

RESEARCH REPORT

Allergy alerts — The incidence of parentally reported allergies in children presenting for general anesthesia

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Summary

Background and aim: Pediatric patients increasingly report allergies, including allergies to food and medications. We sought to determine the incidence and, nature of parent-reported allergies in children presenting for surgery and its significance for anesthetists.

Methods: We prospectively collected data on admissions through our surgical admission unit over a 2-month period at a pediatric tertiary care teaching hospital. Data collected included patient demographics, history of atopy, with more comprehensive information collected if an allergy was reported. A clinical immunologist and an anesthetist reviewed the documentation of all patients reporting an allergy.

Results: We reviewed 1001 pediatric patients, 158 (15.8%) patients with parent-reported allergies; to medications/drugs ($n = 73$), food ($n = 66$), environmental allergens (dust/grasses, $n = 35$), tapes/dressings ($n = 27$), latex ($n = 4$), and venom (eg, bee, wasp, $n = 9$). Forty-one patients reported antibiotic allergies, with Beta-lactam antibiotics being the most common, with the majority presenting with rash alone (57%). Ten patients reported allergies to nonsteroidal anti-inflammatory drugs and eight to opioids. Twenty-four patients reported egg and/or peanut allergy. Only 3/1001 (0.3%) patients were deemed to have evidence of likely IgE-mediated drug allergy. Of the reported allergies, only 60 (38.2%) had been investigated prior, most likely to be followed up were food (53%) and environmental allergies (44.4%). Only 4/73 (5.5%) reported medication allergies had further follow-up. Just four patients (0.4% of the entire cohort) had drug sensitivities/allergies that were likely to majorly alter anesthesia practice.

Conclusion: Only the minority of parent-reported allergies in pediatric surgical patients were specialist confirmed and likely to be clinically relevant. Self-reported food allergy is commonly specialist verified whereas reactions to medications were generally not. Over-reporting of allergies is increasingly common and limits clinician choice of medications. Better education of patients and their families and more timely verification or dismissal of parent-reported reactions is urgently needed.

KEYWORDS

allergens, anaphylaxis, anesthesia, child, drug hypersensitivity, self-report

1 | INTRODUCTION

The reporting of childhood allergy is increasing with food allergies dominating the first decade of life with a shift to insect venom and medication allergies thereafter.^{1–4} A review of anaphylaxis in children and adolescents,¹ conducted over 8 years from 10 European countries found that of the severe allergic reactions, 66% were caused by food items, 19% by insect venom, and 5% by medications. Analgesics and penicillins/cephalosporin antibiotics were the most common triggering medications. Just 8.9% of severe reactions occurred in a hospital or medical practice.

In one adult study, 29.1% of patients self-reported an allergy at a perioperative clinic⁵ yet severe allergic reactions perioperatively are rare events around 2.7–10/100 000.^{6–9} Many self-reported drug allergies are in fact adverse drug reactions (ADR) or non IgE-mediated immunological reactions rather than a true IgE-mediated immediate reactions. IgE-mediated allergic reactions can range from mild to moderate allergic reactions, such as pruritic urticarial rashes, angioedema, gastrointestinal symptoms to severe allergic reactions, termed anaphylaxis, with respiratory and circulatory compromise. Data on pediatric allergic reactions in the perioperative setting, including anaphylaxis are emerging, the incidence of perioperative anaphylaxis being around a quarter of the rate in adults.⁶

Careful history taking and avoidance of allergens is known to be the safest approach for patients with true allergies.¹⁰ However, some patients may experience worse health outcomes as a consequence of inaccurate allergy labeling and avoidance of the optimal treatment.¹¹ In Australia, over 90% of adults self-reporting antibiotic allergy to their doctor have shown not to be truly allergic when tested.¹²

In this audit, we aimed to determine the number, nature and types of self-reported allergies in patients presenting to our surgical admissions unit. Then, in those with self-reported drug allergy, we aimed to determine if these were likely true immune-mediated allergy and by examination of the medical records, their impact on prescribing.

