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Recommandations

Update on the emergency action plan for allergic reactions in children and adolescents. Position of the "Allergy at school" and "Food allergy" working groups of the French Allergology Society

Actualisation de la conduite à tenir en cas d'urgence allergique chez l'enfant et l'adolescent. Position des groupes de travail « Allergie en milieu scolaire », « Allergie alimentaire », sous l'égide de la Société Française d'Allergologie

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ABSTRACT

The hospital admission rate for anaphylaxis is increasing especially among the youngest children and food is the leading cause of anaphylaxis in children. In 2014, an emergency action plan for accidental food allergic reactions in children has been proposed to the medical community by the French Allergology Society. Since its publication, new information (dissemination of recommendations on the management of anaphylaxis, provision of a new dosage of 0.5 mg epinephrine in one of the autoinjector available in France, confirmation of the lack of evidence of the effectiveness of oral corticosteroids in anaphylaxis, experience gained on the use of the current action plan...) has led

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to an update of the initial emergency action plan. As a result, the "Allergy at school" working group, in conjunction with the task forces"Food allergy" working group of the French Allergology Society, supported by various learned societies, medical and patients' associations, is proposing an update of the emergency action plan in case of allergic reaction in children and adolescents. The aim of this initiative is to harmonize current practices and to improve the quality of the management of allergic emergencies. The present manuscript combines a rationale on the contents of the emergency kit and the epinephrine autoinjectors.

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RÉSUMÉ

Les admissions hospitalières pour anaphylaxie augmentent dans la plupart des pays, principalement chez l'enfant et pour les aliments. En 2014, un plan d'action en cas de réaction accidentelle chez l'enfant souffrant d'allergie alimentaire a été proposé à la communauté médicale. Depuis, de nouvelles informations (diffusion des recommandations au plan national et international, expérience du plan d'action initial, besoins d'harmonisation des supports d'éducation thérapeutique, confirmation de l'absence d'efficacité des corticoïdes, mise à disposition d'un dosage à 0,50 mg d'adrénaline pour un des auto-injecteurs en France. . .) conduisent à proposer une actualisation de ce plan d'action. Ainsi, le groupe de travail « Allergie en milieu scolaire » en lien avec le groupe de travail « Allergie alimentaire » de la Société Française d'Allergologie et avec le soutien de sociétés savantes, associations médicales et associations de patients, proposent une actualisation de la conduite à tenir en cas d'urgence pour anaphylaxie chez l'enfant. L'objectif de cette actualisation est de tendre vers une harmonisation des pratiques afin d'améliorer la qualité de la prise en charge de l'urgence allergique. Un argumentaire sur le contenu de la trousse d'urgence et les auto-injecteurs d'adrénaline est associé.

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Food allergies (FA) affect 4 to 8% of school-age children in Europe. Anaphylactic reactions, which sometimes can be severe, are becoming increasingly frequent [1–3]. The hospital admission rate for anaphylaxis is higher in children than in adults, especially among the youngest children [1,2]. Food is the leading cause of anaphylaxis in children, notably peanut, mammalian milks, nuts (cashew, pistachio, hazelnut), hen's egg [1,4]. Ten to 20% of anaphylaxis cases occur during school time or leisure activities [4].

A number of recommendations from international societies and task forces have enabled to clarify the definition of anaphylaxis as well as the guidelines for its management [5–9]. Despite the latter, the management of allergic emergencies in everyday life remains insufficient, by the patients and/or their relatives in the school setting, by the caregivers in pre-hospital settings, and in emergency rooms [8,10–12]. The reasons for this shortcoming include: lack of anaphylaxis recognition, underestimation of its severity, reluctance and delay in using epinephrine auto-injectors (EAI) in case of anaphylaxis despite their availability, and failure to prescribe an emergency kit with an EAI in at-risk patients. The promotion of therapeutic patient education and the wide dissemination of recommendations for the management of allergic emergencies to caregivers, as well as in school and extracurricular settings, are thus primary objectives.

In 2014, the "Food allergy" working group of the French Allergology Society proposed an emergency action plan for accidental food allergic reactions in children [13]. Since its publication, new information has led to an update of the emergency action plan that was initially proposed. These include:

- dissemination of recommendations on the management of anaphylaxis [8,9];
- new data relative to anaphylaxis in children, adolescents and young children [14];
- provision of a new dosage of 0.5 mg of epinephrine in one of the EAIs currently available in France [15];
- confirmation of the lack of evidence of the effectiveness of oral corticosteroids in anaphylaxis [16];
- experience gained on the use of the current action plan and reflections on its improvement;
- the wish for a shared document in conjunction with the Ministry of National Education.

