

Development of Local Pathways for Follow-up of Suspected Perioperative Anaphylaxis

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Abstract

Aims

This project aimed to enhance staff awareness, documentation, and follow-up of suspected perioperative anaphylaxis through the implementation of guidelines and education.

Methods

The first intervention involved the development of local anaphylaxis investigation guidelines. An anaphylaxis investigation pack was also created. This included a referral form and template letters for patients and their general practitioners. To prevent loss to follow-up, a new local follow-up pathway was established. This pathway included a dual referral process; patients were referred both to the immunology centre and to our local anaesthesia clinic. A departmental education session was provided. Staff surveys were conducted pre- and post-intervention.

Results

Referral form location awareness improved from 3/14 (21%) to 6/16 (37.5%). Awareness of mast cell tryptase testing remained high (14/14 [100%] pre- vs 15/16 [93.75%] post-intervention), with improved knowledge of correct sampling timing (10/14 [71%] to 13/16 [81.25%]). However, recognition of the correct sample tube colour remained low (3/14 [21%] to 4/16 [25%]), and understanding of required referral documents decreased (2/14 [14%] to 1/16 [6.25%]).

Discussion

This project highlights the challenges in maintaining staff awareness of the referral process. While targeted interventions improved knowledge in specific areas, overall retention of key details was limited. Ensuring clear, accessible guidelines and implementing a reliable follow-up system are essential to safeguarding referrals.

Introduction

Perioperative anaphylaxis is a rare but potentially fatal event, occurring in approximately 1 in 10,000 anaesthetic procedures¹. Prompt identification, appropriate acute management, and comprehensive follow-up are essential to prevent recurrence and optimise patient safety. All patients with suspected perioperative anaphylaxis should be referred to immunology services for investigation. However, the process of investigating and following up on suspected perioperative anaphylaxis can be fragmented, leading to incomplete referrals, and missed diagnoses.

Anaesthetists may encounter perioperative anaphylaxis infrequently, with an estimated exposure of one case every 7.25 years². This rarity, coupled with frequent turnover in hospital staffing, increases the risk of missed referrals and incomplete documentation. Not all hospitals have local access to immunology consultation. Traditionally, the referral process relies on paper-based communication with external immunology centres, requiring multiple administrative steps that may fail due to logistical challenges. Thus, the referral and follow-up rates at our institution are unclear. This study aimed to enhance the perioperative anaphylaxis investigation pathway by establishing a structured and accessible referral and follow-up process, ensuring that patients are both referred to immunology and subsequently reviewed by the anaesthesiology team.

Methods

This project was conducted in a large teaching hospital with a high turnover of non-consultant hospital doctors (NCHDs). It was approved by the hospital audit and quality improvement committee (reference number AUQI 1/24/27). The aim was to improve awareness, documentation, and follow-up of perioperative anaphylaxis cases. Participants were informed of the purpose of the project and were invited to undertake a baseline assessment using an electronic pre-intervention survey (Microsoft Forms, Microsoft, 2024) to evaluate staff familiarity with the local anaphylaxis referral process, documentation requirements, and existing guidelines for the management of suspected perioperative anaphylaxis.

Following the baseline assessment, a series of structured interventions were introduced. The first intervention involved the development of local anaphylaxis investigation guidelines (Figure 1). These guidelines were designed to standardise the investigative process by outlining clear, step-by-step instructions for referral, documentation, and follow-up procedures. The goal was to ensure consistency of practice across the department and to promote adherence to national recommendations.

The second intervention was the creation of an Anaphylaxis Investigation Pack, available in both hard and soft copy formats. This comprehensive pack included a referral form for the immunology centre, template letters for patients and their general practitioners (GPs), and a Quick Reference Handbook (QRH) (Association of Anaesthetists) outlining the immediate management of bronchospasm and anaphylaxis³. A copy of the newly developed local guideline was also included. To ensure accessibility, the investigation pack was made available in the post-anaesthetic care unit (PACU), on the hospital's internal shared drive, and through the departmental mobile application.

To strengthen patient safety and prevent loss to follow-up, a new local follow-up pathway was developed as the third intervention. This pathway introduced a dual referral process, whereby patients were referred both to the immunology centre and to the anaesthesia clinic. This dual system provided an additional layer of safeguarding, ensuring that each case of suspected perioperative anaphylaxis was appropriately investigated, reviewed locally, and documented. Investigation outcomes were recorded in both the anaesthesia electronic record (Centricity) and the hospital-wide electronic patient record (Patient Centre), providing cross-specialty visibility for surgical, medical, and emergency teams.

