstrate impact of service improvements and change. Wider democratisation of RD&I in this manor is helping to develop the larger studies and RD&I leaders of the future around areas of importance to WAST, our people and the communities we serve.

Patient and Public Involvement and Engagement (PPIE)

All our studies benefit from PPI support and engagement. WAST has worked closely with the Patient Experience and Community Involvement team and HCRW to advertise PPI support for sponsored studies, including the 999 RESPOND 1 & 2 (funded) and



DEPWOC and PEACE 3 proposals submitted NIHR funding schemes. These PPI members have been adopted onto HCRW Involving Peoples network.

Communications and Engagement

WAST representation from the Communications Team to the HCRW Communications Alliance, and a monthly WAST communications meeting have enabled improved collaboration to be established. High profile media coverage has occurred through better collaboration with communications teams.

Studies continue to communicate their findings through a range of activities such as peer reviewed publications and presentations in conferences. 999 R.E.S.P.O.N.D is an example of where R&I teams are producing innovative ways our communication, recently launching a website [[999 R.E.S.P.O.N.D Current Activities](#)], producing a training booklet for staff, providing study communications/media and presenting in the ESRC - Festival of Social Science Coventry Cathedral.



The NIHR funded 3D project has been presented in the European Resuscitation Council Conference, video communications material has also been prepared with the industry partner and WAST communications teams.

Research Impact

WAST R&I continues to make international impact, influencing direct care, policy, guidelines and further R&I. A publications list is included in Annex 2 and below are some of the highlights of this impact:

New Ambulance Response targets:



- Since 1974, Ambulance Services in Wales have been measured by the time it takes to reach emergency calls. A new purple category recently announced by our health minister is being introduced for responses to life-or-death cardiac and respiratory arrests as part of the changes. This is an evidence informed target, only made possible by the R&I conducted in WAST and with international collaborators



COVID 19 enquiry:

- Three studies led from Wales Emergency prehospital care and shielding. The Paramedic-3 Trial published in the New England Journal of Medicine, which is the second highest quality medical journal in the world, and as with its predecessors, will continue to influence resuscitation guidelines.



WAST Healthcare Drones

- R&I is building the body of knowledge for delivery of healthcare products and samples and influencing industry and regulators. As well as engaging in political dialogue to UKRI and Birmingham University Future Flight Social Insight program to Four Nations Parliaments:
- UK Parliament Senedd round table exploring How can we ensure future flight technologies are successfully adopted in the UK?
- UK Parliamentary reception at Houses of Commons. Future Flight Technologies: How can the UK maximise growth opportunities whilst keeping the public on board? Programme at the University of Birmingham.

Summary

This annual report presents a snapshot of R&I in WAST and is reflective of a much broader range of activities and developments with many individuals, groups and organisational partners. These collective efforts have resulted in a thriving R&I environment in WAST, across Wales and internationally, resulting in evidence-based improvements in the care we provide.

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Appendix 1 – WAST R&I Research Portfolio

Portfolio Research

Study Title	Study Information
<p>SIS</p>  <p>Randomised controlled trial of the clinical and cost-effectiveness of cervical spine immobilisation following blunt trauma</p>	<p>The SIS (Spinal Immobilisation Study) trial is a randomised prospective non-inferiority study of triple immobilisation vs movement minimisation sponsored by Imperial College London. Spinal Immobilisation is Controversial. Triple Immobilisation (Collar, Blocks and Tape) has been the standard of care for 30 years with the intention of reducing subsequent spinal cord injury. However, there is minimal evidence of this, and it may be associated with additional harm (aspiration pneumonia, pressure sores, raised intracranial pressure). The Primary Hypothesis is Movement minimisation (intervention) is deemed non-inferior (i.e. no worse) compared to triple mobilisation (control) in patients with potential c-spine injury (pre-imaging) following blunt trauma, in relation to motor and cognitive function at hospital discharge following randomisation. The Primary Outcome is: Total Functional Independence Measurement motor (FIM-motor) score at discharge.</p>
<p>999 R.E.S.P.O.N.D. 2</p>  <p>emeRgEncy diSPatch deciSiONs using viDeo consultation</p>	<p>The 999 RESPOND2 study is an NIHR funded and WAST sponsored collaboration with Swansea Bay University Health Board (EMRTs), Wales Air Ambulance Charity, University of Warwick, Imperial College London, University of Bristol and West Midlands Ambulance Service. This project follows previous work undertaken by this group as part of the RfPPB funded 999RESPOND study. The project aims to explore evaluate the impact of video consultation as a complex disruption to current communication practices (based on phone calls) on risk negotiation and Emergency Critical Care Teams dispatch, so as to support its development and regulate its use. The project team will analyse and compare video consultation and 999 calls to study the ways in which live-stream video affects communication. This will also involve focus groups interviews and workshops with ambulance service and critical care leaders.</p>