This new document is designed to be used in case of anaphylaxis and therefore extended to other situations, namely allergy to insect venoms as well as exercise-induced or idiopathic anaphylaxis.

As a result, the "Allergy at school" working group, in conjunction with the "Food allergy" working group of the French Allergology Society, is proposing an update of the emergency action plan in case of allergic reaction in children and adolescents. The latter combines a rationale on the contents of the emergency kit and the EAIs. This initiative is furthermore supported by various working groups of learned societies and medical associations*.

The provision of a consensus for an emergency action plan in case of allergic reactions in children – for food-related anaphylaxis in a first instance, but also for other causes of anaphylaxis–and available to all physicians, will allow the harmonization of current practices and thus improve the quality of the management of allergic emergencies. On the longer term, this protocol could ultimately be required for any implementation of a personalized care project (PCP) with an EAI-containing emergency kit.

1. Recognizing anaphylaxis: a key imperative

Anaphylaxis is a potentially fatal, generalized or systemic allergic or hypersensitivity reaction which occurs suddenly and encompasses, in varying degrees, mucocutaneous, digestive, respiratory, neurological and/or cardiovascular signs [5].

Its definition is consensually acknowledged and valid regardless of age. Namely, anaphylaxis is defined by a combination of signs evoking an attack of two different organs (Table 1). In children, tachycardia is an early sign of cardiovascular disease with a drop in blood pressure occurring secondarily. There are no useful biological assays for the diagnosis of anaphylaxis, its diagnosis being essentially clinical. The emergency action plan presented herein specifies the signs which, when occurring rapidly after a possible allergen

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Table 1
Clinical criteria for diagnosing anaphylaxis [5].

Anaphylaxis is highly likely when any one of the following three criteria is fulfilled:
Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (e.g., generalized hives, pruritus or flushing, swollen lips–tongue–uvula) AND at least one of the following Respiratory compromise (e.g., dyspnea, wheeze–bronchospasm, stridor, reduced PEF, hypoxemia) Reduced BP or associated symptoms of end-organ dysfunction (e.g., hypotonia, collapse, syncope, incontinence)
Two or more of the following that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours) Involvement of the skin–mucosal tissue (e.g., generalized hives, itch-flush, swollen lips–tongue–uvula) Respiratory compromise (e.g., dyspnea, wheeze–bronchospasm, stridor, reduced PEF, hypoxemia) Reduced BP or associated symptoms (e.g., hypotonia, collapse, syncope, incontinence) Persistent gastrointestinal symptoms (e.g., crampy abdominal pain, vomiting)
Reduced BP after exposure to known allergen for that patient (minutes to several hours) Infants and children: low systolic BP (age specific) or > 30% decrease in systolic BP[a] Adults: systolic BP of < 90 mmHg or > 30% decrease from that person's baseline

PEF: peak expiratory flow; BP: blood pressure.
[a] Low systolic blood pressure for children is defined as < 70 mmHg from 1 month to 1 year, less than (70 mmHg + [2 9 age]) from 1 to 10 years and < 90 mmHg from 11 to 17 years.

Table 2
Epinephrine auto-injector (EAI) dosages according to weight.

	Marketing authorization	Expert recommendations (8,15)
0.15 mg	15–30 kg	7.5–25 kg
0.30 mg	> 30 kg	> 25 kg
0.50 mg[a]	Adolescents > 60 kg or adults	Adolescents > 60 kg or adults

The 0.50 mg dosage is only available for Emerade®.
[a] Dosages at 0.15 mg and 0.30 mg of epinephrine are marketed for all EAIs.

exposure, should evoke anaphylaxis (Fig. 1). The emergency action plan is presented in English French, German, Spanish (Fig. 1a–d).

