



Emergency Callout: New Technology to Enable Safer Patient Responses

Whether embedded on-board an ambulance or integrated into response stations, the next-generation of connected services are going to improve emergency care



A Sector in Trouble

How new technology will enable safer and more efficient patient responses for UK ambulance services

Across the UK, ambulance services face significant difficulties. Huge internal and external pressures on the NHS have caused a major knock-on effect for paramedics and technicians.

This has been regularly documented within the media; stories have recorded long queues of ambulances waiting outside Accident and Emergency departments waiting to handover patients, a situation that leads to delays in ambulance response times for 999 calls.

For the 14 organisations providing ambulance care in England, Scotland, Wales, and Northern Ireland, the short-term future looks tough.

As winter 2023-24 approaches, seasonal viruses such as flu, a spike in cases of Covid-19, and acknowledged issues such as bed blocking by those awaiting transfer to social care, each present a significant challenge to an already-struggling NHS.

The impact this has on the entire ambulance service is clear, whether for two-person crews working on a traditional vehicle or solo paramedics driving a Rapid Response Vehicle (RRV).

Away from the frontline, there are impacts behind-the-scenes too. Call handlers face life-or-death decisions on where to send a limited number of ambulances while concerns persist over ageing fleets, legacy technology, siloed Make Ready practices, loss or theft of expensive equipment, and poor stock management for consumables.

At a time when the UK government is looking to make efficiencies across its health and social care budget, even the cost of simply keeping an ambulance on the road is increasing – with high inflation hitting crew wages, fuel prices, and the cost of repairs.

However, advances in technology now herald a huge opportunity for public safety organisations to save money, improve response times, and ensure their ambulances are kept on-the-road for longer.

At Zebra, we have years of experience working with emergency services across the globe to transform their operations through digital software and mobile communication devices. Our experts have the knowledge, skills, and insight to deliver that for those working within the UK's ambulance services. This report into the challenges and solutions explains how.



Challenging Times Demand New Ways of Operating

Each ambulance service in the UK faces a common set of problems – all of which are solvable through new technology. The three most common and current issues are:

- Ensuring fleets are on-the-run and in operation for longer without delays
- Tracking and managing equipment, assets, and stocks of drugs and consumables
- Reducing costs, waste, and backlogs to ensure value for public money

Conditions for ambulance service workers and managers on the frontline, and in back office roles, are increasingly difficult day-to-day. Their leaders understand inaction is not an answer because the dangers to the public are real and present.

However, they are hamstrung by limited budgets and a lack of long-term workforce and operational planning by the NHS. Post-pandemic, the ambulance service is also still dealing with collating and clearing up wastage it faces from the overstocking of consumables at the height of Covid-19.

Stock control will always present a major challenge for this frontline area of healthcare.

Archaic systems for managing and ordering stock are all too often still carried out manually using a spreadsheet. Not only does this make managerial oversight complex while generating messy audit trails, for crews it means having too many items they don't need, and nowhere near enough of the items they do. This is a common picture nationally.

So, if the sector is to deliver value-for-money when spending tight public funds, this over and under stocking must be tackled. Theft and loss of medical kit also eats into tight budgets, whether expensive monitoring equipment is accidentally left behind at a scene or if on-board consumables are stolen when crews are busy with a patient and the vehicle is not in their view.

Make Ready teams certainly do a great job of ensuring ambulances set off with everything a crew will need in the field, but the system is not infallible. This critical role can take 45 minutes per vehicle each day to clean, prep, and restock it, and do a visual safety check.

With ambulances often in short supply, it is vital the Make Ready turnaround is as efficient and fast as possible. Technology can speed this up by documenting and tracking tasks.

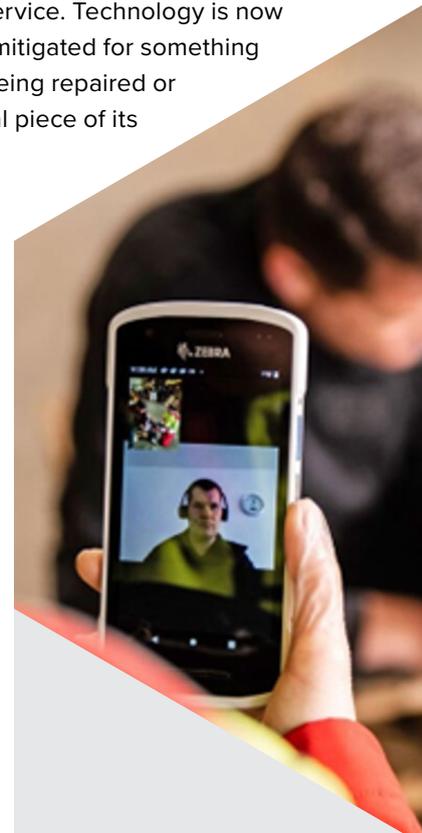
According to a Freedom of Information Act request made by CCS Europe Limited, 75% of ambulance services have no digital-led system to manage the availability and servicing of their critical equipment, their vehicles, and their Make Ready process.

