


## CORRESPONDENCE

## A national survey of current practices in the preparation of pre-hospital emergency anaesthesia drugs

Ian Sheldrake\*  and Matthew Kerton

University Hospital Southampton NHS Foundation Trust, Southampton, UK

\*Corresponding author. E-mail: [ian.sheldrake@nhs.net](mailto:ian.sheldrake@nhs.net)

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Editor—Pre-hospital emergency anaesthesia is commonly performed by national emergency medical services. Effective pre-hospital care involves undertaking critical interventions safely and efficiently to avoid unnecessary delays in hospital transfers that can worsen outcomes.<sup>1</sup>

Anaesthesia and tracheal intubation are often indicated in patients who are critically unwell or injured. There is significant risk associated with performing these life-saving interventions in the pre-hospital environment, which can prolong ‘on-scene’ times.<sup>2,3</sup> Alongside the risks of in-hospital remote site anaesthesia, this environment can pose additional challenges to delivering safe care in commonly austere weather conditions. Poor lighting, noise, and the presence of multiple casualties potentially needing care adds to the complexity. Pre-hospital organisations have diligently constructed standard operating procedures in order to mitigate these risks.<sup>4</sup>

There are significant benefits to having pre-prepared emergency anaesthesia drugs and equipment, including reduced scene times, reduced risk of drug errors, and reduced cognitive load on operators.<sup>5,6</sup> This has led to a growing trend nationally to have drugs pre-prepared in one form or another. Prefilled syringes are manufactured products that are prepared by local hospital pharmacies or independent providers. Pre-drawn drugs are syringes that are filled by clinical teams before arrival at a scene. We aimed to evaluate the current practice regarding preparation of pre-hospital emergency anaesthesia drugs across air ambulance organisations in the UK. The survey was distributed to all organisations via the National Helicopter Emergency Medical Service Research and Audit Forum (NHRAF) network. Our questions aimed to determine primarily if drugs were drawn up at the scene, pre-drawn at the beginning of shifts, or supplied in manufactured

prefilled syringes. We were also keen to explore the procedures, rationale, and experience with drug preparation in individual organisations.

There were 15 respondents out of a possible 22 organisations (68%). More than 60% ( $n=9$ ) draw up drugs on scene, 20% ( $n=3$ ) pre-draw drugs at the start of each shift, and 20% ( $n=3$ ) are supplied with manufactured prefilled drug syringes. Cost ( $n=6$ ) and wastage ( $n=5$ ) were cited as the primary reasons for not using manufactured prefilled syringes, with pharmacy governance issues ( $n=3$ ) also featuring. Smaller organisations commented that their pre-hospital emergency anaesthesia case numbers would not justify the cost or wastage of prefilled or pre-drawn drugs. Ketamine and fentanyl were the main drugs being pre-prepared, and rocuronium and metaraminol were also commonly prepared.

There is clearly an eagerness to introduce prefilled syringes, with 85% ( $n=11/13$ ) of respondents feeling their use would be beneficial in their organisations. The belief that prefilled drug syringes would reduce scene times and improve safety was a common theme to emerge. Additionally, prefilled or pre-drawn drugs are likely to prevent inadvertent syringe swaps, which was identified as a significant area of risk in NAP5 (5th National Audit Project on Accidental Awareness During General Anaesthesia: A Summary of Main Findings and Risk Factors).<sup>7</sup> However, sourcing them is problematic and costly, with some organisations reporting previous supply chain issues causing operational disruption.

Arguably, routinely drawing up pre-hospital emergency anaesthesia drugs offers many of the benefits of manufactured prefilled syringes in terms of scene times, safety, and minimised cognitive load. Two-person checks with drawing up in slow time at the start of a shift should ensure the correct drug is in the correct syringe. Sterility is also likely to be much

better when drawing up drugs on base rather than at the scene. The main disadvantage is shelf-life, with most manufactured prefilled syringes good for 3 months after production, compared with pre-drawn syringes which should be replaced at least every 48 h. Ketamine and fentanyl are known to be stable under standard storage conditions if protected from light. Rocuronium has 'ensured stability' for at least 1 month after being drawn up into a 10 ml BD Plastipak syringe.<sup>8</sup> We have been reassured by the successful use of prefilled and pre-drawn drugs by other helicopter emergency medicine services nationally and internationally without issue.

Having pre-hospital emergency anaesthesia drugs prepared in advance is increasingly common nationally, and in those organisations not already using them there seems to be a definite appetite for change. The findings of this survey contribute to a change of practice to using pre-drawn syringes of fentanyl, ketamine, and rocuronium within our own organisation. Drug dates are checked and drawn up in the drugs room by the critical care team with a two-person check. The pre-hospital emergency anaesthesia pouch is asset tagged, and the unique code recorded in the controlled drugs book. The expiry time and date of the drugs (24 h later) is clearly written in the book and on the asset tag. These are then signed by both clinicians. If used, the patient details are recorded in the controlled drug book. If the pre-hospital emergency anaesthesia pouch is opened at the scene but the drugs not used, they should be wasted. Luer-lock syringes with white plastic bungs are used to optimise sterility. We do not pre-draw propofol, as this is an excellent medium for microbial growth, unlike the aforementioned drugs. We are cognisant of potential drug supply issues that have occurred, and will likely occur again in the future, and the resultant obligation to avoid wastage during these periods. We have a system in place to alert us to drug scarcity, and would revert back to drawing up drugs on scene were this to occur.

## Declaration of interest

The authors declare that they have no conflicts of interest.

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