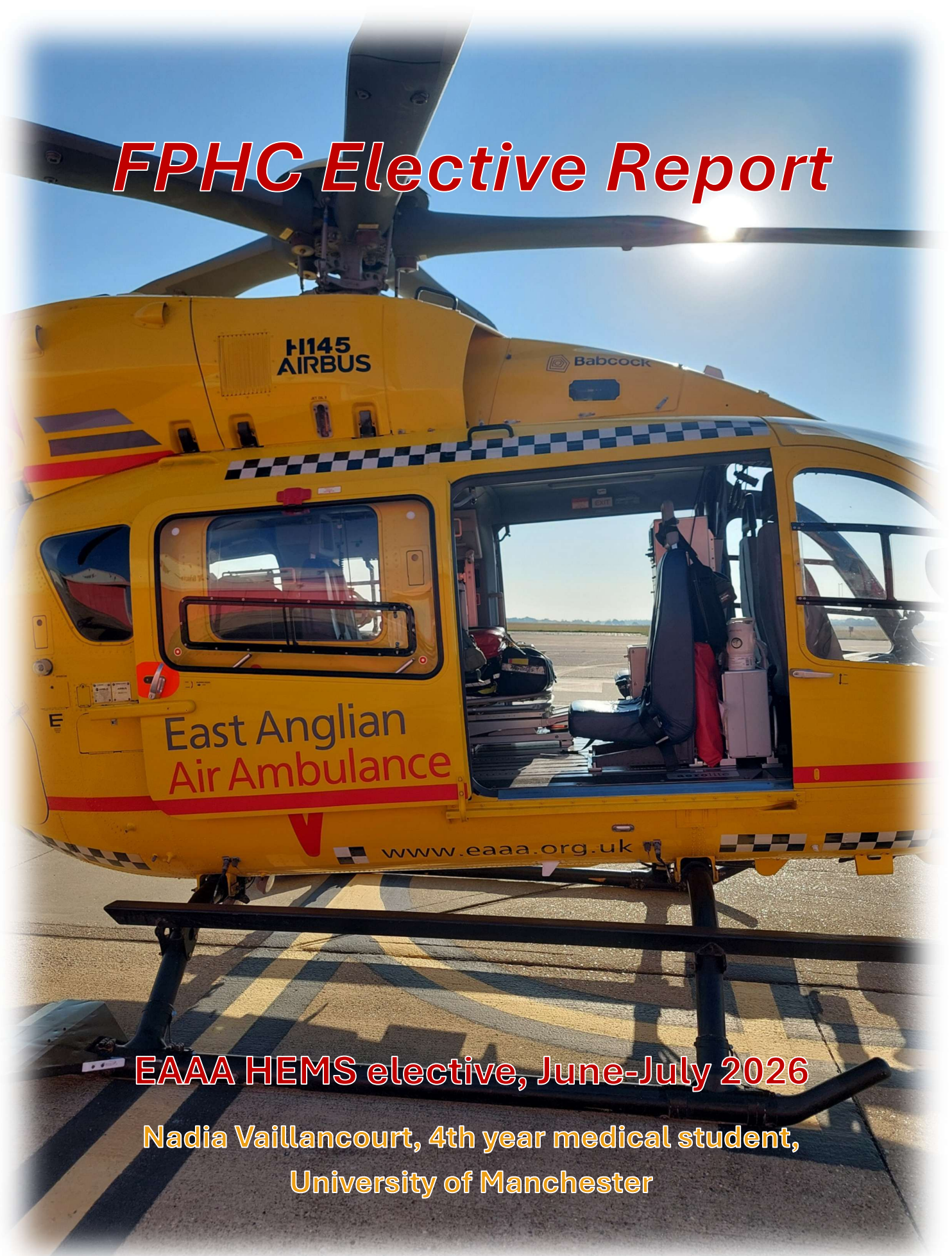


FPHC Elective Report



EAAA HEMS elective, June-July 2026

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For a critically unwell patient, the worst day of their life often begins before they reach a hospital. Medical emergencies in the tumultuous prehospital environment can require the same advanced critical care normally reserved for the resources of a hospital. Naturally, this is where helicopter emergency medical services (HEMS) come in: to bring the hospital to the patient, anytime, anywhere.