CCS Managing Director Emma Strain says: “The need to explore new management solutions is clear from our FOI results but the rapid pace of events faced by the ambulance service understandably means its focus is mostly to deal with short-term issues and pressures as they arise.

But having ambulances out of action for any reason becomes a huge drain on the service. Technology is now available to ensure this can be mitigated for something simple such as when they are being repaired or cleaned, and also when a critical piece of its equipment is being serviced.”

Given every ambulance has a mandated list of 16 items it must carry to be operational, suddenly finding something is missing or broken can massively impact patient care, adds Strain. This is why digital solutions have been designed and are ready to be rolled out to help save time, money, and ultimately lives.

These new technologies can and will build greater levels of trust between crews and their management and crews and their patients over the long-term.





Discovering the Opportunities of Digital Transformation

For those working within procurement and logistics for the UK's individual ambulance services, the stress is all too real as the lives of millions of people rest in their hands.

However, there is evidence from so many other industries that proves how digital transformation can deliver real and tangible change at pace.

Within healthcare, the London Ambulance Service (LAS) is already on this journey. It has "smart vehicles" out on the roads of the capital that are making the job of crews and the treatment of patients far smoother. The first nine of these MAN vehicles came into service in April with 100 more on order.

Built in Germany, they are replacing older vehicles in the fleet and were designed after consultation with frontline crews to ensure they are suitable for the demands of caring for patients in the capital. A survey saw more than 400 clinicians submit ideas and suggestions for the new ambulances.

There are a number of critical areas where technology can provide support:

- Using tracking to offer more certainty that an ambulance has all it needs on-board – from consumables to drugs to medical equipment
- Saving time and money through 24/7 tracking and tracing to identify where a vehicle and its equipment is, through the uses of RFID tags
- Managing shift patterns and rotas via digital-based workflows and artificial intelligence – rather than spreadsheets – to get more ambulances out on-the-road
- Delivering critical information directly to ambulance crews in the field thanks to having rugged smartphone-style or tablet devices on-board
- Reducing the laborious administrative tasks faced by first responders on the frontline and throughout their second-line support network

The positive outcomes of digital transformation include:

- Stock ordered efficiently with item levels and expiry dates monitored in real time
- Clear digital records of drug prescribing amounts/locations to adhere to regulations
- Clarity offered to crews for ambulance maintenance and cleaning timelines
- Replenishment done by Make Ready teams using a digital checklist to reduce time
- Monitoring of specific parts of critical equipment to signal replacement or servicing
- Quickly locating where 'missing or lost' equipment can be 'borrowed' from

There is also another huge positive here for the UK's ambulance services. In a sector where morale can be low due to crew strain and pressure, these technological solutions can reduce frustrations and increase communication. The result is crews will feel more engaged, and leaders can demonstrate to them how they are cared for and considered.

Future-proofing Operations by Embedding New Solutions

Zebra has years of experience working with emergency services around the world; its asset management and mobile device technology is ready to be implemented and can be done so in a safe and speedy manner.

For those leaders in the UK's ambulance services who oversee budgets and/ or make decisions on logistics, the question can't any longer be 'should we do it?', instead it must be "when should we do it?"

Examples of actions that could be taken include:

Crews

Smartphone-style handhelds such as Zebra's TC27, Zebra Android Enterprise ET45 Healthcare Tablet, or a rugged ET65 are perfect additions to an ambulance's life-saving arsenal of equipment.

Linked to the cloud offering enhanced security, connectivity and sustainability over existing in use technology, they can send and receive critical information allowing crews to have actionable intelligence at their fingertips. They can also be used to track RFID tags on missing equipment. Importantly, the newest 5G-ready devices can run critical software applications out in the field such as using a 'packing app' to ensure bags are loaded with all the right kit.

