



# Research Annual Report 2020/21

Helen Pocock, Senior Research Paramedic  
Martina Brown, Research and Clinical Audit Manager  
Prof Charles Deakin, Research Lead

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## 1. Introduction

The year 2020-21 has been a year like no other. The COVID-19 pandemic has presented both challenges and opportunities for research throughout the NHS. As a core frontline NHS service, it has been essential for the national ambulance services to develop new ways of working to both develop and maintain existing services in the context of an emerging and ongoing global health threat. At South Central Ambulance Service NHS Foundation Trust, (SCAS) we have risen to the challenge and offered patients and staff the opportunity to be enrolled in research projects of local, national and global significance.

This Annual Report outlines the context and mechanisms that support the delivery of high-quality research in SCAS. Following our successful involvement in both the PARAMEDIC and PARAMEDIC2 trials, in 2018 we developed a *Research Strategy* guiding our journey towards maximising the research capacity and capability of the Trust. This is aligned with the Trust's commitment to research as outlined in our *Clinical Strategy*. Our ultimate aim is that every service-user and staff member is offered the opportunity to take part in high-quality research. In striving to fulfil this aim, SCAS will contribute to the vision of a research-led and evidence-based NHS as set out in the government's health research strategy *Best Research for Best Health*. This report charts our progress within this context and showcases some of the exceptional research activities undertaken in the last 12 months.

The Research and Development (R&D) functions at SCAS are carried out by a small core team consisting of a Research Lead, Senior Research Paramedic and Research Assistant. We have been fortunate to also appoint a Research Manager to the team this year. We are also supplemented with additional Research Paramedics to support the design and/or delivery and management of projects, depending on the stage of the research cycle. Much of our core funding is provided centrally by the National Institute of Health Research (NIHR), administered locally by our local Clinical Research Network. SCAS is spread across two CRN regions, but can be aligned with only one. Our research activity is supported and reported through CRN Wessex. Research projects may be sponsored by commercial or non-commercial funders and sometimes both. During this period SCAS has been engaged only in non-commercial research. Funding directly from the research projects is used to support the variety of activities necessary to deliver the project. This is often received via a grant awarded to the researchers. Additional funding comes from the Department for Health and Social Care as Research Capability Funding.

In the last year, the NIHR has prioritised COVID-19 Urgent Public Health studies. Most non-COVID-19 research has been paused or closed. Many of the NIHR-funded clinically qualified staff have been redeployed to clinical duties. This was the case in SCAS, and all of our research paramedics were diverted to essential frontline work for the period March-May 2020 and again in January-February 2021. During this time our team was severely depleted, but we were still able to engage with a number of Urgent Public Health studies, such as the PRINCIPLE trial, exploring COVID-19 treatments and the RECAP study, using technology to support decision-making.

**In a public health emergency, the Health Research Authority (HRA) can fast-track the approvals process so that studies seeking to improve diagnosis, test new treatments or prevent disease spread can be commenced with minimal delay.**

We have a dedicated area for Research on the South Central Ambulance Service NHS Foundation Trust website, which can be accessed at:  
[link]: <https://www.scas.nhs.uk/about-scas/research/>

## 2. Research infrastructure

SCAS adheres to the principles of good practice in management and delivery of research as set out in the UK Policy Framework for Health & Social Care Research (2017). The Health Research Authority (HRA), an arm's length body of the Department for Health and Social Care, is the body responsible for reviewing and approving the majority of research projects conducted in the NHS. Through application to the HRA, researchers can seek all necessary reviews and approvals. For example, independent ethical review of projects is provided by NHS Research Ethics Committees. Once a project has been approved, an assessment of the Trust's capacity and capability to deliver the research is made SCAS' Clinical Review Group (CRG). Small, low-risk projects involving no patient-identifiable data may be reviewed and approved by University ethics committees or by the review bodies of individual NHS trusts. The CRG is the body providing this function within SCAS. With the appointment of a full-time Research & Clinical Audit Manager we aim to streamline this process, reducing the amount of time it takes to set up safe, high quality research projects in the Trust.