<p>PARAMEDIC-3</p>  <p>Pre-hospital Randomised trial of Medication route in out-of-hospital cardiac arrest (PARAMEDIC-3)</p>	<p>The PARAMEDIC3 trial conducted a multi-centre, pragmatic, individually randomised, parallel group, superiority trial with internal pilot and economic evaluation to determine the clinical and cost effectiveness of an intraosseous access first strategy, versus current NHS treatment. Adult patients who sustain an out-of-hospital cardiac arrest that require vascular access were randomised in a 1:1 ratio to either an intraosseous first strategy (intervention) or an intravenous first strategy (control) group. The control group reflects current NHS practice. Participants were followed-up to six-months following cardiac arrest. Publication: K Couper, C Ji, R Lall, et al.</p> <p>“Route of drug administration in out-of-hospital cardiac arrest: A protocol for a randomised controlled trial (PARAMEDIC-3)” Resuscitation Plus, Volume 17, 2024, 100544, https://doi.org/10.1016/j.resplu.2023.100544.</p> <p>A Randomized Trial of Drug Route in Out-of-Hospital Cardiac Arrest. <i>N Engl J Med.</i> 2025;392(4):336-348. doi:10.1056/NEJMoa2407780</p>
<p>RAPID 2</p>  <p>Randomised trial of clinical and cost effectiveness of Administration of Prehospital fascia Iliaca compartment block for emergency hip fracture care Delivery</p>	<p>Hip fractures are a very common injury for elderly people. About one in three patients who break their hip die within one year and many patients lose mobility and independence. Pain relief before the patient reaches hospital is often inadequate and causes side effects which may slow down recovery. We have recently completed a small study testing whether a local anaesthetic injection into the hip area called Fascia Iliaca Compartment Block (FICB) given by paramedics at the scene of injury is safe and acceptable. We met all the criteria that we set at the beginning of the study and concluded that it is feasible to undertake a full trial. The aim of RAPID2 was to find out whether the local anaesthetic injection reduces pain, is safe, and improves the patient health outcomes, as well as how much it costs the National Health Service (NHS).</p>
<p>999 R.E.S.P.O.N.D.</p>  <p>emerRgency diSpatch decisiOns in coviD-19</p>	<p>999 R.E.S.P.O.N.D is a collaborative research study between the Welsh Ambulance Services NHS Trust, Emergency Medical Retrieval & Transfer Service, the University of Warwick, Wales Air Ambulance Charity, and the University of Bristol. The project is the first of its kind in the UK and designed to be translatable to training and policy. The study aims to explore the way in which the decision to dispatch a critical care team is made by the teams in ambulance control rooms. It is well documented that getting the right information to make decisions in the heat of the moment is difficult, and the recent pandemic created pressures and disruption to the system which had an impact on risk assessment decision making pathways. The appropriate dispatch of EMS needs to balance patient safety and resource. It is therefore hoped that this study will be able to improve the process of getting critical care to the people who need it most.</p>