2 | METHODOLOGY

We prospectively collected data on admissions through our surgical admission unit over a two-month period from the 15th of August to the 14th of October 2016 in a 220-bed pediatric tertiary care teaching hospital in Perth, Western Australia. Oncology patients were largely excluded as those on active treatment protocols were usually admitted via their own inpatient area prior to theatre procedures (eg, lumbar punctures for chemotherapy, bone marrow aspirates). The patient allergy reporting form, preoperative checklist, and medication chart were reviewed. Data collected included patient demographics, admitting speciality and surgical procedure, history of atopy (asthma, eczema, hay fever), and whether a Red Allergy Alert-wristband, indicating allergy as per hospital standard procedure, was allocated. A list of all allergies and sensitivities for each patient was generated. If a patient or parent reported an

What is already known

- Many children report allergies on admission for surgery but perioperative anaphylaxis is uncommon in children.

What this article adds

- Only a minority of parent-reported allergies are likely to be clinically relevant.

allergy or sensitivity as part of their admission process, then a researcher approached the patient to obtain more comprehensive information on each self-reported allergy. The reported allergies were broadly divided into the following types: medications, blood products, food, environmental (dust/grasses), tapes/dressings, latex, and insect venom. In terms of allergy, information was collected from the individual patient record and/or through history taking with the patient and parents. The following information was recorded for any reported allergies (a) nature of reaction, for example urticarial, swelling, rash, itch, nausea and vomiting, respiratory, cardiovascular; (b) time of last reaction; (c) any clinical investigations of the allergy, for example blood tests, skin testing, and immunological follow-up. In regard to latex reactions, it was noted whether it was a presumed true allergy or a recommendation for precautions only (eg, patients with spina bifida).

In addition, all drugs used perioperatively were recorded and any reactions in the perioperative period were recorded. Latex allergy was verified by reference to the anesthetic record and preoperative checklist and whether appropriate latex precautions had been taken.

A consultant Clinical Immunologist/Allergist (ML) and a consultant Pediatric Anesthetist (DS) independently reviewed the documentation of all patients who reported one or more allergies upon admission to the surgical admission unit. They assigned either “likely allergy”, “no allergy”, “insufficient evidence”, or “contact dermatitis” to the reported allergies. For reported drug allergies, the medication was classified based on the Rawlins and Thompson classification of ADR's into type A (usually predictable, dose related, known pharmacological actions of the drug, including drug intolerance) and type B (usually unpredictable, dose-independent drug hypersensitivity reactions which would include idiosyncratic and immunological mediated reactions).¹³

3 | RESULTS

Between the 15th of August and the 14th of October 2016, a total of 1361 patients were admitted for same day procedures at PMH and data for 1001 patients were captured. Of these, 171 patients presented more than once. The admitting specialities were Ear, Nose and Throat (23.22%), General & Urological Surgery (16.89%), Dental Surgery (14.47%), Orthopedics (11.61%), Plastic Surgery (11.17%), Gastroenterology (7.20%), and other specialities (15.44%) Of these patients, we reviewed 1001 charts. The median (range) patient age

TABLE 1 Summary of patient demographics

Variable, no. (%)	Entire cohort (N = 1001)
Gender	
Female:male	472 (47.15%):529 (52.85%)
Age group	
0-4.99 years	436 (43.56%)
5-9.99 years	334 (33.37%)
10 + years	231 (23.08%)
Any allergy label	
Yes:No	158 (15.78%):843 (84.22%)

TABLE 2 Patients with self-reported allergies/sensitivities

Variable, No. (%)	Entire Cohort (N = 158)			
Gender				
Female:male	77 (47.5%):81 (51.9%)			
History of atopy				
Eczema	38 (24.1%)			
Asthma	38 (24.1%)			
Hay fever	42 (26.6%)			
None	79 (50%)			
Reported allergy	0-4.99 years (n = 46, 29.1%)	5-9.99 years (n = 64, 40.5%)	10 + years (n = 48, 30.4%)	All ages (% of reported allergies)
Drugs	24	26	23	73 (34.1%)
Food	19	25	22	66 (30.8%)
Environmental	5	13	17	35 (16.4%)
Tapes/Dressings	6	12	9	27 (12.6%)
Venom	0	5	4	9 (4.2%)
Latex	1	1	2	4 (1.9%)
Blood products	0	0	0	0

was 6.0 (0.1-18.8) years. Further patient demographics are presented in Table 1.

