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Mr Graeme Irvine
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Walthamstow Coroner's Court
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28 April 2020

Dear Sir

Regulation 28; Prevention of Future Deaths Report (PFD) arising from the inquest into the death of Mitica MARIN

Thank you for your Regulation 28 Report dated 12th March 2020 setting out your recommendations for consideration.

I would like to begin by expressing my sincere condolences to the family of Mr Marin.

I will address the matters set out in the PFD report, as directed to the London Ambulance Service NHS Trust (LAS) as follows:

Delay in defibrillation of Mr Marin

It was accepted in evidence heard at the inquest that Paramedic A did not recognise, in a prompt manner, that Mr Marin was in ventricular fibrillation (VF) (a cardiac rhythm that may respond to defibrillation) and thus a defibrillation shock was not delivered immediately.

A serious incident investigation was undertaken into the circumstances that gave rise to this incident. The investigation found two causative factors were that Paramedic A, having attached Mr Marin to the Lifepak 15 defibrillator (LP15 defibrillator), did not then look at the screen of the LP15 defibrillator to observe the rhythm displaced and as such did not observer the VF and thus did not charge the LP15 defibrillator and deliver a shock in manual mode. Further, Paramedic A did not turn the LP15 defibrillator into automatic external defibrillator mode (AED) which would have initiated an audio and visual prompt to cease chest compressions and stand clear while the LP15 defibrillator analysed the rhythm and charged.

The investigation found the factors contributing to this omission were that this was Paramedic A's first shift as a solo responder and the significant stressors of managing a busy and emotionally charged environment, as the only clinician on scene in the initial stages. Paramedic A gave evidence that she focused on specifically coaching those present to assist with chest compressions and this caused her to become distracted from the LP15 defibrillator.

Paramedic A spoke in evidence of her immediate reflective practice and learning, which was supported by her clinical managers, and was able to demonstrate how that was able to put it into action just a few days later when managing another patient in cardiac arrest.

Paramedic A described how undergoing this reflection and further training has helped reinforce the importance of her training on the order of priorities when managing a patient in cardiac arrest, in a busy and emotional setting when working as a solo responder.

When asked what she would do differently going forward, Paramedic A cited the importance of putting the LP15 defibrillator into AED mode as a priority and the focus being on defibrillation, as the training for paramedics and ambulance crews sets out.

Paramedic A cited the training actions the LAS had undertaken around the fundamental importance of prompt defibrillation, where clinically indicated. In addition to this, the LAS has produced clinical update material to mandate that on all cardiac arrests the LP15 defibrillator should initially be placed in AED mode.

A comprehensive update bulletin 'Cardiac Care Guidance' dated 28th October 2019 was produced to this effect, attached for reference.

This has also been incorporated this into the core skills refresher (CSR) training which all clinical staff undergo in the LAS.

LAS thematic analysis of delayed defibrillation

It was also recognised that the delay in defibrillation of Mr Marin was not an isolated incident for the Trust. In order to address incidents of delayed defibrillation, the LAS undertook a review of similar cases and completed a thematic analysis report in December 2019. The updated Action Plan from this report is attached for your reference.

It is worth noting that the LAS aim to download data from defibrillators and analyse this to improve the care of patients in cardiac arrest. It is through this practice that the LAS have often been able to detect any delay in defibrillation. We would caution any comparison of LAS practice against organisation who do not undertake such audits.

The thematic analysis found that a contributing factor to the circumstances where the LP15 defibrillator is not put into AED mode was that the LP15 defibrillator model defaults to manual mode before use. It is therefore necessary for the user to deliberately put the LP15 defibrillator into AED mode when the circumstances indicate.

You heard live evidence from two LAS staff, the Clinical Practice Development Manager Critical Care, who provided a clinical opinion and also spoke in part to the thematic analysis. You also heard from a Quality, Governance and Assurance Manager who provided evidence on the serious incident investigation, findings, individual reflection and learning and wider Trust learning as well as speaking on the details of the thematic analysis, action plan to continue work to mitigate the risks of not only the circumstances that gave rise to the delay when treating Mr Marin, but taking into account other contributory factors.

Can the LP15 defibrillator be set to AED mode as a default?

You asked the question whether, if the LP15 defibrillator were to be set to automatic mode by default it would mitigate the risk of a delayed defibrillation, particularly in the circumstances that arose during the resuscitation of Mr Marin.

Our Clinical Practice Development Manager gave evidence setting out that it was technically possible for the LP15 defibrillator to be set to AED mode as default, which would require the user to actively have to switch it off when managing a patient who did not require defibrillation. He went on to explain that this option has been considered by the Trust's medical directorate but the evidence gathered in consideration of the best option to mitigate against clinicians being distracted and/or overwhelmed managing multiple tasks at a busy scene, indicates that to set the LP15 defibrillator to AED mode as default was not overtly practical for day to day use.

He cited the rationale that the LP15 defibrillator in the pre-hospital setting is used not only for defibrillation but as a multi parameter patient monitor including oxygen saturations, blood pressure and ECG and as such is used in this function many times per day by ambulance crews. These functions cannot be used in the main when the LP15 defibrillator is in AED mode. If the machine defaulted, when turned on, to AED mode it would issue a verbal prompt to attach the defibrillation pads and analysis of the rhythm.

The LAS has sought the advice of colleagues worldwide as the benefit of this potential change it was felt given the numerous times a shift the monitor is used as a routine clinical assessment tool, it would simply become a matter of 'muscle memory' that the monitor is turned from AED mode to manual mode. It was felt that unintended consequences of such a change would be in what are the comparably rare circumstances of a cardiac arrest we would find the ambulance clinicians turning the monitor to manual mode as this is what they would do on every other occasion it is used.