<p>RELIEF</p>  <p>'Just in Case' medicines use by ambulance paramedics Responding to End-of-Life Care In the Community: a multi-methods study of the Experiences of Paramedics, Doctors, Family and Carers</p>	<p>RELIEF is a collaborative research study between WAST, University of Swansea, Swansea Bay University Local Health Board, Cardiff and the Vale Local University Health Board, University of Southampton, and Dorothy Hospice House. The research aims to explore the views and experiences of paramedics and doctors involved in the care of patients in the community, that are experiencing distressing end-of-life symptoms, such as pain, breathlessness, and agitation. We also propose to seek the views and experiences of informal carers (family or friend caregivers) and paid care workers, where paramedics have administered 'Just In Case' (JIC) medicines to their loved ones or patients in their care. Some thirty months into the ambulance JIC intervention, there is an opportunity to gain an insight into the impact of the intervention on patient care; the workload and role of paramedics in relation to the intervention; and perceived benefits, anxieties and risks from the point of view of clinical staff, informal carers and paid carers.</p>
<p>OHCAO</p>  <p>Out of Hospital Cardiac Arrest Outcomes</p>	<p>This National (UK) Collaborative Project hosted at the University of Warwick Clinical Trials Unit on behalf of the National Ambulance Service Medical Directors. The project has been funded by BHF and Resuscitation Council UK with the aims of establishing the epidemiology and outcome of Out of Hospital Cardiac Arrest (OHCA), exploring sources of variation in outcomes and pushing for quality improvements and research for OHCA patients in the UK.</p>
<p>PEACE</p> <p>Protecting Emergency Medical Services (EMS) Staff from Aggression and Violence in Conflict Encounters</p>	<p>Emergency Medical Services (EMS) staff worldwide have long been at risk of encountering violence and aggression. The overall aim of this project was to explore protecting EMS Staff from aggression and violence in conflict encounters. The objectives of this research are to explore general views on V&A directed towards EMS staff, explore views on characteristics associated with V&A such as intoxication, drugs, altered mental status and the role of medical illness and mental health problems, and explore the impact of policy changes and campaigns to gauge attitudes, understandings, and impact of the initiatives. The study involves two work packages, PEACE1 involved a survey of the public and PEACE2 interviewed EMS staff and constructed a grounded theory exploring this issue from their perspective.</p>
<p>3D Drone Project</p>	<p>The 3D Drone Project/Sky bound aims to explore optimisation and integration of drone-delivered AEDs into the pre-hospital response to out-of-hospital cardiac arrest. There are several barriers to successful bystander AED use, and many are related to the difficulties bystanders face in finding public-location AEDs, as well as the reluctance to leave a patient to find one. Delivering AEDs by drone may overcome many of these barriers, save more lives each year, and make the inequitable national out of hospital cardiac arrest response more equitable.</p>

Non-Portfolio Research

PROWEB

The impact of PRObiotic supplementation on general WELL-Being: An open-label smartphone based study in healthcare workers

The health and wellbeing of any workforce is a core priority and supporting the wellbeing of employees is an important part of everyday working life. There is a growing awareness that probiotics (known as 'good' or 'friendly' bacteria) play a role in boosting general wellbeing. Over the winter of 2022, a small project was set up in South Wales to 'try out' a probiotic manufactured by Cultech Limited (a company based in Port Talbot specialising in the production of nutritional supplements and probiotics). The results were very promising, with significant improvements in wellbeing observed and significantly reduced absenteeism among those who opted to take the product. In this study we want to do a more structured and extensive follow-up with the same probiotic to re-assess the effectiveness in NHS healthcare workers over the autumn/winter period. Our intention is to make this study as user friendly as possible and we are asking participants to sign up to the study online and use the Trialflare smartphone-based app to complete simple questionnaires/tasks when requested.

PhD & Student Research

Reducing inappropriate hospital admissions

Reducing hospital admissions: A Realist Evaluation of Welsh Ambulance Service's gatekeeping stratagem

The study aims to understand the impact of the COVID-19 pandemic on the staff of the Welsh Ambulance Services NHS Trust (WAST). It is intended to look how the pandemic has influenced staff health and wellbeing, both in the short and long term. The methodology will include a mixed methods design to achieve three objectives: Objective 1 (O1): To determine the relationships between staff sickness levels and number of confirmed COVID-19 cases in Wales. Objective 2 (O2): To understand the impact of working through the pandemic on mental and physical health and wellbeing from the point of view of Welsh Ambulance Service staff. Objective 3 (O3): To understand how the Welsh Ambulance service responded to the COVID-19 pandemic in terms of monitoring, managing and ameliorating the impact on health and wellbeing of staff.

BALANCE

COVID-19 impact on health and wellBeing within an AmbuLANce service.