I was thrilled to spend the most memorable four weeks of my medical training so far with the East Anglian Air Ambulance (EAAA) charity, an incredible opportunity only possible thanks to the Faculty of Pre-Hospital Care (FPHC) Elective Programme. Spending my medical elective with EAAA was nothing short of a dream come true for a medical student set on pursuing prehospital emergency medicine (PHEM). My time with EAAA consisted of clinical observer shifts, a service evaluation research project with the RAID (Research, Audit, Innovation, and Development) team, volunteering to teach community CPR, and a chance to observe the Norfolk Accidents and Rescue Service (NARS).



Helimed House, EAAA's Norwich base

About EAAA

EAAA was founded in 2000, and serves the areas of Norfolk, Suffolk, Cambridgeshire and Bedfordshire. The air ambulance charity provides prehospital critical care interventions, often collaborating with East of England Ambulance Service Trust (EEAST) to provide the best possible care to patients before they reach hospital. EAAA crews are

tasked by an EEAST paramedic from the critical care desk (CCD) which allocates critical care resources in the area. On average, the crews are tasked 8 times a day, costing approximately £4250 per job.

The organisation operates out of two bases, in Norwich and Cambridge, tasking HEMS crews on callouts by helicopter or rapid response vehicle, day and night. Each on duty crew consists of a doctor, a critical care paramedic (CCP), two pilots, and sometimes a third clinical crew member such as a HEMS trainee (or a medical student on elective!).

Crucially, the clinical side of EAAA is complemented by the RAID (Research, Audit, Innovation, and Development) team who strive for innovation and improvement in prehospital care, the aftercare team who reach out to patients and their loved ones after an incident, and the fundraising team without whom EAAA simply could not operate. Helimed House, EAAA's Norwich base, was designed so the clinical and operational teams share common spaces and can feel connected to each other's work.



Anglia One (G-RESU), an Airbus H145

Clinical Experience

The clinical observer shifts I had with EAAA were unforgettable. I was scheduled as an observer on 12-hour day shifts worked by the HEMS crew. I observed 6 shifts, during which we were called out to 10 jobs, and had 5 stand-downs. Most of these jobs were either trauma or out-of-hospital cardiac arrest, but we attended diverse medical presentations including seizure, stroke, overdose, and peri-arrest secondary to DKA. I was also fortunate enough to have a shift arranged observing the Norfolk Accident and Rescue Service (NARS), and the critical care desk which dispatches HEMS to jobs.

The HEMS team is a level 3 critical care resource, which means those clinicians can provide critical care interventions that a paramedic crew (level 1) or single critical care paramedic (level 2) cannot provide. One of these unique skills is pre-hospital emergency anaesthetic (PHEA), to sedate patients requiring advanced airway management. Many of the patients we attended received PHEA, highlighting how critical a strong foundation of anaesthetic knowledge is to HEMS clinicians, including non-anaesthetist doctors and critical care paramedics. The other level 3 skill I saw used, perhaps even more often, was senior decision-making on scene. This typically became relevant when making difficult decisions about withdrawing care or not instigating advanced life support for patients in cardiac arrest. My experience seeing HEMS crews working with EEAST paramedics showed how this senior support makes a big difference for ambulance crews who are bound by more restrictive triage systems.

What surprised me most about the shifts I observed was the proportion of time spent on call, waiting to be deployed. Although I have had plenty experience working as an Emergency Medical Responder with how unpredictable the volume of callouts can be prehospitally, I naively assumed the HEMS service would be inundated with critical care calls at a higher frequency than I initially experienced. My first 2 shifts could only be described as quiet, as we were dispatched only once for relatively short jobs on each of those 12-hour days. The downtime between jobs consisted of getting to know the clinicians and pilots, restocking kit bags in the storeroom, doing training scenarios in the designated simulation room, working on my research project, or even collectively tempting fate by putting on a film and repeating how 'quiet' it was when it had been hours without a job tasking! To the disappointment of any superstitious readers, this did not in fact result in more work for the HEMS team.