2. Emergency management in case of anaphylaxis: intramuscular epinephrine, then call for help

All international recommendations confirm that the first-line treatment of anaphylaxis is based on epinephrine, which must be administered promptly by intramuscular injection into the antero-lateral site of the mid-outer thigh [5–8]. Delayed epinephrine injection during anaphylaxis is responsible for complications and increases mortality [17,18]. In France, the French Society of Emergency Medicine in conjunction with the French Allergology Society, has validated these recommendations [9]. EAIs allow the rapid, intramuscular administration of epinephrine, under conditions of optimal efficacy and safety, including by non-caregivers, with a dosage adapted to the weight of the child (Table 2). If an EAI is not available, the dose of intramuscular injected epinephrine for anaphylaxis is 10 μg/kg weight

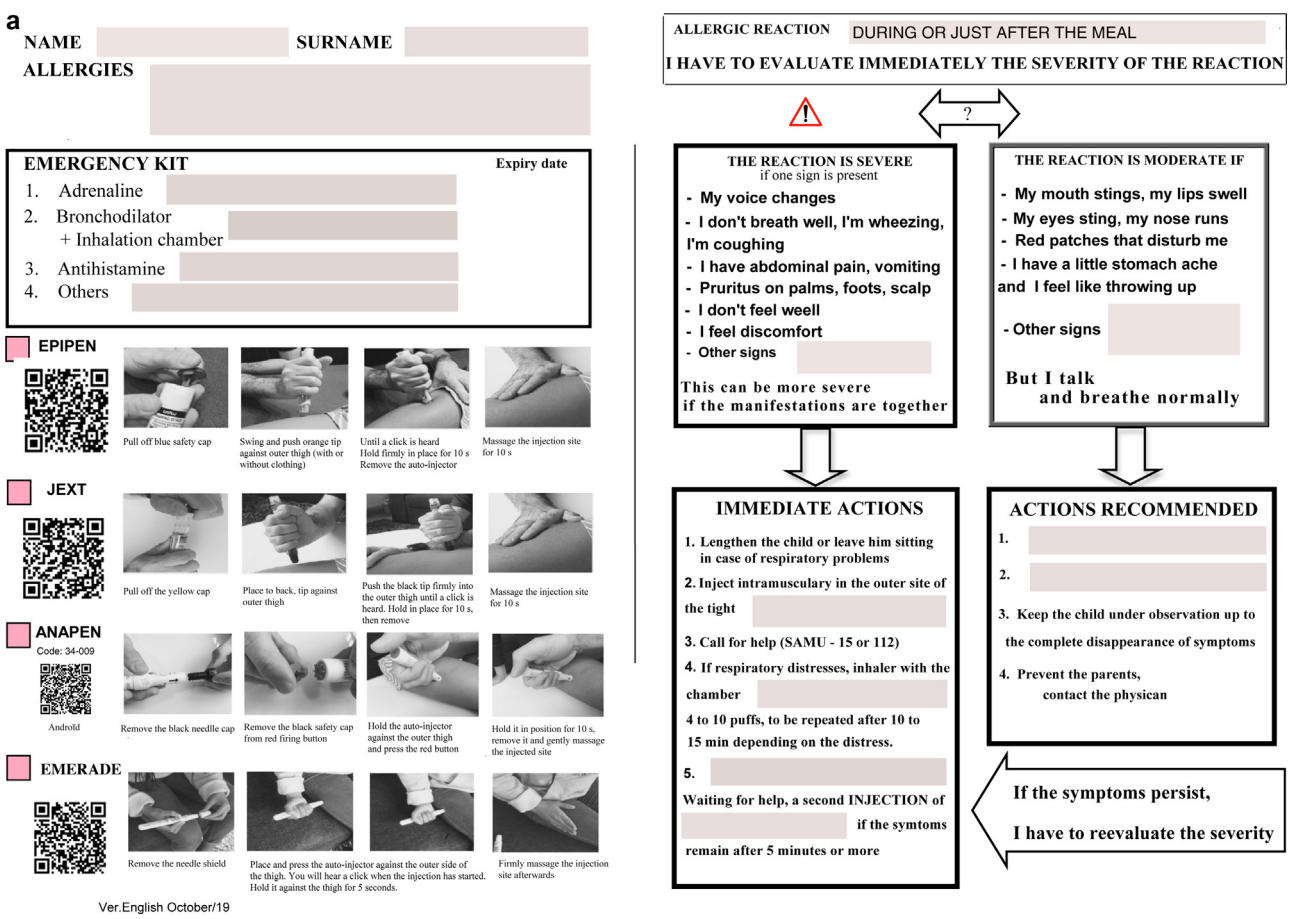

Fig. 1. a–d. Emergency action plan in case of allergic reaction in children and adolescents (in English [a], French [b], Spanish [c], German [d]).