Each day in Wales approximately 1,200 emergency NHS calls are responded to and 800 people are transported to hospital by ambulance, contributing to the 2,100 patients attending Welsh EDs (The Welsh NHS Confederation, 2015). The introduction of minor-injury units has yet to have an impact on ED attendance, prompting the call for a universally agreed unscheduled care triage model. The aim of this study is to understand admission avoidance programmes within the context of Welsh Ambulance Services; to clarify how admission avoidance processes work, for whom, and under which conditions; and to understand the effects of culture and organisational practises on everyday paramedic admission avoidance work.

<p><u>AMBOFALL</u></p> <p>Ambulance Response to Older Adults who have Fallen – a mixed-methods study</p> 	<p>The over-arching aim of the study is to understand factors influencing emergency ambulance staff decision-making, confidence and responses when attending older adults who have fallen in the UK, in order to identify opportunities to support ambulance staff and optimise care when attending this population.</p>
<p><u>Complex PTSD and Psychotic-Like Experiences in UK Paramedics.</u></p>	<p>The primary aims of this research study are to understand whether frequent exposure to traumatic stress during work is associated with complex PTSD (CPTSD) and psychotic-like experiences (PLEs) in UK paramedics, and to propose a new theoretical model of CPTSD and PLEs in paramedics. This research addresses gaps in the evidence base and advances our understanding of how CPTSD, PLEs and burnout relate to each other and subsequently impact the mental health of paramedics. It is hypothesised that burnout will act as a risk factor for both CPTSD and PLEs and that some of the recognised protective factors for PTSD (e.g., social support) will also protect against CPTSD and PLEs. However, additional protective factors specific for CPTSD and PLEs might also be identified in this research.</p>
<p><u>A Mixed Methods Exploration of Prehospital Research Culture and Capacity Building in UK NHS Ambulance Services</u></p>	<p>This project aims to explore, using mixed methods, prehospital research culture and capacity building across UK NHS ambulance services and quantify, using the validated Research Capacity and Culture (RCC) tool, prehospital research culture and capacity building in UK NHS ambulance services. To qualitatively explore and examine, through semi structured interviews, key stakeholder perspectives of prehospital research culture and capacity building in UK NHS ambulance services</p>
<p>Service Evaluation</p>	
<p><u>REASON</u></p> <p>REsilient Autonomous SOcio-cyber-physical AgeNts</p>	<p>The REASON research project will fund a team of 13 investigators and seven post-doctoral researchers across the five universities. Testbeds at each university will validate the foundational research in domains including health and social care, emergency response, and multimodal transportation. The project has two stages; first looking at how autonomous systems can be developed to be more resilient individually and secondly looking at the socio-technical resilience of autonomous systems of systems. For example, an autonomous system of systems may support the end-to-end patient journey for a person requiring emergency assistance from a first responder, followed by admittance, care and discharge from hospital, and long-term care at home.</p>

<p><u>Welsh Health Drone Research and Innovation Partnership / Welsh Blood Drone Project</u></p>	<p>Our vision is to establish a trans-Wales BVLOS drone-based blood delivery service between the WBS sites at Talbot Green in South Wales and Wrexham in North Wales, operated by Snowdonia Aerospace Drone Services and powered by automated infrastructure from SLiNK-TECH. This will provide the foundation for augmenting emergency ambulance and routine health delivery services with drones throughout rural Wales. This proposal will leverage SAC's drone/airspace expertise and SLiNK-TECH's PORTAL infrastructure technology to develop a roadmap for integration of a cost effective drone-based network into the healthcare ecosystem, and define the infrastructure needed to enable the scaled adoption of fully autonomous drone logistics across the wider UK</p>
<p><u>SAINTS</u> UKRI AI Centre for Doctoral Training in Lifelong Safety Assurance of AI-enabled Autonomous Systems (SAINTS).</p>	<p>The SAINTS CDT is the UK's first multidisciplinary PhD programme focused solely on the safety of artificial intelligence (AI). Our vision is to train future leaders with the research expertise and skills to ensure that the benefits of AI systems are realised without introducing harm as the systems and their environments evolve. Research will be focused on the lifelong safety assurance of increasingly autonomous AI systems in dynamic and uncertain contexts. It will build on methodologies and concepts in disciplines spanning AI, safety science, philosophy, law, sociology and health sciences.</p>

