

## Introduction of a Program to Improve the Information Sharing System of Food Allergy Patients

Ji Su Ha, Su Hyun Kim, Sang Hee Lim, Tae Hoon Ko, Sae Won Choi, Hae Young Lee, Kyung Hwan Kim

Department of Medical Informatics, Seoul National University of Hospital, Seoul, Republic of Korea

### Abstract

Although the symptoms of food allergy are diverse and sometimes dangerous to life, we have not been able to effectively share information on patients' food allergies. In this study, we developed a program to prescribe the allergic formula for each patient and to establish a series of processes for safe allergenic meal delivery based on the standards and guidelines of food allergy management. We then assessed the utility of the "introduction of food allergy program" by comparing the number of allergic prescriptions before and after the program application for inpatients. Through the development and introduction of the program, all hospital staffs, including medical staff and dieticians, can share information on food allergy patients. Systematic management of food allergy patients from doctor's prescriptions has provided the basis for safe meal preparation.

### Keywords:

Food allergy, Hospital Information Systems, Prescriptions

### Introduction

Food allergy is an adverse reaction caused by immunity after ingestion of food [1]. Food allergy is a common disease experienced by 6 ~ 8% of children and 2 ~ 3% of adults [2]. According to an epidemiological survey conducted in 2000, 43,045 children aged 6-15 years at the Pediatric Allergy Respiratory Society, the prevalence of diagnosed as food allergy more than once was 4.7% [3]. In a study of 25,000 children whose ages were 6-12, "self-reported" food intake was 10.9% [4]. The food allergy usually grows naturally as it grows [5]. This is an increasing trend [6].

Although food allergies vary in their severity, severe reactions such as anaphylaxis, angioedema, hypotension, and asthma attacks may pose a life threat if they fail to receive early first aid treatment [7]. At the Seoul National University Hospital, there was a case in which complaints occurred due to proximity errors and side effects due to missing food allergy information by patient when issuing meal orders, but there is no systematic program for sharing food allergy information.

### Methods

Since June 2017, the Allergy Internal Medicine, Feeding and Nutrition Department, Nursing Headquarters, QA Team, and Information Development Team have gathered and organized a process to share food allergy information. Based on this, we developed and introduced food allergy information sharing program in the Hospital Information System (HIS).

To evaluate the effectiveness of the food allergy program, we surveyed the status of food allergy information sharing among patients admitted to Seoul National University Hospital from March 1, 2018 to August 31, 2018.

In addition, the number of prescriptions for allergic meals in July 2017 before the introduction of the program and the number of prescriptions for allergic meals in July 2018 after the introduction of the program were compared.

### Results

The information sharing and coping process for food allergy patients were prepared as follows.

- 1) Establish criteria to be managed and guidelines for food allergy management.
- 2) Categorize allergy information and systematically classify and input information when hospitalized.
- 3) Physicians will prescribe the allergic formula for each patient, and provide the allergic formula in the nutrition course, explain the treatment formula and adjust the meal plan.
- 4) Rapid first aid and patient monitoring based on [Alert] information from doctors, nurses, and food and nutrition department in case of food allergy symptoms.

According to the above work process, the food allergy program in HIS was developed as follows.

- 1) In order to systematically share allergy information, the food allergy item of the hospital nursing information survey system was changed from the free text to the categorized check item. One thing to consider is 'Mackerel / pupa / lacquer / hemp / taro' are not likely to be classified by item, but collecting items that are not provided in patient formula improves the convenience of registration (Fig. 1).

Inpatient Nursing Information Survey	
<input type="checkbox"/> Egg	<input type="checkbox"/> Shrimp
<input type="checkbox"/> Tomato	<input type="checkbox"/> Milk and dairy products
<input type="checkbox"/> Wheat (flour, noodles, bread, etc.)	
<input type="checkbox"/> Soybeans (soybean, soy milk, tofu, soybean paste, etc.)	
<input type="checkbox"/> Mackerel / pupa / lacquer / hemp / taro (Not provided in patient formula)	
<input type="checkbox"/> Etc	
Other details	Present

Figure 1

- 2) When you check the food allergy item on the inpatient nursing information search page, it linked to 'Food Allergy' item of [Alert] (Fig. 2).