Additionally, if an item is lost or stolen, crews can also easily and quickly locate a replacement via these devices, showing them where their nearest ambulance station is with the equipment they need.

Zebra's two-in-one ET85 is another piece of kit that will prove to be the first responder's best friend. Thanks to the physical keyboard that clips to the tablet, crews can use it to do paperwork and reports during downtime between calls without having to return to base.

For leaders having to make tough choices, it is vital their personnel have purpose-built tools that are up to the task to respond to medical emergencies when lives are on the line.



Vehicles

Replacing an individual ambulance is costly, meaning replacing an entire fleet is seen as a pipedream – but there is a middle ground available thanks to the latest digital technology.

Introducing a Zebra 5G tablet device to the vehicle and docking it on the dashboard will ensure critical information is delivered in real time to both paramedic and technician ahead of, during, and after an emergency.

RFID tagging of equipment and controlled drugs pouches can ensure full track and trace to show its location and monitor its use. Looking ahead, facial recognition can be utilised to log who is taking these pouches out of smart cabinets built into fleets.

A smartphone-style device, such as those offered by Zebra, could also run apps to show vehicle status, reducing pre-shift checks to seconds and getting an ambulance on-the-run faster than the average 30 minutes for Category 2 incidents in 2023/24.



Five Focus Areas to Consider in 2024



Introducing 'digital champions' across the ambulance service nationwide and offering clarity over who is accountable for operational digital change.



Establishing a joined approach centred on patient outcomes. To support digital systems between ambulance trusts and Emergency Department hospital handovers and treatment.



ZEBRA

Working with a trusted partner such as Zebra to deliver return on investment thanks to savings made, which can then be devoted to providing better healthcare



Learning from other NHS Trusts in the UK - alongside interagency operability with the Police and Fire services – and studying best practice internationally



Taking the public and clinicians on the same journey – there will be new things to learn but implementing new technology will save lives and deliver positive change

It has already been demonstrated how connected services have improved emergency care within the NHS and there is tremendous scope to improve this further.



Welcome to the Virtual Ward

Video technology is helping speed up patient recovery while freeing up hospital beds for patients that need them most.



Virtual wards (also known as hospital at home) allow patients to get hospital-level care at home safely and in familiar surroundings.

Just as in hospital, people on a virtual ward are cared for by a multidisciplinary team who can provide a range of tests and treatments. This could include blood tests, prescribing medication or administering fluids through an intravenous drip.

Patients are reviewed daily by the clinical team and the 'ward round' may involve a home visit or take place through video technology. Many virtual wards use technology like apps, wearables and other medical devices enabling clinical staff to easily check in and monitor the person's recovery.

Making the Right Call on Life Saving Connections: the Tele Doctor Story

A constant operational challenge for emergency services is getting the right people in the right places at the right time. Expertise and equipment must be delivered in the optimal timeframe to offer the best possible care and thanks to mobile computing and 5G capability, new opportunities are emerging.

The Challenge

- The number of emergency callouts are growing year-on-year
- Demand on highly-skilled emergency personnel is constantly increasing
- Labour shortages within the ambulance service are becoming more common
- Congestion and driving conditions mean it can take longer to get to a scene

The Solution

- Telemedical support instantly connects an emergency team at the scene to an additional emergency doctor (known as the Tele Doctor)
- Paramedics and/or an emergency doctor in the field are able to communicate in real time with their additional colleague, regardless of location
- Crews can integrate outside professionals into their ongoing care process with audio-visual communication (image and sound) primarily used as a method
- Ambulances can be equipped with robust 5G-capable ET85 tablets from Zebra with crews also given 5G-capable TC58 touch computers to communicate from
- Body Worn Cameras connected to the emergency doctor via all communication channels outside of the ambulance vehicle

The Benefits

- Maximising the use of limited resources in the face of increasing emergency callouts
- Optimising deployment time, particularly in rural areas, of the right medical skills
- Modernising information management and recording across the emergency services
- Managing more effectively the mix of emergency calls, triaging importance
- Ensuring a Tele Doctor can take on light and less complex tasks
- Allowing emergency doctors on the ground to focus on more demanding tasks



To learn about how we can improve health outcomes together, visit the dedicated Ambulance section of our website:
<https://www.zebra.com/gb/en/solutions/industry/public-sector/ambulance.html>



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