Appendix 2 – Publications in 2023 – 2025

Publication Title	Authors	WAST Authors	Year	Journal	DOI
Adrenaline for traumatic cardiac arrest: A post hoc analysis of the PARAMEDIC2 trial	Ji, C., Pocock, H., Deakin, C.D., Quinn, T., Nolan, J.P., Rees, N., et al.	Nigel Rees	2025	Resuscitation Plus	10.1016/j.resplu.2025.100890
401 Adrenaline for traumatic cardiac arrest: a post hoc analysis of the PARAMEDIC-2 Trial	Ji, C. et al.	Nigel Rees	2025	Resuscitation Plus	10.1016/j.resplu.2025.100890
Development of the Call Prioritisation Streaming System (CPSS) for NHS 111 Wales	Brady, M., Lyall, A., Fivaz, MC., Brown, C., Armstrong, A. et al.	Mike Brady, Craig Brown, Deborah Armstrong, Rhiannon Roynon.	2025	British Medical Journal	doi.org/10.1136/bmjinnov-2024-001305
Behind the screen: exploring the effects of home working on 999 telephone clinicians during the COVID-19 pandemic	Brady, M., Harry, E.	Mike Brady, Ed Harry	2025	British Paramedic Jnl.	doi.org/10.29045/14784726.2024.9.9.2.1
999 telephone triage: a comparison of UK ambulance nurse and paramedic case mix, outcomes and audit compliance	Brady, M., Fivaz, MC., Noblett, P., Scott, G., Olola, C.	Mike Brady	2024	Int, Journal of Emg. Serv.	doi.org/10.1108/IJES-08-2023-0033
Factors influencing appropriate referrals from NHS 111 to 999 services in Wales	Brady, M., Brown, P.	Mike Brady	2024	British Journal of Health Care Mngmt.	doi.org/10.12968/bjhc.2023.0119
Drone-delivered automated external defibrillators for out-of-hospital cardiac arrest: A simulation-based feasibility study.	Smith C et al.	Nigel Rees, Carl Powell	2024	Paramedicine	10.1177/27536386241281061
Landscaping risk in medical emergency dispatch.	Angouri, J., Ting, S.S.P., Nadeem, L., Booker, M., Rawlinson, D. and Rees, N.	Nigel Rees	2024	N/A	10.31273/9781911675181
Transient Ischaemic attack Emergency Referral (TIER): randomised feasibility trial results	Watkins, A., Jones, J.K., Ali, K., Dewar, R., Edwards, A., Evans, B.A., Evans, L., Ford, G.A., Hampton, C., John, R. and Jones, C	Nigel Rees, Chris Moore	2024	Emergency Medicine Journal	10.1136/emmermed-2021-212230

159 Attitudes of real-world out-of-hospital cardiac arrest bystanders to drone-delivered Automated External Defibrillators	Bernstein, C.J., Smith, C.M., Powell, C., O'Sullivan, M., Holt, M., Couper, K. and Rees, N.	Nigel Rees	2024	Resuscitation	N/A
160 Full integration of drone-delivered Automated External Defibrillators with the emergency response for out-of-hospital cardiac arrest in the UK: a simulation study.	Smith, C.M., Bernstein, C.J., Powell, C., Howe, H., Holt, M., O'Sullivan, M., Couper, K. and Rees, N.,	Nigel Rees	2024	Resuscitation	N/A
PP18 Lost in transmission: risk negotiation in emergency medical dispatch	Ting, Shawnea SP, Jo Angouri, Matthew Booker, David Rawlinson, Lauren Williams, David Lockey, Lyba Nadeem, and Nigel Rees	Nigel Rees, Lauren Williams	2024	BMJ Journals	10.1136/emered-2024-999.18
PP40 Co-design and refinement of a logic model describing case management for people who frequently call ambulance services—the stretched evaluation	Porter, A., Cole, R., Edwards, A., Edwards, B., Evans, B., Foster, T., Fothergill, R., Gripper, P., Hampton, C., John, A. and Khanom, A	Nigel Rees	2024	BMJ Journals	10.1136/emered-2024-999.40
'JUMPED OUT OF THE WINDOW': Textual trajectories in emergency medical dispatch. DOI: 10.1177/09579265241296901	Angouri, J et al.	Nigel Rees	2024	Discourse & Society.	10.1177/09579265241296901
A Randomized Trial of Drug Route in Out-of-Hospital Cardiac Arrest.	Couper, K et al.	Nigel Rees, Carla Jones, Charlotte Evans	2024	N Engl J Med	10.1056/NEJMoa2407780
Facilitators and barriers to the delivery of the PARAMEDIC-2 Trial	Helen Pocock, Nigel Rees., et al.	Nigel Rees	2024	Resuscitation Plus	10.1016/j.resplu.2024.100617
Route of drug administration in out of hospital cardiac arrest: A protocol for randomised controlled trial (PARAMEDIC-3)	Couper, K et al.	Nigel Rees	2024	Resuscitation Plus	10.1016/j.resplu.2023.100544
The COVID-19 ambulance response assessment (CARA) study: A national survey of ambulance service healthcare professionals preparedness and response to the COVID-19 Pandemic.	Berret, K. et al.	Nigel Rees	2024	British Paramedic Journal	10.29045/14784726.2024.3.8.4.10
Drone-delivered Automated External Defibrillators for out-of-hospital cardiac arrest: A simulation study	Smith C et al.	Nigel Rees, Carl Powell	2024	MedrXiv	10.1101/2024.02.23.24303253