One of the aims of the Research Strategy 2018-23 was to forge stronger links between the Research and the Clinical Audit teams. As part of the Clinical Directorate restructure, we have taken the opportunity to bring these teams together. Whilst maintaining separate functions day-to-day, these teams have now conjoined under a single manager. This provides us with opportunities to inform research projects with audit and vice versa.

**In preparation for our delivery of the CRASH4 trial, we undertook an audit of current practice. This has inspired some of our communication messages around the trial.**

Building and expanding the infrastructure of the research team is challenging since many research posts within the NHS have limited funding which inform their length. Within SCAS, Research Paramedics posts are usually short term/seconded roles, dependent on the clinical studies to which we are recruiting at the time. This makes the research function within the trust responsive to need whilst providing short-term opportunities to staff members wishing to further their research knowledge and experience. It does, however, provide limited stability for those wishing to work in research on a more permanent basis.

## 3. Developing a skilled workforce

Research is increasingly seen as part of the paramedic career structure. Some of our Research Paramedics stay with the team whilst others take their research experience into other avenues. Previous post-holders have gone on to a variety of clinical, educational and managerial posts including Specialist Paramedic, Clinical Team Educator, University Lecturer and Clinical Education Manager. Taking research experience into these new roles will benefit the Trust in the long term; our paramedic students will benefit from

increased research awareness and the research capability of our clinical teams will increase.

All of our research team complete regular Good Clinical Practice (GCP) training and we ensure that all new members of staff undertake this training as part of their induction programme.

This year we have made two external appointments to the role of Research & Clinical Audit Manager and Research Paramedic. The post-holders bring with them a wealth of experience from Primary Care research and Biomedical research. The team are already benefiting from their expertise in setting up and running a diverse range of research studies.

Staff requiring a temporary period of working on alternative duties have been welcomed to the team and have supported our delivery of the urgent public health studies related to COVID-19. This coming year, bank contracts will be introduced to provide additional opportunities for staff working substantively in other areas as well as increasing the capability and resilience of the team.

The team has continued its development with two of our medical directors having this year completed the NIHR Principal Investigator training which will greatly benefit the smooth running and careful oversight of our portfolio studies. Additionally, two further members of staff have completed leadership courses: one the Wavelength Leadership Academy course and the other the NHS Leadership Academy Edward Jenner course. The NHS R&D Forum has also provided research training for two members of the team.

### 3.1 Awards

We are extremely proud of our team members who have made an outstanding contribution to the NHS COVID-19 vaccine research. Four team members have been diverted from their normal research activities to assist with the delivery of this urgent research. We are the only ambulance service in the country contributing to this ground-breaking national effort. Our staff have acted as excellent ambassadors, integrating well into the multidisciplinary team in the regional hubs. In April 2021 we learned that both the SCAS Research team and Professor Charles Deakin, our research lead, have been recognised by CRN Wessex for our Outstanding Contribution to COVID-19 research.



A team made up of frontline staff on alternative duties drafted in alongside existing members of the research team was established rapidly at SCAS last year to support six

vaccine hubs across Hampshire, Dorset and Oxfordshire. The team helped with patient recruitment, administered vaccines and also collected and audited data at speed which provided outcomes from multiple trials and subsequently contributed to the launch of the current national vaccine rollout. Our research paramedics and research administrator not only trained up these new recruits but also went out to support vaccine hubs, helping them to learn new skills and research delivery at the next level and that is a true testament to the dedication and trust values the SCAS staff have.



Alongside the team award, Professor Charles Deakin, Divisional Medical Director at SCAS, received individual recognition for his research leadership and oversight of recruitment and adherence to the protocols. Professor Deakin's collaborative leadership skills, advice and encouragement inspired many colleagues and teams to work together effectively and passionately which led to offering our service users more opportunities to take part in COVID-19 research.