In the 158/1001 (15.8%) who self-reported allergies, 79/158 (50%) patients had a history of hay fever, eczema or asthma, while 10/158 (6.3%) had all three. With patients who self-reported more than one allergy (n = 38/158, 24.1%), 5/158 (13.2%) had all three. There was no gender difference seen (Table 2).

Of the 73 self-reported drug allergies in 66 patients, antibiotic allergy (n = 41/73; 56.2%) was the largest group with four patients allergic to multiple antibiotics. Five of the patients with self-reported antibiotic allergies (12.2%) reported eczema, asthma, or hay fever. Beta-lactams were the most commonly cited antibiotics. Table 3 shows the antibiotic classes to which allergies were reported. There were 2/41 (4.9%) patients who reported an antibiotic allergy but were unable to specify which one. The most common allergy

TABLE 3 Antibiotics to which surgical short stay patients reported allergies (n = 41 patients)

Antibiotic group	Antibiotic	Number with self-reported allergies (% of patients self-reporting antibiotic allergy labels)
Beta-lactams	Penicillin	12 (29.3%)
	Amoxicillin	13 (29.3%)
	Amoxicillin/clavulanic acid	1 (2.4%)
	Flucloxacillin	1 (2.4%)
	Piperacillin/Tazobactam	1 (2.4%)
Cephalosporins	Cephalexin	3 (7.3%)
	Cefaclor	1 (2.4%)
Sulfamethoxazole/ & Trimethoprim	Cotrimoxazole	1 (2.4%)
	Trimethoprim	1 (2.4%)
Lincosamides	Clindamycin	1 (2.4%)
Macrolide	Clarithromycin	2 (4.9%)
Phenol Ether	Pentamidine	1 (2.4%)
Glycopeptide	Vancomycin	5 (12.2%)

symptom to antibiotics reported by patients was rash alone (n = 24/41, 58.5% of known previous reactions). This includes five patients reporting vancomycin allergy who were documented as having had red man syndrome. Furthermore, 5/41 (12.2%) patients reported gastrointestinal symptoms from antibiotics as their reported allergic symptoms. One patient who reported an allergy to amoxicillin experienced cardiovascular/neurological symptoms (weak, dizzy, tachycardia). Perioperatively, no patient received antibiotics to which they had reported an allergy.

Of the nonantibiotic medication-reported allergies, just over half were type B idiosyncratic/reactions and could potentially have been immune-mediated.

Anesthetically, 87.5% (28/32) of reported nonantibiotic medication allergies were not relevant to anesthetic management or were easily substituted for medications to which the patient had not reported a reaction.

The patient who reported an allergy to levetiracetam (Table 4) had a complicated medical history and had previously developed tongue swelling, angioedema, and urticaria a few hours after receiving it and was informed it was a potential levetiracetam allergy. The patient was immediately taken off levetiracetam; however, they re-developed the same symptoms eight days later indicating the symptoms were caused by an agent other than levetiracetam. The discharge summary from this admission outlines this history but parents still reported a levetiracetam allergy on admission.

The patient, who reported a fentanyl reaction was given fentanyl intraoperatively without reaction but had previously reported some itch and mild periorbital swelling after 3 days of an epidural infusion, which improved when epidural was discontinued, and patient mobilized.