Experiences and views of people who frequently call emergency ambulance services: A qualitative study of UK service users	Evans, B., et al.	Nigel Rees	2024	Health Expectations	10.1111/hex.13856
Information governance as a socio-technical process in the development of trustworthy healthcare AI	Rees, N., Holding, K. and Sujan, M	Nigel Rees, Kelly Holding	2023	Frontiers in Computer Science	10.3389/fcomp.2023.1134818
Protecting Emergency Medical Services (EMS) Staff from Aggression and Violence in Conflict Encounters (PEACE 1): A survey of Wales Adults Attitudes in 2022	Nigel Rees ¹ , Daniel Todd ² , Francesca Fiorentino ³ , Peter O'Meara ⁴ , Lauren Williams ¹ , Julia Williams ⁵ , Claire Hawkes ² ,	Nigel Rees, Lauren Williams	2023	MedRxiv	10.1101/2023.11.30.23299241
OP06 Effects of case management on emergency service usage and morality of people who call 999 frequently (STRETCHED): emergency results of linked data analysis	Driscoll, T. et al.	Nigel Rees	2023	Emergency Medicine Journal	10.1136/emermed-2023-999.6
PP58 Case management of people who call 999 frequently – qualitative study of the perspective of people providing and receiving care (STRETCHED)	Porter, A. et al.	Nigel Rees	2023	Emergency Medicine Journal	10.1136/emermed-2023-999.57
Emergency Medical Systemic frustration of aggression and violence in conflict encounters: An evolved grounded theory	Rees, et al.	Nigel Rees, Lauren Williams	2023	MedRxiv	10.1101/2023.07.24.23293095
Information governance as a socio-technical process in the development of trustworthy healthcare AI	Rees, N., Holding, K. and Sujan, M	Nigel Rees, Kelly Holding	2023	Frontiers in Computer Science	10.3389/fcomp.2023.1134818

Appendix 3 – Conferences & Engagement in 2023 – 2025

Conference	Topic / Study	Type	Speakers / Poster Authors / Attendees	Date
2025				
<i>Big Bang Event</i>	Research and Development	Stand	Tom Dart, Sophie Price, Lauren Williams	20 th June 2025
<i>Medi Wales Connects Conference</i>	RELIEF, 999RESPOND, PROWEB	Presentation/Workshop/	Nigel Rees, Chris Moore, Jo Angouri, Lauren Williams, Cendl Xanthe, Ed Harry	17 th June 2025
<i>Medi Wales Connects Conference</i>	Research & Development Stand	Stand	Cendl Xanthe, Lauren Williams	17 th June 2025.
<i>Research & Innovation Workshop (Wrexham)</i>	Research and Development	Workshop	R&D Team	10 th June 2025
<i>Marie Curie Research into Practice Conference</i>	RELIEF	Presentation	Chris Moore, Natasha Campling	12th February 2025
<i>Research & Innovation Workshop (Wrexham)</i>	Research and Development	Workshop	R&D Team	10 th June 2025
2024				
<i>Public Health Wales Conference - Cardiff</i>	Research & Development Stand	Stand	Cendl Xanthe, Dmitri Holloway, Charlotte Levey, Sophie Price	2nd December 2024
<i>European Resuscitation Council Conference</i>	3D Drones	2x Poster Presentations	3D Project Team	31st Oct - 2nd Nov 2024
<i>CEO Roadshow Carmarthen</i>	Research & Development Stand	Stand	Cendl Xanthe, Lauren Clarke	17th October 2024
<i>CEO Roadshow Carmarthen</i>	Research & Development Stand	Stand	Lauren Williams, Charlotte Evans	16th October 2024
<i>CEO Roadshow Builth Wells</i>	Research & Development Stand	Stand	Nigel Rees	15th October 2024
<i>CEO Roadshow Llandudno</i>	Research & Development Stand	Stand	Carla Jones	14th October 2024
<i>CEO Roadshow Wrexham</i>	Research & Development Stand	Stand	Carla Jones	14th October 2024
<i>Health and Care Research Wales Conference</i>	Research & Development Stand	Stand	Lauren Clarke, Lauren Williams, Nigel Rees	10th October 2024
<i>999 EMS Conference</i>	999RESPOND	Poster Presentation	999RESPOND Team	17th-18th September 2024