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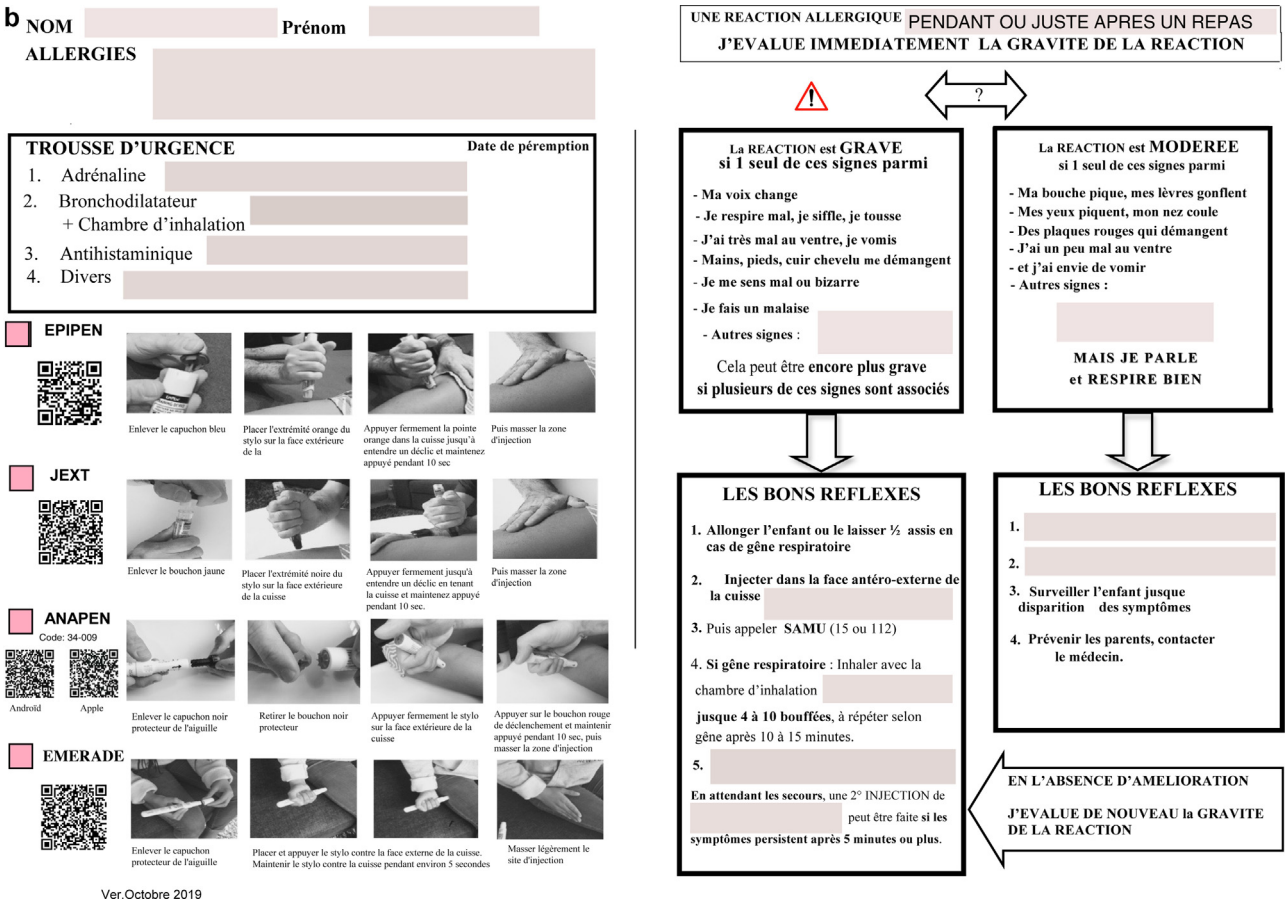

Fig. 1. (*Continued*)

per injection, up to 0.5 mg per injection [6–9]. If signs persist after 5 to 10 minutes, a second epinephrine injection at the same dosage should be administered [6–9]. There are no contraindications to the use of epinephrine during anaphylaxis. In the event of mistaken injection, the side effects of intramuscular epinephrine injection, including in healthy subjects, are mild (tremor, pallor, sweating, headache) and of brief duration (a few minutes).