TABLE 4 Reported nonantibiotic drug allergies in surgical short stay patients

Drug type	Drug	Reported reaction details and relevant history	Reaction type ^a	Subsequent anesthetic impact ^b	Result of immunologist review
Opioids	Codeine	Severe stomach cramps within 1 hour	B	None	Unlikely to be allergy
	Codeine	Floppy, tired after a couple of minutes	B	None	Insufficient evidence
	Morphine	Bronchospasm intra operatively	A	Minor	Insufficient evidence
	Morphine	Rash, itchy, swelling, 30 minutes	A	Minor	Insufficient evidence
	Morphine	Respiratory impairment	A	Minor	Unlikely to be allergy
	Morphine	Severe vomiting	A	Minor	Unlikely to be allergy
	Tramadol	Bronchospasm intraoperatively	A	Minor	Insufficient evidence
	Fentanyl	Delayed onset minor swelling of eyes and itch with epidural. Had IV subsequently without issue	A	None	Unlikely to be allergy
NSAIDS	Ibuprofen	Vomiting immediately	B	Minor	Insufficient evidence
	Ibuprofen	Avoiding due to von Willebrand Disease diagnosed after previous postoperative bleed	A	Minor	Unlikely to be allergy
	Ibuprofen	Swelling local, facial, immediate	B	Major	Yes
	Ibuprofen	Avoiding due to Esophageal Varices and bleeding risk	U (A)	Minor	Unlikely to be allergy
	Ibuprofen	Tongue swelling within 1 minute, hard to breathe	B	Major	Yes
	Ibuprofen	Vomiting	A	Minor	Unlikely to be allergy
	Ibuprofen	Generalized rash and bronchospasm in an asthmatic	A & B	Minor	Insufficient evidence
	Paracetamol	Diarrhea, pain	B	Minor	Unlikely to be allergy
	Paracetamol	Vomiting, couple of hours after intake	A	None	Unlikely to be allergy
	Paracetamol	Swelling, puffy face, lips and eyes, immediate	B	Minor	Insufficient evidence
Other drugs	Desmopressin	Throat swelling, rash within minutes	B	Major	Insufficient evidence
	Volatile Agents	Family history of malignant hyperthermia	U (B)	Major	Unlikely to be allergy
	Midazolam	Paradoxical Excitement	A	Minor	Unlikely to be allergy
	Infliximab	Breathing difficulty, dropping blood pressure and O ₂ saturation, headache, starting about 20 minutes after infusion	B	None	Yes
	Sulphur	Increased pain	B	None	Unlikely to be allergy
	Levetiracetam	Tongue swelling, red mark on skin, short breathing after a few hours. Reoccurrence 8 days later without drug ingestion	B	None	Unlikely to be allergy
	Hydrochlorothiazide	Rash (face) 4 days	B	None	Insufficient evidence
	Prednisolone	Insomnia, hyperactivity	A	None	Unlikely to be allergy
	Bromidine eye drops	Low blood pressure	A	None	Unlikely to be allergy
	Droperidol	Dystonic reaction	B	Minor	Unlikely to be allergy
	L-Asparaginase	Heart racing, breathing problems immediately	B	None	Insufficient evidence
	Iron sucrose	Rash, vomiting, tachycardia, tolerated IV iron polymatose instead	B	None	Insufficient evidence
	Ventolin	No reaction, avoiding due to parental history	U	None	Unlikely to be allergy
	Carboplatin	Rash face & abdomen, irritable. Ok at slower rate and antihistamine cover	B	None	Unlikely to be allergy

^aReaction Type: A & B from Rawlins and Thompson classification³⁵; U – unclassified as no reaction to date in patient.

^bSpecialist anesthetist classified based on impact reported allergy would potentially have on the conduct of anesthesia. Major: large effects technique or drug choice; Minor: little effect on drugs or techniques used; None.

One patient in the review had a family history of malignant hyperthermia. The patient had never had a reaction themselves but reported an allergy to "general anesthetics". The familial history of malignant hyperthermia was confirmed by testing in both grandfather and paternal aunt. Father and patient were untested; however, both wore medical alert bracelets. For this patient, a nontriggering general anesthetic was used.

There were four patients who reported an allergy to latex. One had had an immediate urticarial/angioedema reaction previously. The other three were avoiding as a precaution and had not had previous reactions. Latex precautions were taken for all these patients. In total, 17 patients reported egg, nine peanut, and none soy allergies; 16 of these 24 patients received propofol and none had any reported reactions during anesthesia.

Of the reported allergies, only 60 (38.2%) had been investigated prior. The allergy categories most likely to be followed up medically were food (53%) and environmental (44.4%). None of the patients with self-reported latex allergy were tested. In particular, only 2/41 (4.9%) patients reporting antibiotic allergies had been further assessed after their initial reaction. Both of these had reacted to amoxicillin with one having a positive specific IgE result.

