Use of a 24-Hour Hotline vs Voicemail for Off-Hour Support During Oral Immunotherapy for Food Allergy

Paradis V[1], Des Roches A[1], Elbany C[1,2], Braun C[1,3], Graham FJ[1,4], Samaan K[1], Labrosse R[1], Paradis L[1,4], Bégin P[1,4]

[1]*Division of Allergy, Rheumatology, and Immunology, Department of Pediatrics, CHU Sainte-Justine, Montreal, Canada*

[2]*Division of Allergy, Department of Pediatrics, Necker Hospital, Paris, France*

[3]*Division of Allergy, Department of Pediatrics, CHU de Lyon, Lyon, France*

[4]*Division of Allergy and immunology, Department of Medicine, CHUM, Montreal, Canada*

J Investig Allergol Clin Immunol 2025; Vol. 35(3): 227-229
doi: 10.18176/jiaci.1063

Key words: Food allergy. Oral immunotherapy. Off-hour support. Telephone support. Hotline.

Palabras clave: Alergia alimentaria. Inmunoterapia oral. Apoyo fuera de horario. Apoyo telefónico. Línea directa.

Oral immunotherapy (OIT) has proven effective at reducing the risk and severity of accidental allergic reactions and improving the quality of life of food-allergic patients and their families [1-3]. However, the treatment carries a risk of allergic reactions at home, and the dosing strategy must be adapted in certain situations. Patients undergoing OIT and their caregivers must thus be prepared to play an active role in the daily management of their food allergy outside the clinic [4].

There is no consensus or recommendation regarding the kind of after-hour support that should be offered during OIT [1,2,5-8]. A satisfaction survey from Italy found that patients undergoing OIT appreciated having access to a 24-hour hotline, with about half of the 85 respondents reporting having used it. The objective of this study was to report the real-life use of a voicemail system and a 24-hour hotline for OIT in a tertiary university care center (CHU Sainte-Justine, Montreal, Canada).

Since its inception in 2017, the CHU Sainte-Justine OIT clinic has provided patients with the voicemail number for the allergy nurses and the phone number for the hospital's 24-hour support hotline. These were the only means to talk to the allergy department outside an appointment. Hotline nurses received training on management of the most common situations in OIT and could communicate with the on-call allergist if necessary.

Between July 2017 and December 2020, 884 children underwent OIT at the CHU Sainte-Justine. Of these, 393 patients/caregivers (44%) left 841 voicemails for the allergy nurses, and 43 (5%) made 62 calls to the 24-hour hotline. The 24-hour hotline contacted the on-call allergist in 20 instances (31%) (Table S1). All patients were called back

Table. Main Reason(s) for the Call

	Voicemail system n=841	24-Hour hotline n=62
Main reason for call		
– Report reaction to OIT dose at home	432 (51%)	33 (53%)
- Requiring epinephrine	109 (13%)	12 (19%)
- Treated with epinehrine	31 (4%)	6 (10%)
- Leading to emergency visit	41 (5%)	8 (13%)
– Advice on dose adjustments (eg, infection, skipped doses)	172 (20%)	9 (15%)
– Allergic reaction unrelated to oral immunotherapy	107 (13%)	11 (18%)
– Concomitant medication (premedication included)	51 (6%)	6 (10%)
– Help with food aversion/anxiety	48 (6%)	3 (5%)
– Scheduling issues	31 (4%)	0
Advice provided		
– Reassurance/no change	162 (19%)	6 (10%)
– Changes made to regular medication	468 (55%)	28 (45%)
- Antihistamine	372 (44%)	16 (26%)
- Gastrointestinal medication	135 (16%)	3 (5%)
- Antipyretic medication	43 (5%)	7 (11%)
– To decrease the dose	325 (39%)	9 (15%)
– To stop the dose	57 (7%)	16 (26%)
– Advice on how to take the dose (eg, diet/timing)	161 (19%)	10 (16%)
– Schedule medical evaluation	93 (11%)	0
– Administer epinephrine and go to the emergency department	NA	1 (2%)
24-Hour hotline shift		
– Day (weekend/holiday) (8 AM to 4 PM)	-	22 (35%)
– Evening (4 PM to 12 AM)	-	38 (61%)
– Night (12 AM to 8 AM)	-	2 (3%)
On-call allergist contacted	-	20 (32%)

Abbreviations: NA, not applicable; OIT, oral immunotherapy.

by the allergy nurse on the following working day. The call lasted a mean (SD) of 13 (5) minutes. The main reasons for leaving voicemail or calling the hotline are shown in the Table.

Compared to families who did not call, independent risk factors associated with calling either line included younger age, a history of allergic rhinitis, experiencing a home-dosing reaction (CoFAR 1 and above), and experiencing a moderate-to-severe reaction (CoFAR 2 and above) (Table S2). Allergic rhinitis may be a proxy for environmental allergies, which can act as cofactors for reactions. Among those who called, the only independent risk factor for using the 24-hour hotline was the level of allergen-specific IgE to the food included in the OIT treatment mix.

Of the 393 patients who left voicemails, 31 (8%) reported having administered epinephrine. However, a further 78 did not administer epinephrine despite reporting respiratory or cardiovascular symptoms that would normally justify its use. Of the 43 patients who called the hotline, 6 (14%) had already administered epinephrine, although a further 6 reported symptoms that would technically have warranted it. None of the 12 patients were instructed to inject (or reinject) epinephrine because symptoms were already improving. The only patient who was instructed to inject epinephrine presented with isolated abdominal pain as the only symptom. The rate of home epinephrine use in patients reporting systemic symptoms (28% in the voicemail group and 50% in the hotline group) was slightly better than the 15%-20% reported in the general food-allergic population who are not undergoing OIT and who would not necessarily call outside clinic hours [9,10].