Further to this the LAS is minded of the potential to heighten patient anxiety by the verbal prompts when the monitor is turned on in routine circumstances. We would like to provide assurance that the LAS has considered this decision in some detail and assessed the potential benefits and consequences of such a change.

Mitigating the risks of delayed defibrillation – what are the LAS doing?

Taking forward the actions identified in the SI report for Mr Marin together with the Trust wide actions detailed in the thematic analysis, evidence was provided on the following:

Continuing to identify risks

The Trust have taken significant steps in downloading our LP15 defibrillator data and this is one way that we are able to identify incidents of delay in defibrillation. The Trust set its own target of 20% which we exceeded and as such we increased it to 30%. We are currently on track at around 23%. We are attempting to lead the way with ambulance trusts in respect of these download figures and probably more importantly being able to review this data, but this is a work in progress that we are always seeking to improve.

There is a further review planned to build on the finding of this thematic analysis and to monitor the effectiveness of the actions that were identified and put into practice. We will be aiming to update our findings based on the continuing evidence we are collating. At this point in time we are unable to commit to a fixed timescale for this, in light of the severe pressures the Trust is currently managing due to the unprecedented demand, in relation to the COVID-19 pandemic response, which will certainly be ongoing for some time.

As a Trust we are proud of our instances of incident reporting, including self-reporting. This has improved significantly in recent years and the Trust has focused on providing a supportive environment to identify lessons and learn, both individually (as evidenced by Paramedic A, who self-reported the incident) and as an organisation.

Practical measures

From August 2019 large yellow indicators (stickers) with 'push analyse for AED mode' were placed on LP15 defibrillators to act as an alert reminder to users to switch the machine into AED mode. This was communicated to staff via station management as well an update in our Routine Information Bulletin (RIB) which is emailed to all staff and also available on the intranet. We have also sought to ensure that devices used in training reflect this change.

Training

There is an ongoing focus on training and communications with staff. Paramedic A spoke to this effect in her evidence that bulletins, intranet communication, emails and clinical updates in our RIB are a good source of refresher training.

This training has also been reiterated in our core skills refresher (mandatory) training program, which runs quarterly for all operational staff. CSR 2019.2 and 2019.3 included refresher training on resuscitation including AED mode and order of priorities on scene.

Our Quality, Governance & Assurance Manager explained in evidence that training now includes clear and unambiguous priorities to be undertaken at a cardiac arrest thus aiming to reduce the opportunity for errors in this first few minutes in managing a cardiac arrest. This has focused on ensuring that by having clear priorities the 'mental bandwidth' of the clinicians is maximised to ensure they can more effectively deal with the challenges they are presented with on scene.

Human Factors Training

Further to the evidence you heard in respect of training, in addition the LAS is continuing to progress 'human factors training' to focus on optimising staff performance through better understanding of behavioural interactions with each other and the environment. This is especially pertinent for operational staff who deal with chaotic, emotional scenes and where no two scenes are the same.

We have started to train clinical education and standard tutors to enable them to train front line staff through CSR program, to ensure human factors are included in the key messages. To date, five members of staff have attended a 'Train the Trainer' program for human factors which involved them taking a lead role in being able to apply the principles to investigations and education programs.

In particular, at each of our 'Train the Trainer' sessions for the CSR program, we ensure human factors training is included in the key messages so it is addressed by tutors at each session. We included a particular model to help with communications at scene which was included in our CSR 2017 module.

A further six staff are due to undertake the 'Train the Trainer' program. We also have a full day of training in areas specific to human factors (communication, active listening, speaking up as part of a team, and how bandwidth impacts decisions and communications) which we hope to be in a position to roll out in July/August

2020 for all tutors and a large number of clinical team managers and advanced paramedic practitioners. This timescale will be kept under review, given the ongoing pressures that the Trust is currently facing.

Procurement of defibrillators

Your report also requests that I address the matter of procurement decisions regarding the future supply of defibrillators.

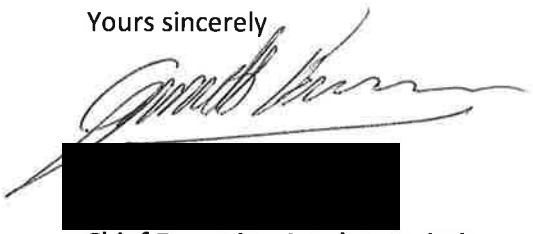
Efforts are being made to investigate devices which have in-built technology to potentially bypass the need for a clinician to have to remember to put the device in AED mode (for example, a device that would automatically switch the device to AED mode when defibrillator pads were applied). At this point in time, we have not located a specific device on the market with this functionality which is also sufficiently robust for the ambulance market.

The available options for procurement of defibrillators will continue to be reviewed as part of the processes for tender for procurement of clinical equipment. Where we have such contacts as one of the world's largest users of defibrillators we have encouraged manufactures to consider such options in future development.

Finally, I very much hope this response helps in setting out the ongoing work that the LAS are engaged with to ensure staff are fully up date and trained in the importance of AED mode and defibrillation as the priority and the ongoing work to further develop and monitor trust wide learning and communicate this to our staff.

We will continue to further our work following the thematic analysis in an ongoing effort to mitigate the risk of delayed defibrillation. As always, we endeavour to contribute to national and international discussions to seek out the best available options for equipment and welcome the consideration of our stakeholders to this matter.

Yours sincerely



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Chief Executive, London Ambulance Service NHS Trust