Figure 1 shows the clinical immunologist assessment of the self-reported allergies by category. The immunologist considered one latex reaction and one chlorhexidine reaction to be true allergies. The majority of reactions to tapes/dressings (23/27, 85.7%) were in fact contact dermatitis rather than true allergy. The majority of self-reported drug allergies (51/73, 69.9%) were determined to have insufficient supporting evidence. In fact, the immunologist could only assign a likely true drug allergy status to 4/73 (5.5%) patients, who had reacted to infliximab ($n = 1$), ibuprofen ($n = 2$), and amoxicillin ($n = 1$).

Of the 158 patients with self-reported allergies, 149 children (94.3%) were given Red Alert wristbands as per our institutional standards. The reasons for not giving wristbands were not recorded. When the immunologist considered the nine patients with self-reported allergies, who were not given red wrist bands, just two were assessed to be likely allergies, both to environmental allergens (cats and dogs; and dust respectively). A further two patients, while having insufficient evidence to confirm a true allergy one to peanut, and the other to an unspecified antibiotic, were of potential importance and were missed (2/1001, 0.2% overall).

During the surgical procedures under assessment, two from 158 patients with allergies showed symptoms which could possibly be linked to allergic reactions during anesthesia. Neither had asthma, hay fever, or eczema and both had been given the appropriate red allergy wristbands preoperatively. Neither of these events was considered clinically to represent an allergic reaction. One patient had reported a previous rash to tape and experienced bronchospasm during a bronchoscopy. The other patient had reported their allergy to penicillin due to diarrhea after 4 days of treatment. Postinduction, a brief period of low oxygen saturation was recorded and clinically it was felt to be due to upper airway obstruction. They had not received antibiotics. Overall, we did not see an increased rate of allergic reactions in the perioperative period in those with reported allergies compared to those without.

4 | DISCUSSION

Approximately, one in six children presenting to our surgical admissions ward self-reported an allergy and half of these patients had a history of atopy (50%), this is slightly higher than the previous reported childhood prevalence rate (about 40%) for Australian

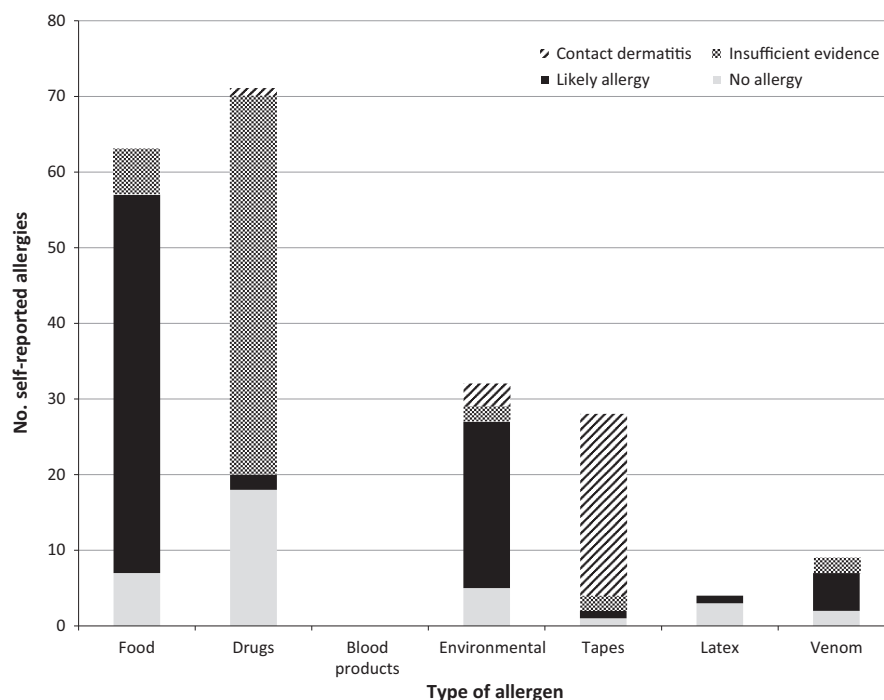


FIGURE 1 Summary of clinical immunologist's assessment of self-reported allergies by allergen group