<i>999 EMS Conference</i>	RELIEF	Poster Presentation	Chris Moore	18th September 2024
<i>BSA Medical Sociology Conference 2024</i>	999RESPOND	Presentation	999RESPOND Team	11th-13th September 2024
<i>BSA Medical Sociology Conference 2024</i>	999RESPOND	Poster Presentation	999RESPOND Team	11th-13th September 2024
<i>Medi Wales</i>	999 RESPOND	Presentation / Stand	Dr Nigel Rees, Jo Angouri, Shawnea Pok Ting, Lyba Nadeem	26th June 2024
<i>Medi Wales</i>	Research & Development Stand	Stand	Lauren Williams / Dmitri Holloway	26th June 2024
<i>Medi Wales</i>	Research & Development Presentation	Presentation	Dr Nigel Rees, Dmitri Holloway	26th June 2024
<i>Medi Wales</i>	Welsh Health Drone Innovation Partnership	Stand	SLINKTECH	26th June 2024
<i>iMean7 - Bristol</i>	999RESPOND	Stand	999RESPOND Team	19th - 20th June 2024
<i>Research Development Forum</i>	Welsh Health Drone Innovation Partnership	Poster Presentation	Dr Nigel Rees, Carla Jones, Lauren Williams, Lauren Smythe	13th May 2024
<i>Research Development Forum</i>	WAST Research Delivery	Presentation	Carla Jones	13th May 2024
<i>WAST Big Bang Event</i>	Research & Development Stand	Stand	Lauren Smyth, Lauren Williams, Dmitri Holloway, Charlotte Evans	19th April 2024
<i>Research & Innovation Workshop (North)</i>	WAST Research & Development	Workshop	WAST R&D Team	6th February 2024
2023				
<i>Research & Innovation Workshop (Central & West)</i>	WAST Research & Development	Workshop	WAST R&D Team	12th December 2023
<i>RELIEF Workshop</i>	RELIEF	Workshop	RELIEF Project Team & PPI	20th November 2023
<i>Global Emergency Nursing & Trauma Care Conference</i>	999 RESPOND	Presentation	999RESPOND Team - Shawnea, Jo, Matthew, Charlotte, Lauren, David, Nig	9-11 November 2023
<i>Research & Innovation Workshop (South East)</i>	WAST Research & Development	Workshop	WAST R&D Team	13th November 2023

<i>Health and Care Research Wales Conference</i>	RELIEF	Poster Presentation	Cendl Xanthe	12th October 2023
<i>Bevan Commission Conference - The Tipping Point</i>	999 RESPOND	Workshop	Dr Nigel Rees, Jo Angouri, Shawnea Pok Ting, Lauren Williams	5th July 2023
<i>Research Development Forum</i>	ASSIST	Presentation	Dr Nigel Rees	22nd May 2023
<i>National HEMS Research and Audit Forum</i>	999 RESPOND	Presentation	999RESPOND Team - Shawnea, Jo, Nigel, David, Matthew.	25th May 2023
<i>999 R.E.S.P.O.N.D Stakeholder Workshop</i>	999 RESPOND	Workshop	Dr Nigel Rees, Lauren Smyth, Lauren Williams & 999RESPOND Team	24th-25th January 2023