

The use of medical alert jewelry to communicate allergy information

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Clinical Implications

- Medical alert jewelry may be valuable for communicating allergy information, but the information provided is often nonspecific or not optimized for real-world usefulness. Formal guidelines regarding the use of these devices may ensure maximal value.

TO THE EDITOR:

Information regarding allergy can be critical in an emergency. Medical alert jewelry provides immediate information and is not dependent on access to physical or electronic health records. However, the prevalence, characteristics, and validity of allergy information on medical alert jewelry has not been studied. In Australia, the most commonly used medical alert jewelry is MedicAlert. We examined the (deidentified) database of the Australian branch of the MedicAlert Foundation to study the current utilization of MedicAlert jewelry for allergy communication (RAH HREC approval no. HREC/17/RAH/51). Information assessed included sex; age; types of drug, food, and insect sting (venom) allergies reported; comorbid conditions and medications (particularly epinephrine autoinjectors) recorded in the database; and terminology used to describe allergy engraved on the jewelry emblem. Since 2003, medical validation of information submitted for a MedicAlert application has not been mandatory.

Between January 1, 1998, and June 22, 2016, there were 61,542 MedicAlert subscribers, 26,428 (42.9%) of whom listed an allergy on their MedicAlert emblem. Drug allergy was most common ($n = 19,874$), followed by food ($n = 4,642$) and venom allergy ($n = 1,641$). The most commonly reported drug, food, and venom allergy groups are presented in [Tables I and II](#). MedicAlert jewelry was more commonly used by females than by males in all 3 allergy categories (73.6%, 55.1%, and 56.8%, respectively), potentially reflecting differences in health care engagement between sexes, and/or willingness of females to wear medical jewelry. The higher frequency for drug allergy in females is consistent with epidemiological data that drug allergy is more common in females.¹ Food-allergic patients with MedicAlert devices were significantly younger than those with venom and drug allergy, with 70.2% ($n = 3,258$) of patients younger than 30 years. There was a bimodal age distribution in venom allergy, with the highest rates in those aged 40 to 69 and a lesser peak at age 10 to 19 years. In comparison, drug allergy was most commonly declared in the elderly, peaking in the 60 to 89 year age group. Asthma is an important risk factor for mortality in patients with food allergy, and in patients with food alerts on their jewelry emblems, 33.1% ($n = 1,538$) had a history of asthma recorded as a comorbidity in the MedicAlert database.

Relevant comorbidities in patients with venom allergy include cardiovascular disease and concomitant antihypertensive medication (particularly beta-blocker and angiotensin-converting enzyme inhibitor therapy); 15.9% ($n = 261$) and 13.9% ($n = 229$) of venom-allergic patients had hypertension or cardiovascular disease as a comorbidity, respectively, while 11.6% ($n = 191$) and 11.1% ($n = 183$) listed a beta-blocker or angiotensin-converting enzyme inhibitor as a concomitant medication. A total of 83 patients had mastocytosis according to the database; 70 (84.3%) had it engraved on their emblem, whereas 18 (21.7%) patients with mastocytosis declared a drug allergy and 14 (16.9%) a venom allergy.

Drug allergy may be specific to the index drug rather than the whole class.²⁻⁵ The specific culprit drug was listed in 9.9% ($n = 1,016$), 20.3% ($n = 556$), and 60.7% ($n = 1,282$) of penicillin, “sulfur,” and cephalosporin allergy, respectively. In regard to opioids, nonsteroidal anti-inflammatory drugs, and radiocontrast media, a specific drug was declared in 93.9% ($n = 6,060$), 63.5% ($n = 1,159$), and 8.8% ($n = 44$) of cases. In most cases, the nonspecific term “allergy” was used as a descriptor on MedicAlert jewelry. The most commonly used specific descriptor, “anaphylaxis,” was used to qualify 13.5% ($n = 2,678$) of drug, 41.1% ($n = 1,908$) of food, and 33.7% ($n = 554$) of venom alerts. The term “intolerance” was rarely used to qualify either drug or food sensitivities. Other specific drug allergy descriptors were infrequent: urticaria ($n = 37$), angioedema ($n = 62$), rash ($n = 31$), hepatitis ($n = 3$), nephritis ($n = 1$), Stevens-Johnson syndrome (SJS) and/or toxic epidermal necrolysis ($n = 50$), and drug reaction with eosinophilia and systemic symptoms ($n = 3$). Five jewelry emblems declared a risk of SJS without naming the causative drug.