#### 4. Developing collaborations

We are represented on the following local and national committees:

##### Local Clinical Research Network

- CRN Wessex Senior Research Nurses/Allied Health Professionals Development Group
- CRN Wessex Research Study Delivery Group
- CRN Thames Valley & South Midlands Trauma and Emergencies Specialty Group

Membership of these groups, which meet quarterly, has been extremely useful for developing relationships with our local acute trusts and promoting out-of-hospital research. The CRN also deliver updates and education to these groups, ensuring that our knowledge and skills are current; these have mostly been delivered via email and videoconferencing during the pandemic. During the past year, the meetings have continued via an online platform. Additionally, in order to ensure timely and robust vaccines research, the CRN has hosted weekly regional meetings. Such meetings have enabled the various organisations to unitedly support the commercial COVID-19 vaccine trials across the Wessex region. Latterly, they have facilitated the co-ordinated resumption of the pre-pandemic trials.

## National Ambulance Research Steering Group

Membership of this group, which meets bi-monthly, keeps us linked with the other ambulance services. This group welcomes researchers bringing new research ideas for feasibility discussions at an early stage in their projects. This has been beneficial to all stakeholders in increasing the quality of the projects and optimising their potential to recruit to time and target. One of the strengths of this group is their ability to respond to national developments with a single voice, such as a project encouraging the development of paramedics to become Principal Investigators.

**A Principal Investigator is an individual responsible for the conduct of a research project at a site, e.g. an ambulance service or a hospital.**

## Local and national collaboration

Whilst it is important for the trust to contribute to large national research projects, it is also important that we remain responsive to local need. Some of our local collaborations are designed to specifically benefit local patients. Our work with the Universities of Portsmouth and Southampton exploring care and outcomes of people with dementia is an example of such focus. Other local collaborations have been designed to create meaningful data from a local dataset that can feed into the national picture, for example our exploration with Hampshire Hospitals of our COVID-19 pathways.

### **Local collaboration in COVID-19 research**

**SCAS research team has been working with teams from Hampshire Hospitals and University of Southampton on a project to investigate whether clinical observations taken in the home by ambulance staff might be predictive of outcomes of COVID-19. The team found a strong link between initial oxygen saturation measurement and clinical deterioration in patients with confirmed COVID-19.**

**The collaboration enabled the tracking of patients from the community through to hospital discharge and the detailed statistical analysis of data. The project has influenced national guidance regarding pathways for patients with COVID-19.**

We are delighted to play an important part in some of the most ground-breaking national out-of-hospital studies in recent years. In addition to being involved in both the design and delivery of the high-profile PARAMEDIC2 trial, such trials often present further opportunities. For instance, members of SCAS research team have taken the lead in investigating and articulating the learning from running this trial to further improve and refine future trials.

### **National collaboration on patient safety**

**This year SCAS has published a ground-breaking paper exploring medicines safety issues in out-of-hospital medicines research delivery. The PARAMEDIC-2 trial, investigating the role of adrenaline in cardiac arrest, posed many challenges for ambulance services. One such challenge was**

**medicines management. Collaboration between the trial Sponsor, University of Warwick, and each of the participating ambulance services (SCAS, London Ambulance Service, West Midlands Ambulance Service, Welsh Ambulance Service and North East Ambulance Service) allowed the sharing of learning from incidents and errors. The resulting paper was published in a high-impact peer-reviewed journal with a view to informing the procedures, and improving the safety, of future such trials.**

We are also supporting University of Southampton medical students who wish to undertake research projects with us, to provide them with an introduction to research and support them with mutually beneficial projects.

#### 5. Aligning research with practice

The number of patients receiving relevant health services provided or sub-contracted by SCAS in 2020-21 that were recruited during that period to participate in research approved by a research ethics committee was 1584.

We have been engaged with a number of projects focussing on patient treatments and interventions as well as studies exploring staff experiences. All have the overall goal of supporting our staff to improve patient care as well as establishing SCAS as the employer of choice.