Linked to [Alert]	
Food Allergy	
<input type="checkbox"/> Yes : Egg, Shrimp, Tomato, Milk and dairy products	<input type="button" value="Modify"/>

Figure 2

3) In case of adding or modifying the items of food allergy since the creation of the inpatient nursing information survey system, add or modify through the 'Food Allergy' item of [Alert] (Fig. 3).

Figure 3

- 4) The primary care physician issued an allergic meal order (the name of 'other treatment formula').
- 5) The nurse issues an allergic meal order as prescribed by the doctor.
- 6) Dietitians provide allergic meals by patient through food management program of food allergy patients.
- 7) At the time of hospitalization after the patient is discharged from hospital [Alert], the food allergy information is linked to the inpatient nursing information survey.
- 8) Dietitians are able to manage food allergy categories, manage food allergy categories.

From March 1, 2018 to August 31, 2018, 2,033 patients (5%) were enrolled in a total of 37,429 hospitalized patients with food allergies. As a result of analyzing the number of registered food allergies, the most frequent item among all 2,666 food allergy items was mackerel / pupa / lacquer / hemp / taro item, and total 321 (12%).

Table 1- Number of food allergies registered by Seoul National University Hospital (March to August 2018)

Type of food allergy	Number of registrations (times)
Mackerel / pupa / lacquer / hemp / taro	321(12.0%)
Peach	296(11.1%)
Shrimp	202(7.5%)
Milk and dairy products	122(4.6%)
Egg	106(4.0%)
Pork	97(3.6%)
Chicken	60(2.3%)
Crab	58(2.2%)
Wheat (flour, noodles, bread, etc.)	58(2.2%)
Other (crustaceans)	44(1.7%)

Of the total 76,623 meals prescribed by physicians in July 2017 before the introduction of the program, 34 (0.04%) were allergic. It was analyzed that 2,303 (3%) out of 76,623 of the total meal prescriptions were provided to the patients, and 98.5% of the allergic diets provided through the intervention of nurses and food and nutrition. After the introduction of the program, the physician's diet was revised to be linked to the actual meals provided. In July 2018, the total number of allergic prescriptions and recipes out of 80,766 prescribed by physicians was 2,784, or 3.4%.

## Discussion

The purpose of this study is to evaluate the utility of food allergy program based on the process to improve the information sharing system of food allergy patients.

Through the reflection of the computerized system and the data analysis, we obtained the following positive evaluation.

- 1) The proportion of patients enrolled in a specific period of time with food allergy is 5%, which is similar to that reported in adults with a prevalence of approximately 3-4% [5].
- 2) By categorizing the items subject to food allergies, it is possible to provide more systematic food allergy meals.
- 3) Prior to this program, there was no program to share the fact that all hospital staffs such as medical staff and nutritionist were food allergy patients. It is possible to share food allergy patient information through [Alert] 'Food Allergy' as an effective opportunity to treat patients.
- 4) The number of allergies provided after the introduction of this program was about 3% and 3.4%, respectively, compared to the one month before and after the introduction. However, the rate of providing food allergy was 0.04% and 3.4%. This means that doctors, nurses, and nutritionists are able to manage food allergy patients in an integrated manner through the introduction of computerized programs.

## Conclusions

In conclusion, the development and introduction of the program allowed all hospital staffs, including medical staff and dietitians, to share information on food allergy patients, and managed the food allergy patients in an integrated manner to lay the groundwork for a safe meal recipe.

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## Address for correspondence:

Jisu Ha. [smile\\_jisu@snuh.org](mailto:jisu@snuh.org).