



Letter to the Editor

Hospital doctors' knowledge of adrenaline (epinephrine) administration in anaphylaxis in adults is deficient

Sir,

Recently a critical incident occurred in a NHS trust in the North of England. A junior doctor was instructed by his consultant to administer 1 mg of adrenaline/epinephrine intravenously, to an alert and not haemodynamically compromised 45-year-old patient with anaphylaxis (due to receiving an intravenous antibiotic). The patient suffered from transient coronary vasospasm with a subsequent troponin rise, attributed to the intravenous adrenaline.

Detrimental effects of incorrect or inappropriate adrenaline administration have been described previously.^{1,2} Approximately half of the fatal anaphylactic reactions recorded in the UK each year are iatrogenic and the median time to cardio-respiratory arrest for iatrogenic reactions is 5 min.¹ This underlines the importance of the knowledge of the correct route and dosage of administration of adrenaline/epinephrine, for all hospital doctors of all grades.

We therefore conducted a short survey regarding the hospital doctors' knowledge of adrenaline administration for anaphylaxis in adults in this trust.

A convenience sample of 161 of 325 hospital doctors, at both junior and senior level, working in General Medicine, General Surgery, Orthopaedics and Accident and Emergency (A&E) on three different sites of a large District General Hospital NHS Trust, were interviewed per direct questioning, with a seven question proforma. Distribution of grades and specialties and answers regarding administration route and dosage use are summarized in Table 1.

Our results showed that:

68.9% ($n=111$) of hospital doctors would not choose the recommended route of administration for adrenaline/epinephrine, 62.1% ($n=100$) of hospital doctors would either not know the dosage to use or choose an incorrect dose of adrenaline/epinephrine, and only 15.5% ($n=25$) of hospital doctors would administer adrenaline/epinephrine as recommended by the UK Resuscitation guidelines from 2008.³

To our knowledge, this is to date the largest survey of hospital doctors in four specialties, and the first including a representative percentage of senior grades (51% of 161 doctors), regarding the knowledge base of adrenaline/epinephrine administration for anaphylaxis in adults. Our results are similar compared to a UK study assessing mainly junior doctors ($n=95$; 16.8% answered correctly) and a New Zealand study assessing mainly House Surgeons and few Middle Grade doctors ($n=91$; 20% answered correctly), both from 2007.^{4,5}

How can this situation be improved?

Here are a few propositions:

Table 1

Adrenaline administration in adults with anaphylaxis: answer summary ($n=161$).

	Junior doctors	Senior doctors	Medical	Surgical/ Orthop/A&E
<i>n</i>	78	83	80	81
%	48.4	51.6	49.7	50.3
Administration route:	IM	SC	IV	DK
<i>n</i>		128	19	13
%		79.5	11.8	8.1
IM administration site	TGH	DLT	GLT	DK
<i>n</i>		50	35	8
%		31.1	21.7	5.0
Dosage	<500 mcg	500 mcg	1 mg	DK
<i>n</i>	7	61	25	68
%	4.4	37.9	15.5	42.2

Combined correct dosage and injection route and site, $n=25$ (15.5%).

Glossary: Junior doctors: Foundation Year 1 ($n=30$); Year 2/Senior House Officer/Specialty Trainee Year 1+ Year 2 ($n=48$).

Senior doctors: Consultants ($n=41$); Specialist Registrars and equivalent ($n=42$).

A&E: Accident and Emergency; SC: subcutaneous; IV: intravenous; IM: intramuscular.

TGH: thigh muscle (antero-lateral); DLT: deltoid; GLT: gluteal; DK: don't know; NR: not recorded.

1. Introduction of "anaphylaxis packs" with pre-filled syringes of adrenaline/epinephrine and clear user instructions to be placed on every ward/resuscitation trolley.
2. More emphasis should be placed on the recognition and treatment for anaphylaxis in the multiple courses for attending to critically ill patients (ALERT, IMPACT, ALS, ATLS, etc.)
3. Include training of anaphylaxis guidelines in junior doctor's inductions to a trust.
4. The formation of an "anaphylaxis task force" in each trust consisting of a multi-disciplinary team of resuscitation officers, acute care/critical care outreach nurses, pharmacists, doctors, etc., with the aim to promote the knowledge of anaphylaxis treatment.

Knowledge of hospital doctors of all grades, in both medical and surgical specialties, regarding adrenaline administration for anaphylaxis seems (still) deficient. Our perception is that urgent attention needs to be paid to this serious issue.

Conflict of interest statement

We have no conflict of interest.

References

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