#### **Exploring the emotional experience of ambulance work**

**A small study of frontline ambulance worker pairs aims to explore emotions felt whilst working, how these are expressed these emotions and how working partners respond to these emotions. The results of this study could help us to understand the emotions that ambulance workers experience on a daily basis and how they support each other when working in pairs.**

The Urgent and Public Health studies introduced since the onset of the pandemic have provided SCAS patients with new opportunities for research involvement. Innovative studies such as the PRINCIPLE trial have been accessed through the COVID Clinical Assessment Service (CCAS) via our 111 call service, users of which have previously been under-represented in the Trust's research offering. Realising the research potential of this service is hugely significant as we research offers a potential source and range of new treatments for our patients.

#### **Study summary: Platform Randomised trial of INterventions against COVID-19 In older peOPLE (PRINCIPLE)**

**This study, sponsored by University of Oxford, is a platform trial to evaluate treatments suitable for use in the community for treating COVID-like-illness that might help people recover sooner and prevent hospitalisation. A "platform trial" is a trial in which multiple treatments for the same disease are tested simultaneously. New interventions can be added or replace existing ones during the course of the trial in accordance with pre-specified criteria.**



**Callers to the SCAS-hosted COVID-19 Clinical Assessment Service (accessed by calling 111) are invited to consider taking part in the study.**

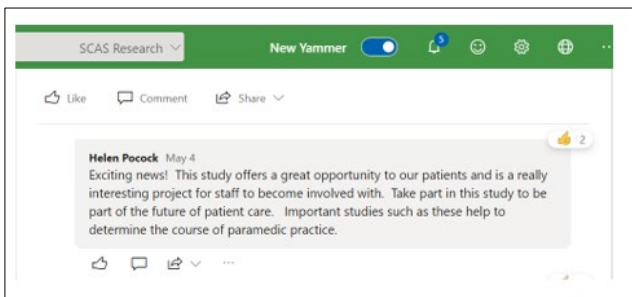
**The study has recently identified that inhaled Budesonide, a common and inexpensive corticosteroid, can shorten recovery times in patients aged over 50 with COVID-19 who are treated at home and other community settings.**

Equally important as taking part in research is the commitment to translate research findings into clinical practice. For example, following their publication, the findings of the CRASH3 trial were integrated into our medicines guidelines. This ensures that the benefits demonstrated in the research are available for all patients and now form the standard of care.

Ongoing work with the European Resuscitation Council and the International Liaison Committee on Resuscitation has also supported the revision to the 2021 resuscitation guidelines which are due to be published shortly.

## 6. Disseminating research findings

This year we have increased our visibility within the Trust by establishing our own community within 'Yammer', our internal social media platform. Members of the team regularly Yammer to other members of the Trust about ongoing and planned research projects. Opportunities to take part in studies or become a research advocate are also advertised on this SharePoint.



We have an area on the SCAS website dedicated to research, which can be accessed via this link: <https://www.scas.nhs.uk/about-scas/research/>

This is where our Research strategy and Annual report are posted. Also located here is information for patients regarding the use of their data in research and information for researchers about how to obtain approval for their research projects to be conducted in the trust. All NHS trusts are required to publish their research activity quarterly on the NIHR platform and a link to our performance data can be found on our webpage. We post information about our ongoing studies and summaries of the results of completed projects with links to research papers where applicable.

### **COVID-19 Ambulance Response Assessment study (CARA)**

**This cross-sectional survey of UK patient-facing ambulance staff evaluated the impact of the COVID-19 pandemic on their wellbeing and factors**

**influencing their practice. The study involved three phases of online questionnaire completion: firstly, during the acceleration phase of the pandemic, secondly during the peak, and finally during the deceleration phase.**

**The CARA study attracted 235 participants and publication of findings is eagerly anticipated since it is likely to inform ambulance services' response to any future public health emergency response.**

Despite being redeployed to frontline clinical practice during 2020-2021, we have continued to communicate our research to our public and peers albeit within the constraints of the online world! SCAS staff this year produced 14 publications in peer-reviewed journals and made 8 conference presentations. These are listed in appendices A & B.