In case of respiratory signs such as wheezing, coughing and shortness of breath, inhaled short-acting bronchodilator therapy should be combined without delaying epinephrine injection: e.g. salbutamol spray (100 µg per dose) per inhaled route with a spacer, 4 to 10 doses depending on the weight of the child, to be repeated every 10 to 15 minutes [7–9].

The patient should also be maintained in the position where he or she feels best: semi-seated in case of respiratory distress or in supine position with the lower extremities elevated in case of cardiocirculatory failure with no mobilization before complete recovery [7–9].

Emergency services (15, or 112 abroad) should be called immediately after administration of epinephrine injection, in order to continue in-hospital care management after medical transfer. Certain anaphylactic reactions are refractory to a first dose of epinephrine (up to 10%). There is also a risk, albeit low, of a two-stage (biphasic) reaction (less than 5%) [19]. It is recommended to perform a tryptase assay between 30 minutes to two hours after the onset of the first signs (peak serum tryptase) [8,9]. Monitoring after anaphylaxis is usually 6 to 24 hours depending on the nature and course of the signs, the context of the allergic reaction, and patient history.

Table 3
Absolute and relative indications for prescribing an epinephrine auto-injector (EAI). Consider prescribing at least one epinephrine auto-injector with any of the following additional factors (especially if more than one is present) [8].

Absolute indications
Previous anaphylaxis triggered by food, latex, or aeroallergens
Previous exercise-induced anaphylaxis
Previous idiopathic anaphylaxis
Co-existing unstable or moderate to severe, persistent asthma and a food allergy[a]
Venom allergy in adults with previous systemic reactions (not receiving maintenance venom immunotherapy) and children with more than cutaneous/mucosal systemic reactions
Underlying mast cell disorders or elevated baseline serum tryptase concentrations together with any previous systemic allergic reactions to insect stings, even in venom immunotherapy-treated patients
Relative indications
Previous mild-to-moderate allergic reaction[a] to peanut and/or tree nut
Previous mild to moderate allergic reaction linked due to small amounts of food[a]
Teenager or young adult with a food allergy[a]
Remote from medical help and previous mild-to-moderate allergic reaction to a food, venom, latex, or aeroallergens

[a] Excluding pollen food syndrome (oral allergy syndrome).

3. Choosing the contents of the emergency kit: with or without an epinephrine auto-injector

The choice of the contents of the emergency kit, with or without an EAI, should take into account the recommendations (Table 3).

Four EIAs are currently marketed in France: Anapen® 0.15 and 0.30 mg, Emerade® 0.15/0.30 and 0.50 mg, Epipen® 0.15 and 0.30 mg and Jext® 0.15 and 0.3 mg. The choice of the EAI assay has