The fourth component of the initiative involved departmental education. A structured teaching session was delivered to the anaesthetic department, outlining the new referral and follow-up guidelines, and highlighting the contents of the investigation pack. Due to the challenges of shift work and frequent staff rotation, attendance was limited; therefore, emphasis was placed on the use of the guidelines and online access to promote continued education and sustainability of the intervention.

Following NCHD changeover, the new cohort of doctors received the above interventions and then the post-intervention survey was conducted. This survey assessed the effectiveness of the implemented interventions by measuring knowledge retention, staff awareness, and compliance among a new cohort of anaesthetic staff.

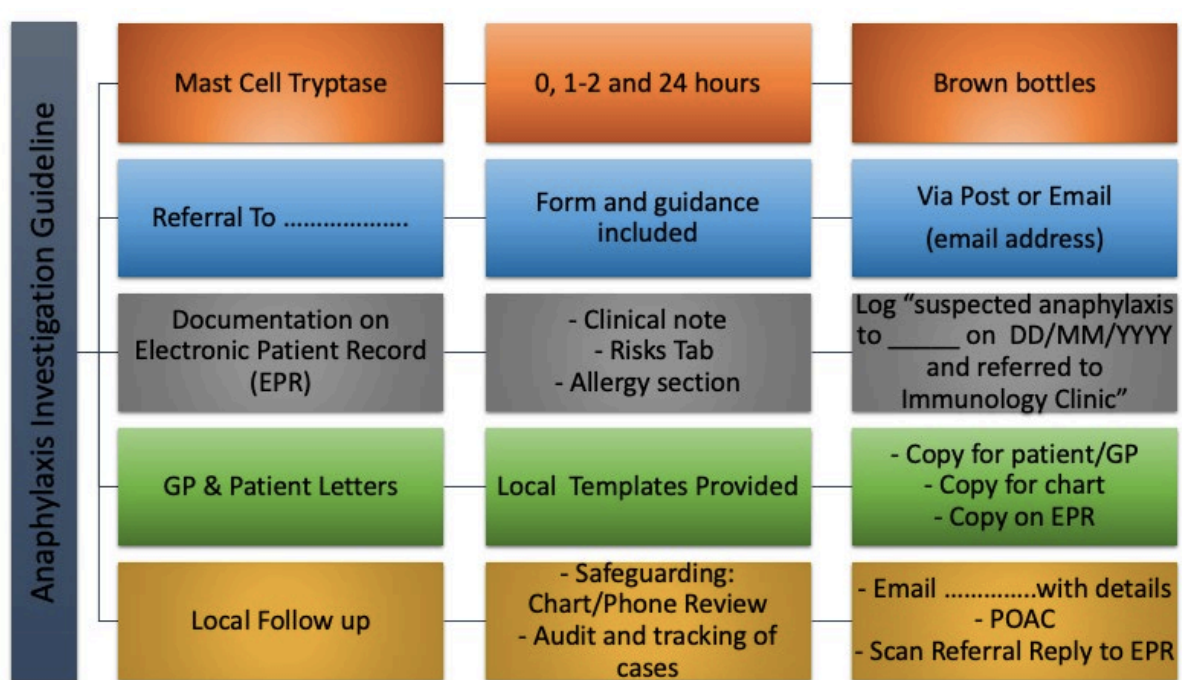


Figure 1: Novel local guideline for referral for anaphylaxis investigation

Results

A total of 14 pre-intervention and 16 post-intervention surveys were completed (response rate ~25%). The key findings are summarised in Figure 2.