## 7. Sustainability

The appointment of an experienced Research & Clinical Audit manager this year has allowed us to explore new ways of working and bring research projects into areas of the Trust that were previously underrepresented in research. Each research project brings funding in order that the activity does not detrimentally impact on the other important day-to-day functions of the Trust. With the ever-increasing number of projects, budgeting and spending have been reorganised to allow smooth, trackable cash-flow to sustain the various projects across their life cycle.

One of the consequences of the pandemic is the accelerated move towards online education and training. This can be extremely beneficial for busy clinicians wanting to engage in learning activities that might traditionally have necessitated a journey to attend. Two of our clinical leadership team have completed the NIHR Principle Investigator Essentials course this year. This helps to maintain the profile of research, leading from the top of the organisation. Building a clear, shared understanding of what is necessary for successful research is so important to build sustainable activity.

## 8. Future plans

In the coming financial year, we intend to continue our involvement in several large-scale trials of national importance, predicted to involve thousands of patients. We will expand our portfolio to include new studies that have been in development this year. We will grow our team in response to need, finding new and innovative ways of working that give staff flexibility and scope to take part in research alongside their current roles. We will increase the number of staff trained to deliver research to patients on the national portfolio thereby giving patients a greater number of opportunities to take part in research.

We will further integrate the research and clinical audit teams and build additional resilience into the team. Although funded separately, our future vision is that audit and research will sit alongside each other and will sometimes inform each other. Both share the common goal of improving patient care.

As the NHS slowly moves towards 'business as usual' we are keen to retain the enthusiasm for and build on the successes of UK healthcare research of the past 12 months. We are in a stronger position now than ever before to build our research capacity and hence improve our care for all of our patients, service users and staff.

## Appendix A - Publications

Nolan JP, **Deakin CD**, Ji C, Gates S, Rosser A, Lall R, Perkins GD. (2020) Intraosseous versus intravenous administration of adrenaline in patients with out-of-hospital cardiac arrest: a secondary analysis of the PARAMEDIC2 placebo-controlled trial. *Intensive Care Medicine*, 46: 954–962.

Perkins GD, Kenna C, Ji C, **Deakin CD**, Nolan JP, Quinn T, Scomparin C, Fothergill R, Gunson IM, **Pocock H**, Rees N, O'Shea L, Finn J, Gates S, Lall R. (2020) The influence of time to adrenaline administration in the Paramedic 2 randomised controlled trial. *Intensive Care Medicine*, 46: 426–436.

**Elsey A.** (2020) Speaking up — even when not heard. *Journal of Paramedic Practice*, 12 (6), doi: 10.12968/jpar.2020.12.6.246

Inada-Kim M, Knight T, **Sullivan M**, **Ainsworth-Smith M**, Pike N, Richardson M, Hayward G, Lasserson D. (2020) The Prognostic Value of National Early Warning Scores (NEWS) During Transfer of Care From Community Settings to Hospital: A Retrospective Service Evaluation. *British Journal of General Practice Open*, 4 (2): bjgpopen20X101071. DOI: [link]: <https://doi.org/10.3399/bjgpopen20X101071>.

**Deakin CD**, **Anfield S**, **Hodgetts GA.** (2020) Which building types give optimal public access defibrillator coverage for out-of-hospital cardiac arrest? *Resuscitation*, 152: 149-156.

Myall M, Rowsell A, Lund S, Turnbull J, Arber M, Crouch R, **Pocock H**, **Deakin CD**, Richardson A (2020) Death and dying in prehospital care: what are the experiences and issues for prehospital practitioners, families and bystanders? A scoping review. *British Medicine Journal Open*, 10:e036925. doi:10.1136/ bmjopen-2020-036925.