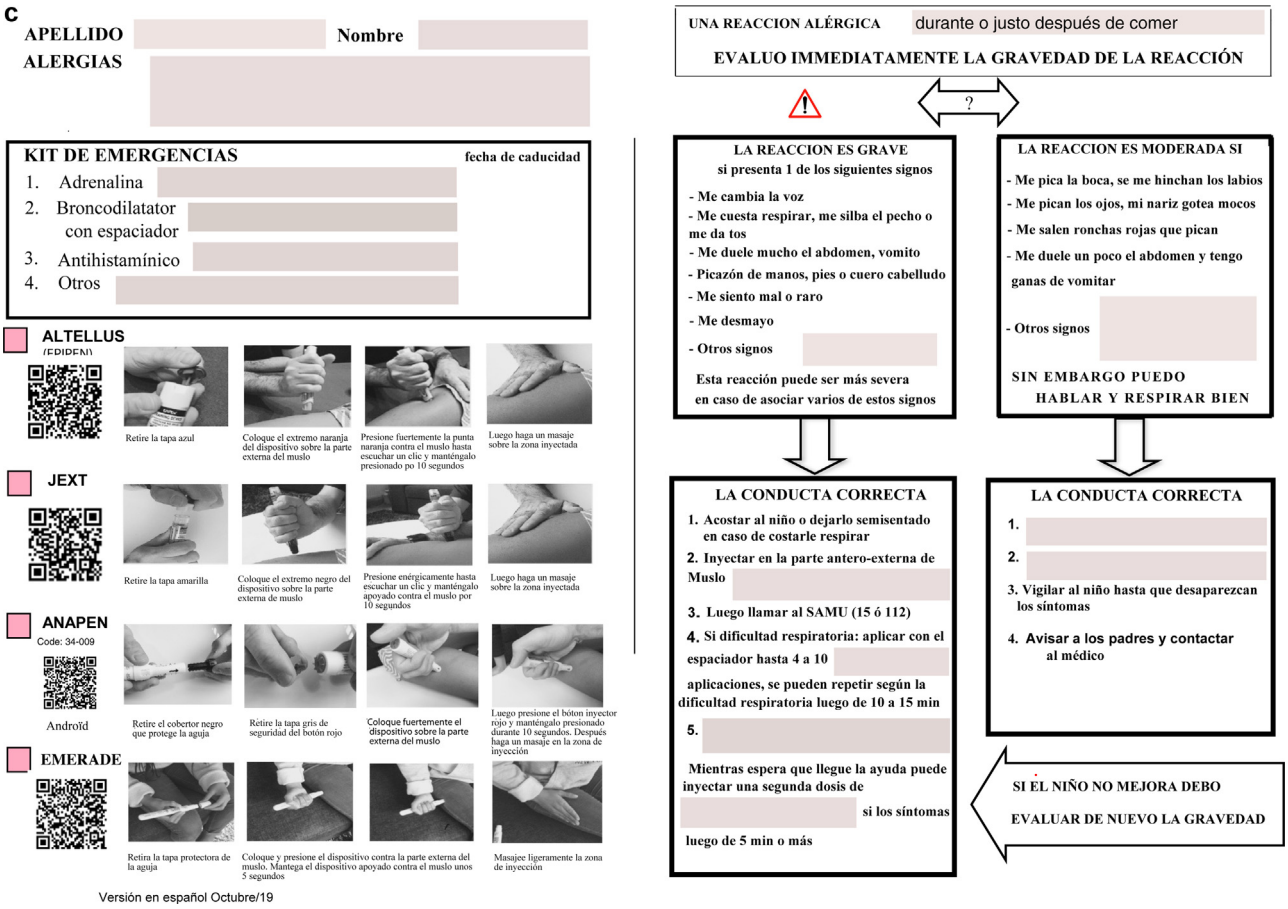

Fig. 1. (*Continued*)

been the subject of recommendations by the French Allergology Society [15] (Table 2). In France, the National Health Authority and the French Society of Emergency Medicine recommend prescribing two EAIs per emergency kit [9].

The contents of the emergency kit aside from EAIs have yet to reach a consensus. Most allergists prescribe an oral antihistamine, effective only on mucocutaneous reactions. In instances of severe or fatal food-related anaphylaxis, bronchospasm is most often an associated condition [18]. This justifies the prescription of short-acting inhaled bronchodilators (with or without an inhalation chamber depending on the age, habits and aptitude of the child).

Oral corticosteroids are not effective during an acute reaction or on the risk of biphasic reactions [19]. This point is further illustrated by the fact that they are considered as third-line drugs in recent recommendations [8,9]. With some exceptions, they are thus not prescribed and do not appear on measures to be taken urgently.

It is up to the physician prescribing the emergency care protocol to accompany the present document with explanations and a minimum of therapeutic education: i.e. demonstrate the use of the EAI with a trainer and have the child and his family manipulate the device, train the child to use an inhalation chamber or the chosen inhaled device. It is important to remember that the contents of the kit as well as the expiry dates of the drugs should be checked regularly, that the EAI should be stored at room temperature (< 25–30 °C) and that the liquid contained in the EAI should remain clear.

4. After emergency treatment of anaphylaxis, consultation with an allergist is imperative

In emergency at the time of the reaction, the physician needs to undertake the following action: constitute or renew the contents of the emergency kit with regard to the allergic reaction that has occurred, prescribe a follow-up with the allergist, provide the family with the medical report related to the allergic reaction, including specifying the clinical condition and the medications received.

In a patient with a known allergy, any new anaphylaxis or use of a drug in the emergency kit should be systematically followed by a consultation with the allergist. Indeed, it will be necessary to review, with the patient and his or her family, the nature of the allergic reaction as well as the allergen in question when identified, the appropriate calling or not of emergency medical services, the adequacy of the drugs used, and if necessary, the use of the EAI. A duplicate of the documents completed by the emergency physician (with as much detail as possible on the context, the signs of the reaction, the suspected allergens, the surveillance modalities, the treatments received, the biological tests performed, etc.) must be given to the patient or his/her family, to be conveyed to the allergist.

In case of a first anaphylaxis, the emergency action plan presented in this article must be proposed. It is therefore advisable to prescribe an emergency kit with two EAIs according to the previous recommendations.