Out of Hospital Cardiac Arrest (OOHCA)

The first patient I saw with a HEMS crew was a patient for whom early bystander CPR and paramedic resuscitation had led to a return of spontaneous circulation (ROSC). This patient only received one intervention from HEMS which the ambulance crew would not have been able to do: an arterial line to more closely monitor the post-arrest arterial blood gas (ABG) of the patient. This illustrated the reality that not all HEMS jobs would be major trauma patients who needed life-saving interventions that only HEMS could give; often, we were there to support colleagues from the ambulance service in continuing to do their jobs brilliantly, providing a safety net if the patient deteriorates and additional information like an ABG. I hadn't realised that in a straightforward medical cardiac arrest, prehospital critical care practitioners can sometimes offer better support after ROSC than during the arrest.

In contrast, a patient who I attended on a shift with NARS highlighted a different kind of support that a critical care paramedic can provide: choosing to not start ALS procedure on a frail patient with no known DNACPR. Whereas the paramedic crew who first attended the patient would have been obligated to begin CPR when this patient arrested, a critical care paramedic could make the decision in the patient's best interests that the unlikely chance of successful resuscitation was heavily outweighed by the potential injury and loss of dignity to the patient. I had been watching the patient's vital signs deteriorate on the monitor and mentally preparing myself to begin CPR in the back of the ambulance, so the CCP's call to not begin resuscitation caught me off guard, but the logic of his reasoning soon became clearer. We transported the patient to hospital, continuing only the minimally invasive intervention of bag-valve mask ventilations, and handed over to A&E staff. In the department, the patient was officially pronounced life extinct, and the respect and dignity afforded to their peaceful passing were in sharp contrast with the invasive ALS interventions I had initially imagined.



The final patient I saw on my elective was also an OOHCA, and I was confronted with the reality of what death in the community can look like for the loved ones left behind. We attended a cardiac arrest with resuscitation in progress, but the patient's outcome was bleak with an initial rhythm of asystole and no change in almost 30 minutes. The heartbroken reactions of the patient's family were a stark reminder that a scenario that prehospital clinicians see regularly at work is for someone else a completely devastating event which requires empathy and patience to guide them through. No one had prior experience of death themselves, but clinicians who have seen it many times are uniquely placed to support those experiencing its aftermath. The communication I saw between the doctor and the patient's family encapsulated this beautifully.



Norwich city centre from above

Trauma

I saw a wide range of trauma calls with HEMS, which I had expected to be the case. The first one I witnessed was an e-bike crash resulting in an open ankle fracture and a matching collarbone fracture. Our focus was on pain relief for the patient, including fracture stabilisation, and transport to hospital. In the ambulance, the doctor guided me through how to make a pre-alert call to the A&E we were headed to, which was a type of handover I had never done before. I continued by later handing over to A&E staff in person, which made me feel like a real part of the team. This call improved my confidence by miles because of how involved I was able to be, and thanks to the mentorship of the anaesthetist I was with.

While on shift with NARS, I also saw a traumatic cardiac arrest being managed on scene, something I hadn't seen in hospital for obvious reasons. The focused interdisciplinary working between ambulance, fire, police, and HEMS services drove home just how collaborative an effort prehospital care can be. After the call was over, as the most unwell patient had been sadly pronounced life extinct, the CCP led a hot debrief for the members of the various services who had responded. What struck me was the flat leadership structure of the discussion, and how all concerns and suggestions were encouraged and welcomed to ensure no one went home with lingering doubts about what could have been done differently.



