



# Is parenteral adrenaline used unnecessarily in the treatment of asthma patients in the pre-hospital setting?



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## Introduction

With the rise in cases of asthma worldwide more ambulance clinicians have found themselves responding to patients presenting with varying levels of asthma attack. The clinician's ability to assess and treat accurately based on current guidelines is imperative, but with several conflicting guidelines can the appropriateness of the treatment be ascertained? Within the UK the British Thoracic Society (BTS); National Institute for Health and Clinical Excellence (NICE) and Scottish Intercollegiate Guidelines Network (SIGN) have removed adrenaline from their asthma management guidelines. However the Joint Royal Colleges Ambulance Liaison Committee (JRCALC) has continued to include adrenaline as a first line drug for the pre-hospital treatment of asthma. Has their reluctance to remove adrenaline resulted in it being used excessively by ambulance crews?



## Materials and Methods

All asthma related Patient Clinical Records (PCR) over a 12 month period (October 2012 – September 2013) were collated from within one UK ambulance service. Those PCRs where patients received adrenaline as part of their treatment regime were isolated and the data provided was then reviewed with a specific focus upon the presenting condition and the corresponding drug therapy provided.

For reference the outlines of asthma presentation specified within the UK Ambulance Service Clinical Practice Guidelines (2006) are:

| Life Threatening  | Acute Severe  |
|---|---|
| <ul style="list-style-type: none"> <li>Exhaustion</li> <li>Confusion</li> <li>Coma</li> <li>Silent Chest</li> <li>Cyanosis</li> <li>Feeble Respiratory Effort</li> <li>Bradycardia</li> <li>Hypotension</li> <li>Peak Flow &lt;33% of predicted best value</li> <li>SpO2 &lt;92%</li> </ul> | <ul style="list-style-type: none"> <li>Unable to complete sentences in one breath</li> <li>Respiratory Rate &gt;25</li> <li>Pulse &gt;110 bpm</li> <li>Peak Flow 33% - 50% of predicted best value</li> </ul> |