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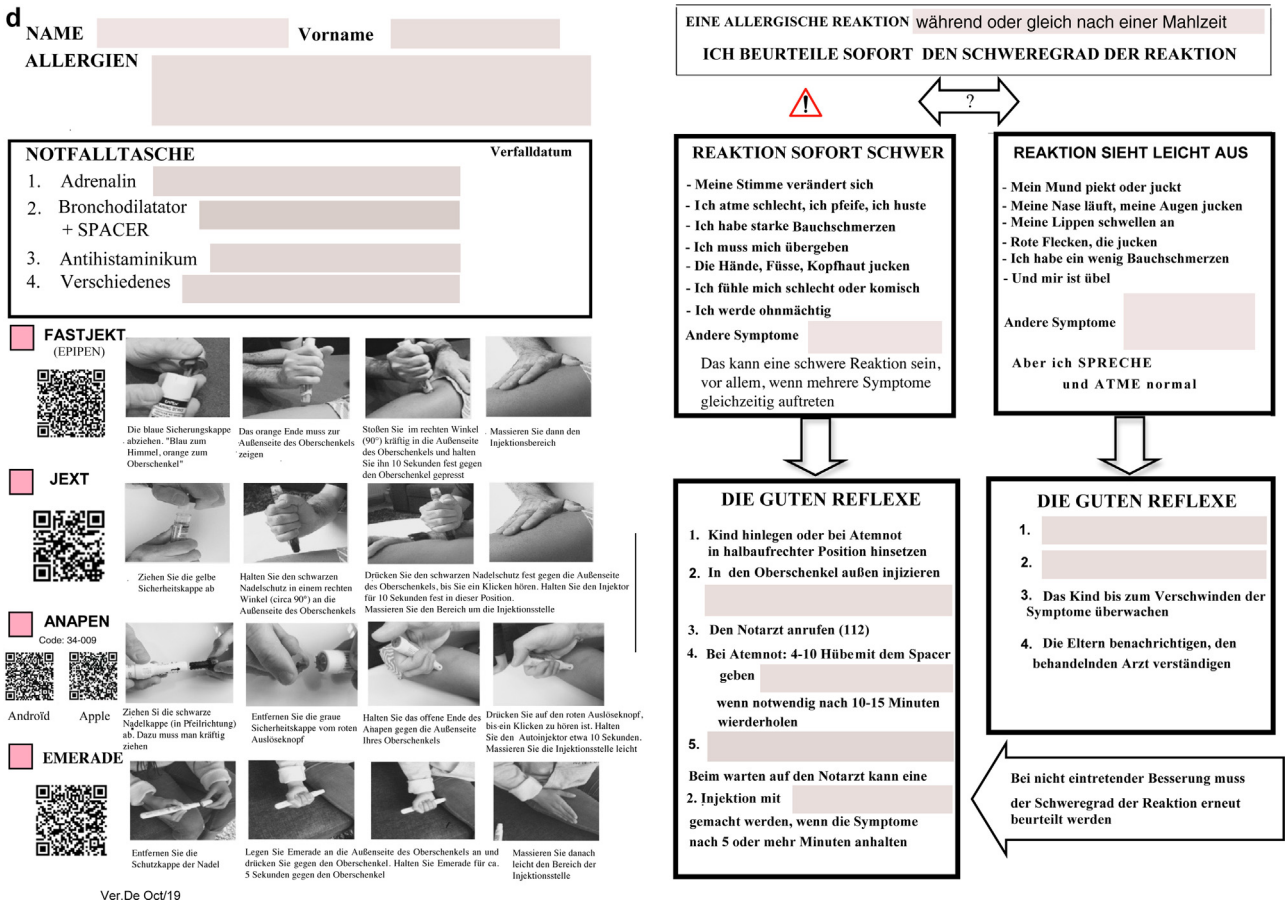

Fig. 1. (*Continued*)