Heat Emergencies

On my third shift, we had a longer and more complex callout which made the day feel packed by the end of only one job. The emergency alarm sounded near the end of our shift, and HEMS was called to a patient who was found seizing in their garden by concerned neighbours. During the helicopter ride to the patient's location, the HEMS clinicians discussed possible causes for the seizure, keeping the differentials broad due to limited information. We were informed en route that the patient's seizure was suspected to be caused by heat stroke; unsurprising given the relentless heatwave which had begun to engulf the UK that week. When we arrived on scene, the patient was being loaded into an ambulance for rapid transport to the nearest emergency department. In collaboration with the ambulance crew already attending, the priority was to initiate rapid cooling of the patient using ice packs, bottles of cold water, and

eventually, every fluid-containing vessel we could find in the back of the ambulance. The HEMS crew acted decisively, and their calm demeanour helped keep everyone on task as the patient was conveyed to hospital. After returning from that call, an hour or so after our shift had technically ended, I marvelled at how the quick thinking of the critical care paramedic to grab additional ice packs to bring with us to the job may have helped save this patient's life, and how much of a difference their professionalism made to managing a critical call.



Research, Training, & Professional Development

I worked closely with the RAID (Research, Audit, Innovation, and Development) team during my time with EAAA. The team leads the organisation's flagship research projects such as the ERICA arrest trial, which investigated the use of endovascular aortic balloon occlusion in cardiac arrest, and the BRAIN-FIRST trial, which uses novel technology to help diagnose bleeding in the brain. My research with RAID was an extension of the BRAIN-FIRST project, consisting of a service evaluation of the i-STAT Alinity, the device used for pre-hospital blood tests. Clinicians had anecdotally reported recurring problems with the device, such as test cartridge malfunctions or the device being outside of operating temperature range. I audited the documented instances of i-STAT malfunction on HEMSbase, the electronic patient record platform used by air ambulance trusts, to investigate the extent of this issue.

During my placement, I saw multiple patients with suspected or confirmed intracranial haemorrhage. Seeing these cases helped contextualise my research into the feasibility of the i-STAT Alinity as a prehospital tool for early recognition of brain bleeds, as I saw firsthand how a positive result helped influence transport decisions based on neurosurgical resources.

I was fortunate enough to have plenty of other opportunities for professional development, including attending the clinical debrief sessions where the EAAA consultants discuss previous cases and learning points from them. This was a great insight into how consultants weigh up decisions in slow time, and how learning from experience benefits more than just the clinicians who attended the call.

During my shifts, I also joined the crew members in running simulations to practice my emergency assessment, and specialist skills like intubation which I was keen to get more practice with. I found that while completing my simulated ABCDE assessments, I often forgot the critical care kit and interventions available in a HEMS context, being used to assessing patients with a different scope of practice as an EMR. These simulation trainings became increasingly helpful as I saw more real cases on my clinical shifts and continued to learn from the clinicians.

Other invaluable learning happened during and between shifts, chatting to the doctors and paramedics about their memorable or interesting cases, and what they had learned from them. For example, one of the CCPs I worked with had been a member of one of the six HEMS crews to respond to the Bedfordshire train crash, a major incident which involved over 160 patients. His reflections on the incident were invaluable, ranging from how unusual it was as a HEMS crew to be triaging many patients instead of caring for one critical ill patient, all the way to how the fentanyl lozenges carried by a different air ambulance service had made all the difference to patients needing analgesia with limited resources for IV medication monitoring.

Finally, I also had the chance to volunteer as a CPR teacher at the Duxford Air Show. EAAA holds outreach events throughout the year, often with a focus on community first aid awareness. It was brilliant to work with the dedicated volunteers to teach CPR to attendees of all ages and hopefully leave a positive impact on some small circle of the community I was fortunate enough to work in for a month.



Final Reflections

Although my elective has come to an end, my journey along the path of pre-hospital medicine is far from over. I've learned so much about how the world of PHEM operates from working with some of the best clinicians in the game as well as the incredible non-clinical teams who keep EAAA running, and I couldn't be more grateful.

Thank you to the RAID team who welcomed me into the office, especially to Kate for being a patient and supportive supervisor, and a massive thank you to Heather in operations for scheduling me in for as many shifts as physically possible. Special thanks to the HEMS clinicians I was lucky enough to learn from and see in action, as well as the incredible pilots.

Finally, thank you to the Faculty of Pre-Hospital Care for the opportunity to get involved with the coolest medicine I have had the privilege to witness, with amazing clinicians who were never too cool to welcome a medical student into their team. It's been a ride I will never forget.