Epinephrine autoinjectors are indicated for patients with a history of anaphylaxis and continuing risk of allergic reactions to identified (food or venom) or unidentified triggers. In subscribers with food and venom alerts, 61.9% ($n = 2,873$) and 42.6% ($n = 699$), respectively, had an EpiPen or adrenaline (epinephrine) listed as a medication in the database. This discrepancy between having allergy severe enough to warrant MedicAlert jewelry and prescription of an epinephrine autoinjector may be due to either declaration of nonserious allergy or underutilization of epinephrine autoinjector devices. For those who were prescribed an epinephrine autoinjector, only 28.9% ($n = 1,342$) and 24.1% ($n = 396$) declared it on their emblem. This is concerning because an important indication for medical alert jewelry is to expedite emergency treatment by bystanders and ambulance personnel. Absence or delayed access to an epinephrine autoinjector is a factor in food-related anaphylaxis deaths.⁶ Epinephrine was not rapidly administered even upon ambulance arrival in a significant proportion of cases.⁷ Many patients do not carry their epinephrine autoinjector despite a prescription,⁸ and it is possible that medical alert jewelry may remind the patient to carry it.

Medical alert jewelry is one of several strategies for allergy risk mitigation. Our study shows that although the MedicAlert is commonly used to declare allergies, the quality of the information is variable and nonstandardized. We did not attempt to validate the reported allergies against objective criteria. Limitations of medical

TABLE I. Classes of drug allergy declared

Allergy group	No. of emblems with at least 1 of the specified drug class	Percentage of emblems containing drug type
Total number of drug names listed on MedicAlert emblems	31,855	
Total number of emblems with drug allergy information	19,874	100
Antibiotic	13,122	66.0
Penicillins	10,244	51.5
“Sulfur” or SMX/TMP	2,737	13.8
Cephalosporins	2,111	10.6
Macrolides	768	3.9
Tetracyclines	392	2.0
Trimethoprim	191	1.0
Metronidazole	178	0.9
Other	357	1.8
Opioid	5,108	25.7
Morphine	2,434	12.2
Codeine	1,953	9.8
Pethidine	775	3.9
Tramadol	527	2.7
Oxycodone	220	2.0
Fentanyl	128	1.1
Other	23	0.1
Not specified	396	2.0
Nonsteroidal anti-inflammatory drug	2,140	10.8
Aspirin	1,159	5.8
Ibuprofen	199	1.0
Celecoxib	118	0.6
Diclofenac	93	0.5
Meloxicam	38	0.2
Naproxen	12	0.1
Not specified	930	4.7
Muscle relaxant	758	3.8
Radiocontrast media	501	2.5
Antiemetic	456	2.3
Angiotensin-converting enzyme inhibitors	255	1.3
Paracetamol	199	1.0
Statin	155	0.8
Antiepileptic drug	154	0.8
Chlorhexidine	136	0.7
Other	1,928	9.7

SMX, Sulfamethoxazole; TMP, trimethoprim.

alert jewelry include multiple barriers to access and uptake, limited character space to communicate information, relative difficulty updating information, and self-diagnosis with lack of requirement for medical validation. Medical authentication of allergies may reduce mislabeling, while specific terms can help convey the level of contraindication and therefore improve the utility of these devices. Standardized recommendations regarding the indications and terminology for communicating allergy on medical alert

TABLE II. Types of food and insect sting (venom) allergy declared

Allergy group	No. of emblems with at least 1 of the specified allergen	Percentage of emblems containing allergen
Total number of food allergies listed on MedicAlert emblems	7,293	
Total number of emblems with food allergy information	4,642	100
Nut	3,607	77.7
Peanut	1,212	26.1
Cashew	533	11.5
Other nut specified	137	3.0
Nut not specified	1,739	37.5
Seafood	1,164	25.1
Shellfish	657	14.2
Fish	197	4.2
Seafood not specified	310	6.7
Egg	805	17.3
Milk/dairy	454	9.8
Fruit	286	6.2
Sesame seed	195	4.2
Wheat	124	2.7
Gluten	98	2.1
Additive	94	2.0
Total number of venom allergies listed on MedicAlert emblems	1,757	
Total number of emblems with venom allergy information	1,641	100
Bee venom	1,429	87.1
Wasp venom	174	10.6
European wasp	8	0.5
Paper wasp	9	0.5
Wasp not specified	158	9.6
Ant venom	88	
Jack jumper ant	43	5.4
Bull/inch ant	16	2.6
Green ant	1	0.1
Ant not specified	28	1.7
Insect not specified	28	1.7

jewelry (similar to those that have been proposed for drug allergy passports⁹) would help address this issue. We propose the following:

1. The specific allergen and nature of the reaction (using standardized terms, eg, anaphylaxis, angioedema, and SJS) should be described on the emblem.
2. Additional information for drug allergy such as timing and severity of the reaction, diagnostic testing, and ability to tolerate related drugs be recorded in the database.
3. Those who are prescribed an epinephrine autoinjector for food, venom, or idiopathic anaphylaxis should have this declared on their emblem.
4. Subscribers should be encouraged to have information medically validated and regularly reviewed.

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Conflicts of interest: W. Smith is an honorary (nonfinancial) member of the Medical Advisory Board of the MedicAlert Foundation of Australia. C. Foreman and T.-T. A. Le have no relevant conflicts of interest.

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