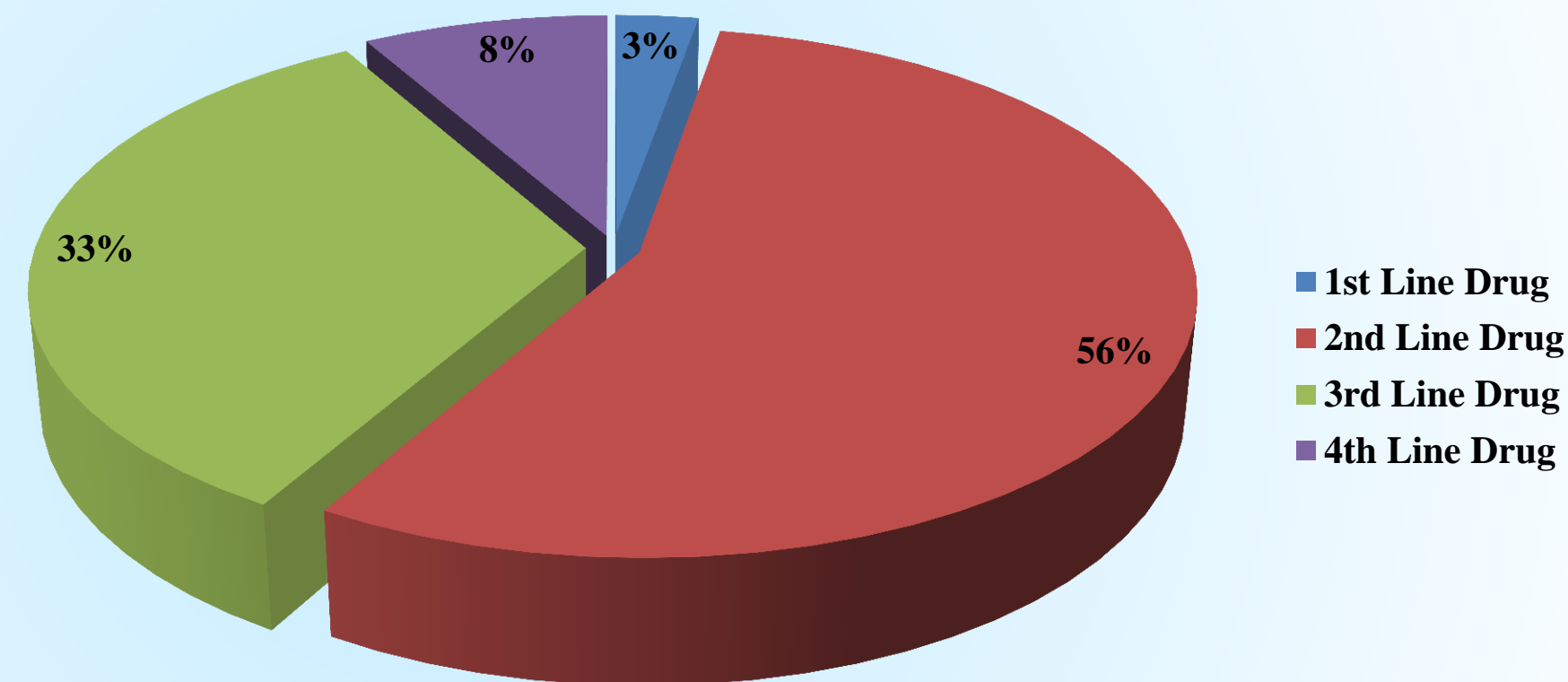
## Results

**3,217 asthma calls attended over 12 months. Adrenaline was administered to 36 patients (1.1%)**

**Of the 36 patients, 17 (47.2%) presented with an Acute Severe attack and 19 (52.8%) with a Life Threatening attack**

**Fig 1. The point at which Adrenaline was administered as part of the drug treatment regime**

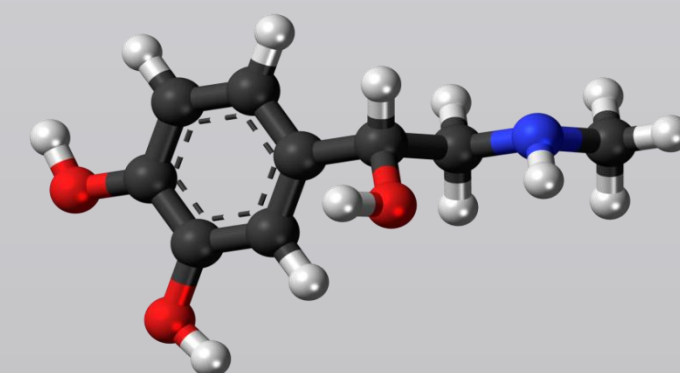
- One patient had adrenaline administered as a 2<sup>nd</sup> line drug by their school prior to the ambulance arriving. Ambulance guidelines do not support adrenaline being used for children suffering an asthma attack so in this case it would not have been administered. However this asthmatic episode seems secondary to an anaphylactic reaction.
- One patient administered their own adrenaline after the crew had arrived as it was part of their normal treatment for Brittle Asthma. This would have likely been administered by the crew anyway.



**Why has parenteral adrenaline been removed from BTS, NICE & SIGN guidelines, but been retained by JRCALC?**

**The reason for this was the limited drug therapy options available to paramedics for the treatment of asthma..... it was felt that in a patient with failing ventilation despite nebuliser therapy adrenaline would be the only suitable option.**

Mark Millins, AACE



**IM or SC adrenaline in adults would run the risk of adverse cardiac risks.....IM/SC adrenaline remains a possible option in extremis when all other therapies have failed – but this is not 'evidence based.'**

Sally Welham, BTS

## Conclusions

This study demonstrates that although parenteral adrenaline is within the JRCALC asthma guidelines, ambulance clinicians do not use it unnecessarily. Instead this research identifies that it has been solely administered to asthma patients who are severely compromised and then only as part of a stepwise approach.

Further research could be undertaken to ascertain whether all asthmatic patients who require adrenaline actually receive it as part of their treatment regime. In addition, questions should be asked as to whether the assessment techniques employed by ambulance clinicians to diagnose the severity of asthma attacks are sufficiently robust; and, also, whether they use them consistently and effectively in the clinical setting.



## References

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