children.¹⁴ Food, environmental, and venom allergies represented about half the reported allergies. Affected children were more commonly under specialist care and likely to have had appropriate assessment and counseling. For the other categories, after review of the allergy history and documentation by a specialist allergist/immunologist, the majority had insufficient evidence to support use of the allergy label. Description of allergies to tapes/dressings was most consistent with contact dermatitis. If we consider the largest group which was drug allergy, the majority were accepted/common adverse drug reactions or non-IgE immune reactions rather than true IgE-mediated reactions. It is difficult for parents and clinicians to reliably distinguish differences between drug side effects, sensitivities, idiosyncratic reactions, temporal co-occurrences and IgE and non IgE-mediated immune responses. Parents commonly report all previous reactions which can include a multitude of reactions/symptoms in an effort to inform us, so we can avoid potentially harming their child with an exposure. The risk is a true allergy that could be overlooked in the potential over-labeling of patients who self-report "allergies".

When asked, 10% of parents report a history of drug allergy in their child but only a small proportion of these were confirmed as true allergic reactions after investigation^{15,16}. A percentage of 6.6% of our patients reported any drug allergy with just 4/73 (5.5%) of suspected drug allergies having had further specialist assessment or testing. The potential risks of unverified drug allergy are outlined in the International Consensus on Drug Allergy and include the use of less effective or more expensive drugs.¹⁷ For example, an Australian study of adults found that patients with a penicillin allergy label had poorer health outcomes, and more readmissions.¹¹

While the true numbers of allergic reactions may be low, it is important that reported reactions are investigated, particularly considering increasing deaths and admissions due to anaphylaxis from prescribed medications.¹⁸ Liew et al¹⁸ reported that drug-induced anaphylaxis deaths increased approximately 300% with an approximate 150% increase in drug-induced anaphylaxis admissions in Australia in recent times. In the absence of verified allergy information, medical professionals must take note of self-reported allergies and ensure that patient safety is maintained. Accurate allergy labeling represents an opportunity for anesthetists to improve patient care in the perioperative setting but will require ready access to a specialist service to assess drug allergy.

From an anesthetic perspective, when one combines drug, latex, relevant food, and dressing reactions the alert band would have triggered additional consideration in 118 patients, 74.7% of those reporting allergies and 11.8% of overall admissions. Of the four alerts judged to be of potential major impact, one was a patient at risk of malignant hyperthermia rather than an allergy and three patients had reported airway swelling from drugs commonly used perioperatively.

Antibiotics are among the commonest causes of anaphylaxis during anesthesia.^{19,20} There was one reported case to Cefuroxime in the NAP6 cohort, with antibiotic use in approximate 26.5% of pediatric general anesthetics.⁶ In our study, 41 patients (4.1% of total

admissions) reported antibiotic allergies; however, a review of the notes by a Clinical Immunologist and Anesthetist could only assign likely true drug allergy status to one of these. Only two of the 41 children with reported drug allergies had been further investigated in our cohort, unverified antibiotic allergy, most commonly to Beta-lactams featured highest, and often represent a clinical dilemma when cephazolin is the most common perioperative prophylactic drug of choice.

There has been increasing attention on preventing surgical site infections (SSI) with timely administration of preoperative antibiotics.²¹ Unfortunately, inaccurate or unconfirmed penicillin or B-lactam allergy and misconceptions surrounding cephalosporin cross-reactivity mean that many patients do not receive optimum prophylaxis, or it is avoided.^{22,23} In one adult study, patients with a penicillin allergy label had a 50% increased risk of SSI attributed to using the recommended penicillin alternative antibiotics.²⁴ However, it is known that many of these patients are falsely labeled. Studies in both adults²⁵ and children²⁶ have suggested that around 90%-95% of patients with a prior history of beta-lactam allergy could be safely given beta-lactam antibiotics following evaluation. Pediatric data are emerging which show that patients with rash alone, the majority of patients in our study, could potentially be de-labeled safely with supervised oral provocation testing^{26,27} alone. Fast tracking to a drug allergy outpatient clinic, could ensure that this be completed preoperatively for most patients between booking and surgery date.