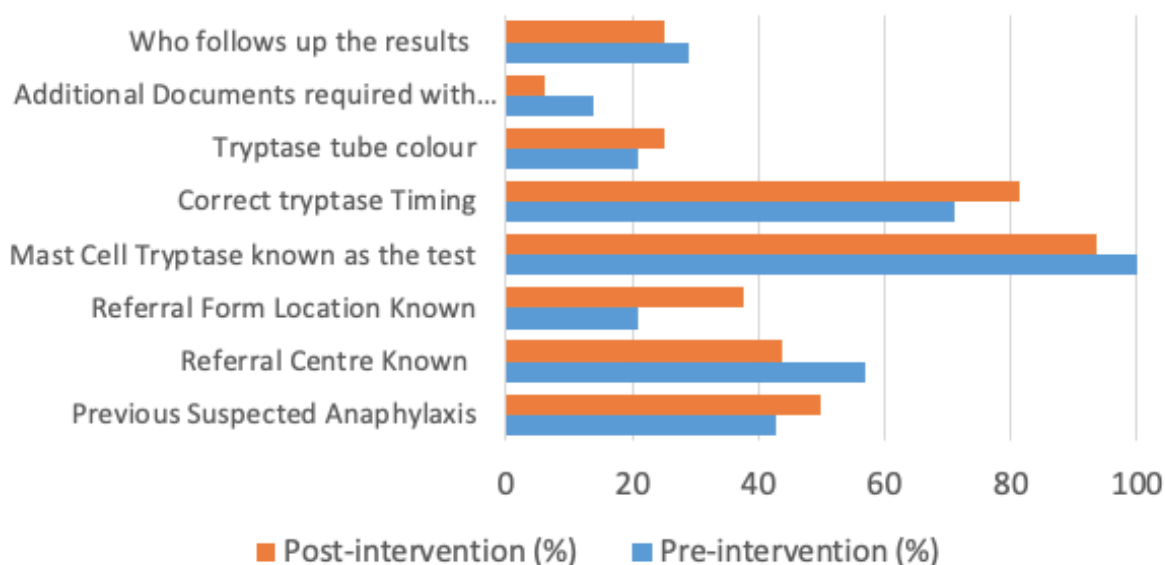


Figure 2: Results of pre- and post-intervention survey

42.8% in the pre-intervention survey and 50% in the post-intervention survey reported having encountered suspected perioperative anaphylaxis.

Knowledge of the referral centre for anaphylaxis investigation decreased from 57% pre-intervention to 43.75% between the two groups. However, staff awareness of where to obtain the necessary referral forms improved from 21% to 37.5%.

Awareness of mast cell tryptase testing remained high, with 100% pre-intervention awareness and 93.75% post-intervention. Knowledge of the correct timing for obtaining this test improved from 71% to 81.25%, but correct identification of the tube colour for sample collection remained low, with only a slight increase from 21% to 25%.

Staff understanding of the additional documents required for referral, such as the anaesthetic record, drug Kardex and discharge summaries remained low (14% pre, and 6.25% post).

Discussion

This quality improvement project sought to strengthen the referral and follow-up pathway for suspected perioperative anaphylaxis through the implementation of local guidelines, an anaphylaxis investigation pack, a dual referral system, and targeted departmental education. National audits have highlighted significant variation in perioperative anaphylaxis investigation practices, emphasising that inconsistent documentation, incomplete referral information, and poor communication with primary care contribute to delays and missed diagnoses^{1,4}. Of note, only 72% (n=18) of the 25 reported suspected anaphylaxis cases had been referred for immunology investigation by the respondents themselves. It remains unclear whether the remaining cases were referred by another clinician or lost to follow-up. Given the reliance on external investigations and frequent staff rotation a robust internal tracking system is essential to ensure patient safety. As perioperative anaphylaxis is a rare event, occurring approximately once every 10,000 anaesthetics¹, most anaesthetists encounter such cases infrequently, limiting opportunities to gain practical experience and complicating the retention of procedural knowledge^{1,2}. For rare but high-risk events, clear and accessible guidelines serve as essential cognitive aids, particularly for clinicians who may not have directly managed a case for years.

This project demonstrated improvements in certain knowledge areas, notably awareness of referral form location and correct mast cell tryptase sampling intervals. However, overall understanding of the full referral pathway remained limited. This aligns with existing evidence that passive dissemination of guidelines, such as distributing documents or holding a single teaching session, rarely produces sustained behaviour change in clinical environments^{5,6}. Systematic reviews repeatedly show that educational interventions are most effective when interactive, repeated, and embedded within wider implementation strategies rather than delivered as isolated events^{5,6}. Staff rotation further compounds the challenge; as new clinicians join frequently, one-off educational sessions quickly lose their impact.

To address these limitations, guidelines must be visible, easy to access, and incorporated into everyday workflow. Studies demonstrate that promoting clinical guidelines and providing electronic access, such as intranet resources and mobile applications, improves clinician adherence⁷. Therefore, the placement of this anaphylaxis investigation pack in both digital and physical formats within clinical areas supports guideline implementation.

In summary, while this project achieved improvements in specific areas of knowledge, significant variability remained in staff understanding of the anaphylaxis referral process. These findings reflect the inherent difficulty of maintaining awareness of rare clinical pathways within a frequently changing workforce. Ensuring that clear, accessible, and embedded guidelines are supported by ongoing education and systematic audit is vital to safeguarding follow-up of suspected perioperative anaphylaxis and enhancing patient safety.

Declarations of Conflicts of Interest:

None declared.

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