Our study is limited by its single-center and retrospective design, and the results may not be generalizable to other settings. That said, it was performed in a tertiary care center with a specific focus on severe cases; therefore, one would not expect a significantly greater burden in other settings. In the future, automatized systems to control OIT at home such as apps may further decrease the burden of follow-up of reactions [11].

The study period included the outbreak and peak of the COVID-19 pandemic. However, this does not seem to have impacted the use of the voicemail system or the 24-hour hotline, as the average of calls to both systems remained similar before and after the onset of the pandemic.

Another caveat is that since the 24-hour hotline was not offered by the allergy nurses themselves, this may have encouraged patients to use the voicemail system rather than speak with a nurse who is not familiar with their case. We cannot exclude that the number of the 24-hour hotline calls would have been greater if the allergy nurses or the allergists had made themselves available 24/7.

All in all, the key findings were that the volume of 24-hour hotline calls received was relatively low (62 calls over 3.5 years) and we did not identify any instances where it affected management in a meaningful way.

Nevertheless, the service may still have contributed to quality of care, including for those who did not use it, by providing a sense of safety. Even outside OIT, 24-hour hotlines have been shown to improve the quality of life of children with food allergy [7]. While we did not specifically question patients on their preferences, a satisfaction survey performed in 2021 suggested that families were satisfied with the off-hour support services provided.

The low volume of calls also means that it was easily absorbed by our hospital's pediatric support service, at little cost. Rather than concluding that it is not needed because it is seldom used, one could say that it is easily implementable. Therefore, our conclusion is that while it may not be an absolute safety requirement for OIT, the 24-hour hotline should be viewed as a positive addition to improve OIT when feasible.

Acknowledgments

We would like to thank the allergy and NACC nurses for their contribution to the study.

Funding

The study was supported by the CHU Sainte-Justine Foundation. VP was supported by a Canadian Society of Allergy and Clinical Immunology Research Scholarship. PB was supported by the Fonds de Recherche du Québec – Santé.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

1. Begin P, Chan ES, Kim H, Wagner M, Cellier MS, Facron-Godbout C, et al. CSACI guidelines for the ethical, evidence-based and patient-oriented clinical practice of oral immunotherapy in IgE-mediated food allergy. Allergy Asthma Clin Immunol. 2020;16:20.
2. Muraro A, de Silva D, Halken S, Worm M, Khaleva E, Arasi S, et al. Managing food allergy: GA(2)LEN guideline 2022. World Allergy Organ J. 2022;15:100687.
3. Cerecedo I, López-Picado A, Hernández-Núñez MG, Rubio-Herrera MA, de la Hoz B, Infante S, et al. Milk Ladder for Reintroduction of Cow's Milk in Infants With IgE-Mediated Cow's Milk Allergy: Version Adapted to the Spanish Population. J Investig Allergol Clin Immunol. 2024;34:51-3.
4. Gaspar A, Santos N, Faria E, Câmara R, Rodrigues-Alves R, Carrapatoso I, et al. Anaphylaxis: A Decade of a Nationwide Allergy Society Registry. J Invest Allergol Clin Immunol. 2022;32:23-32.
5. Mack DP, Soller L, Chan ES, Hanna MA, Terpstra C, Vander Leek RK, et al. A High Proportion of Canadian Allergists Offer Oral Immunotherapy but Barriers Remain. J Allergy Clin Immunol Pract. 2021;9:1902-8.
6. Mack DP, Dribin TE, Turner PJ, Wasserman RL, Hanna MA, Shaker M, et al. Preparing Patients for Oral Immunotherapy (PPOINT): International Delphi consensus for procedural preparation and consent. J Allergy Clin Immunol. 2024;153:162-33.
7. Kelleher MM, Dunngalvin A, Sheikh A, Cullinane C, Fitzsimons J, Hourihane JO. Twenty four-hour helpline access to expert management advice for food-allergy-triggered anaphylaxis in infants, children and young people: a pragmatic, randomized controlled trial. Allergy. 2013;68:1598-604.
8. Baldwin A, Willis E, Harvey C, Lang M, Hegney D, Heard D, et al. Exploring the role of nurses in after-hours telephone services in regional areas; A scoping review. PLoS One. 2020;15:e0237306.
9. Chooniedass R, Temple B, Becker A. Epinephrine use for anaphylaxis: Too seldom, too late. Ann Allergy Asthma Immunol. 2017;119:108-10.
10. Noimark L, Wales J, Du Toit G, Pastacaldi C, Haddad D, Gardner J, et al. The use of adrenaline autoinjectors by children and teenagers. Clin Exp Allergy. 2012;42:284-92.
11. Sánchez-Fernández S, Lasa E, Terrados S, Sola-Martínez F, Martínez-Molina S, López de Calle M, et al. Mobile App/Web Platform for Monitoring Food Oral Immunotherapy in Children: Longitudinal Clinical Validation Study. JMIR Pediatr Parent. 2024;7:e54163.

Manuscript received August 20, 2024; accepted for publication January 15, 2025.

Philippe Bégin
CHU Ste-Justine
3175 côte Ste-Catherne,
Montréal, H3T 1C5
Canada
E-mail: Philippe.begin.med@ssss.gouv.qc.ca