Our commonest surgical prophylaxis is cefazolin, and the only antibiotic used in this cohort. The four patients who had reported a prior reaction to a cephalosporin did not require an antibiotic on this admission. While there can be some uneasiness around using cephalosporins in penicillin allergic patients, cephalosporins have been used safely in patients with a penicillin allergy label perioperatively.^{28,29} In the wider healthcare setting, the risk of anaphylaxis appears similar to nonpenicillin allergy patients.³⁰ Further with its unique R1 side chain, cephazolin may result in a selective hypersensitivity not a class hypersensitivity as reactions can occur to it without cross-reactivity with penicillins, cephalosporins, or other beta-lactams.³¹

In our audit, there was only one patient who received a drug (fentanyl) to which they self-reported an allergy, with no reaction throughout the perioperative period. In fact, all patients with a self-reported opioid allergy received fentanyl and two patients reporting ibuprofen allergy received parecoxib (though not the two with a swelling history) without incident. In a study of 431 adult patients, there were 114 incidences (26.5%) of patients being given drugs or drugs from the same family to which they had reported an allergy preoperatively without incident.⁵

From an anesthetic perspective, there has been some discussion on the safety of propofol use in patients with egg, soy, or peanut allergies, largely because of product labeling precautions. Asserhoj et al³² reported on four Danish patients with confirmed hypersensitivity to propofol none had allergy to egg, soy, or peanut. They also looked at the 171 anesthetic records of 99 patients with specific IgE to any of these allergens and found no signs of allergic reaction.

Retrospective studies on the use of propofol in small numbers of pediatric patients with egg and soya food allergies found propofol use to be safe.^{33,34}

4.1 | Study limitations

To minimize the potential for selection bias, our approach was to prospectively collect data on all patients presenting to the day of surgery admission ward over a 2-month period. Those that did not declare a sensitivity/allergy during nursing or medical admission were not further questioned by researchers. The 2-month concurrent timeframe was chosen for pragmatic reasons to allow sufficient numbers for meaningful summary statistics and available patient recruitment was dependent on staff availability. While allergy symptoms are seasonal, the recall of seasonal allergy is unlikely to be majorly impacted by seasons.

Chart review of the patients who were missed during their hospital visit due to staff availability revealed a similar incidence of reported allergy. Data were only collected from children admitted via the day of surgery admission unit and included a low number of oncology children and children, who were already inpatients. The majority of oncology patients scheduled for a procedure are admitted to a specialist oncology unit before theater. These children have a higher incidence of self-reported allergies compared to other children undergoing elective surgeries, having frequently acquired alerts over their treatment, for example to tapes, asparaginase, platelets, or vancomycin.

In children who were not previously admitted to our institution or who had new acquired allergies, this study has the potential for parental recall bias. In many cases, the exact nature of the allergic reaction and any subsequent investigation was vague or incomplete, meaning that determination of a true allergy was not possible by the immunologist. Thus, the rate of true allergy may have been underestimated. Where possible prior medical records and blood tests were accessed but many of allergies had occurred in a community setting and were not available to us; however, this reflects the typical every day dilemma in routine clinical practice, forcing clinicians to sometimes make decisions based on limited verified information.

In summary, the rate of self-reported allergy in Australian children presenting to a day of surgery admission unit was almost one in six children. The most common types of reported allergies were to medications and foods. Children with environmental and food allergies were more likely to have been investigated, whereas children with drug allergies and contact allergies had generally not been assessed for their presumed allergies, highlighting the need for better assessment pathway and education. Only a minority of allergies had the potential to alter anesthesia management.

The study was approved through the Princess Margaret Hospital for Children Quality Improvement Committee as an audit (GEKO QA: 12909). The audit was recognized by the University of Western Australia ethics committee RA/4/1/8765. The requirement for written informed consent was therefore waived but all parents/guardians were given verbal information and gave verbal informed

consent prior to interviewing them with regards to their child's allergy status.

CONFLICT OF INTEREST

Britta S von Ungern-Sternberg is a Section Editor for Pediatric Anesthesia. No other conflicts of interest declared.

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