Disclosure of interest

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References

[1] Turner PJ, Gowland MH, Sharma V, Ierodiakonou D, Harper N, Garcez T, et al. Increase in anaphylaxis-related hospitalizations but no increase in fatalities: an analysis of United Kingdom national anaphylaxis data, 1992-2012. J Allergy Clin Immunol 2015;135:956–63.
[2] Mullins RJ, Dear KB, Tang ML. Time trends in Australian hospital anaphylaxis admissions in 1998-1999 to 2011-2012. J Allergy Clin Immunol 2015;136:367–75.
[3] Pouessel G, Chagnon F, Trochu C, Labreuche J, Lejeune S, Recher M, et al. French Group for Pediatric Intensive Care and Emergencies (GFRUP). Anaphylaxis admissions to pediatric intensive care units in France. Allergy 2018;73:1902–5.
[4] Grabenhenrich LB, Dölle S, Moneret-Vautrin A, Köhli A, Lange L, et al. Anaphylaxis in children and adolescents: the European Anaphylaxis Registry. J Allergy Clin Immunol 2016;137:1128–37.
[5] Sampson HA, Muñoz-Furlong A, Bock SA, et al. Symposium on the definition and management of anaphylaxis: summary report. J Allergy Clin Immunol 2005;115:584–91.
[6] Lieberman P, Nicklas RA, Oppenheimer J, et al. The diagnosis and management of anaphylaxis practice parameter: 2010 update. J Allergy Clin Immunol 2010;126:477–80.
[7] Simons FER, Ardusso LR, Bilò MB, Cardona V, Ebisawa M, El-Gamal YM, et al. International consensus on (ICON) anaphylaxis. World Allergy Organ J 2014;7:9.
[8] Muraro A, Roberts G, Worm M, et al. Anaphylaxis: guidelines from the European Academy of Allergy and Clinical Immunology. Allergy 2014;69:1026–45.
[9] Gloaguen A, Cesareo E, Vaux J, Valdenaire G, Ganansia O, et al. Prise en charge de l'anaphylaxie en médecine d'urgence. Recommandations de la Société française de médecine d'urgence (SFMU) en partenariat avec la Société française d'allergologie (SFA) et le Groupe francophone de réanimation et d'urgences pédiatriques (GFRUP), et le soutien de la Société pédiatrique de pneumologie et d'allergologie (SP2A)*. Ann Fr Med Urgence 2016;6:342–64.
[10] Pouessel G, Galand J, Beaudouin E, Renaudin JM, Labreuche J, et al. The gaps in anaphylaxis diagnosis and management by French physicians. Pediatr Allergy Immunol 2017;28:295–8.
[11] Pouessel G, Lejeune S, Dupond MP, Renard A, Fallot C, Deschildre A. Individual healthcare plan for allergic children at school: lessons from a 2015-2016 school year survey. Pediatr Allergy Immunol 2017;28:655–60.
[12] Grabenhenrich LB, Dölle S, Ruëff F, Renaudin JM, Scherer K, et al. Epinephrine in severe allergic reactions: the European Anaphylaxis Register. J Allergy Clin Immunol Pract 2018;6:1898–906.
[13] Deschildre A, Villard-Truc F, Gomez S, Santos C, Just J. Plan d'action en cas de réaction accidentelle dans l'allergie alimentaire chez l'enfant : position du groupe de travail « allergie alimentaire » sous l'égide de la Société française d'allergologie. Rev Fr Allergol 2014;54:389–93.
[14] Greenhawt M, Gupta RS, Meadows JA, Pistiner M, Spergel JM, et al. Guiding principles for the recognition, diagnosis, and management of infants with anaphylaxis: an expert panel consensus. J Allergy Clin Immunol Pract 2019;7,1148-56.e5.
[15] Pouessel G, Beaudouin E, et le groupe de travail « Anaphylaxie » de la Société française d'allergologie. Auto-injecteurs d'adrénaline : quel dosage ? Position du groupe de travail anaphylaxie sous l'égide de la Société française d'allergologie. Rev Fr Allergol 2018;58:468–72.
[16] Alqurashi W, Ellis AK. Do corticosteroids prevent biphasic anaphylaxis? J Allergy Clin Immunol Pract 2017;5:1194–205.
[17] Pumphrey RS, Gowland MH. Further fatal allergic reactions to food in the United Kingdom, 1999-2006. J Allergy Clin Immunol 2007;119:1018–9.
[18] Pouessel G, Turner PJ, Worm M, Cardona V, Deschildre A, et al. Food-induced fatal anaphylaxis: from epidemiological data to general prevention strategies. Clin Exp Allergy 2018;48:1584–93.
[19] Lee S, Peterson A, Lohse CM, Hess EP, Campbell RL. Further evaluation of factors that may predict biphasic reactions in emergency department anaphylaxis patients. J Allergy Clin Immunol Pract 2017;5:1295–301.

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