Achana F, Petrou S, Madan J, Khan K, Ji C, Hossain A, Lall R, Slowther A-M, **Deakin CD**, Quinn T, Nolan JP, **Pocock H**, Rees N, Smyth M, Gates S, Gardiner D, Perkins GD, Paramedic 2 Collaborators (2020) Cost-effectiveness of adrenaline for out-of-hospital cardiac arrest. *Critical Care*, 24 (579). <https://doi.org/10.1186/s13054-020-03271-0>

**Handyside B**, **Pocock H**, **Deakin CD.** (2020) An exploration of the facilitators and barriers to paramedics' assessment and treatment of pain in paediatric patients following trauma (EX-PAT). *Emergency Medicine Journal*, 37: e2. DOI: 10.1136/emered-2020-999abs.22.

**Deakin CD**, Soar J, Morley P, Drennan I. (2020) Double Sequential Defibrillation for Refractory Ventricular Fibrillation Cardiac Arrest: A Systematic Review. *Resuscitation*, 155: 24-31.

Ramluggun P, Freeman-May A, Barody G, **Groom N**, **Townsend C** (2020) Changing paramedic students' perception of people who self-harm. *Journal of Paramedic Practice*, 12 (10): <https://doi.org/10.12968/jpar.2020.12.10.403>

**England E**, **Deakin CD**, Nolan JP, Lall R, Quinn T, Gates S, Miller S, O'Shea L, **Pocock H**, Rees N, Scomparin C, Perkins GD. (2020) Patient safety incidents and medication errors during a clinical trial: Experience from a pre-hospital randomised controlled trial of

emergency medication administration. *European Journal of Clinical Pharmacology*. *European Journal of Clinical Pharmacology*, 76: 1355–1362.

Otto Q, Musiol S, **Deakin CD**, Morley P, Soar J. (2020) Anticipatory Manual Defibrillator Charging during Advanced Life Support: A Scoping Review. *Resuscitation Plus*, 1–2, 100004. <https://doi.org/10.1016/j.resplu.2020.100004>.

**Deakin CD**, Nolan JP, Ji C, Fothergill RT, Quinn T, Rosser A, Lall R, Perkins GD. (2021) The Effect of Airway Management on CPR Quality in the Paramedic2 Randomised Controlled Trial. *Resuscitation*, 58, 8–15.

Haywood KL, Ji C, Quinn T, Nolan JP, **Deakin CD**, Scomparin C, Lall R, Gates S, Long J, Regan S, Fothergill RT, **Pocock H**, Rees N, O’Shea L, Perkins GD (2021) Long term outcomes of participants in the PARAMEDIC2 randomised trial of adrenaline in out-of-hospital cardiac arrest. *Resuscitation*, 160: 84-9.

## Appendix B – Presentations

**Ainsworth-Smith, M.** Covid@home and the introduction of pulse oximeters in the community. *SE Region AHSN (virtual). February 2021.*

**Ainsworth-Smith, M.** Covid Management for Patients who are non-conveyed to hospital. *National Ambulance Service Medical Directors Meeting. March 2021.*

**Ainsworth-Smith, M.** Dealing with Major Trauma in the Pre-Hospital Arena. *Wessex Critical Care Programme. March 2021.*

**Deakin, C.D.** Hypotension and Arrhythmias During and After CPR. 3<sup>rd</sup> Annual State of the Future of Resuscitation Conference (Virtual), Las Vegas. September 2020.

**Deakin, C.D.** Defibrillation. European Resuscitation Council 2020. Annual Conference (Virtual). October 2020.

**Deakin, C.D.** Out-of-Hospital Emergencies and the Care and Transfer of Critically Ill Patients. *Aortic Dissection Education Day. Royal College of Surgeons of Edinburgh. November 2020.*

**Deakin, C.D.** Defibrillation. European Resuscitation Council Guidelines Conference 2021. Antwerp (Virtual). March 2021.

**Pocock, H.** Optimising ambulance service contribution to clinical trials: a phenomenological exploration using focus groups. *College of Paramedics Research Conference (virtual). November 2020.*