

A

System Activation | #10

Current Status of Assigned Staffs

You can see details by clicking "Assigned Section"

2017-01-10 21:02:01
(Automatically updates every minute)

Assigned Section	Physician	Nurse	Support Staff	Logistician
Not Assigned	0	0	0	0
Incident Site	0	0	0	0
Headquarters	2	2	1	1
Triage Post	0	2	0	1
Immediate Area	3	3	0	1
Delayed Area	1	1	0	0
Minor Area	1	1	0	0
Deceased Area	0	1	0	1

B

System Activation | #10

Assigned section : Immediate area

☆ : You can sort by clicking a column header

You can assign a leader by clicking the number

2017-01-10 21:02:01 Last Updates

	Occupation	Speciality/Section	Position	Year (Work)	Name	Trained (DMAT)	Trained (NBC)	Estimated Arrival	Arrival	Assigned Section	Arrival Confirmation
1	Physician	Surgery/ER	Fellow	12	Hira E	○	○	20:15	○	Immediate Area	Input
2	Physician	Surgery	Fellow	8	Shinozaki K	○	○	20:17	○	Immediate Area	Input
3	Physician	Surgery	Resident	3	Mizushima Y	-	-	20:24	○	Immediate Area	Input
4	Nurse	Ward	Head Nurse	15	Kajiwara N	-	-	20:13	○	Immediate Area	Input
5	Nurse	Ward	Staff	9	Fujiwara Y	-	-	20:14	○	Immediate Area	Input
6	Nurse	Ward	Staff	6	Ueyama S	-	-	20:36	○	Immediate Area	Input
7	Logistician	Human Resources	Staff	6	Yoshimoto K	-	-	20:16	○	Immediate Area	Input

Fig. 2. System screen of assigned section. Panel A: Overview table of assigned section. http://www.cereja.co.jp/dcs/Assigned_Section_Overview.html Panel B: Detailed information about assigned section. http://www.cereja.co.jp/dcs/Assigned_Section_Detail.html

the assignment without errors using both the ICT system and a conventional manual approach. However, the ICT system was significantly more rapid than the conventional manual approach in assigning 30 staff members ($P = 0.0016$; Fig. 4D).

To ensure that a hospital's disaster control headquarters conduct an effective initial response, it is crucial that they notify in-house hospital

staff, provide the necessary information, and receive responses from those staff [8]. Although the phone tree approach does enable direct verbal communication between individuals, it results in lost time accuracy. In fact, in a US survey, only 43% of respondents considered the phone tree an effective method of contacting in-house staff in a disaster situation [14].

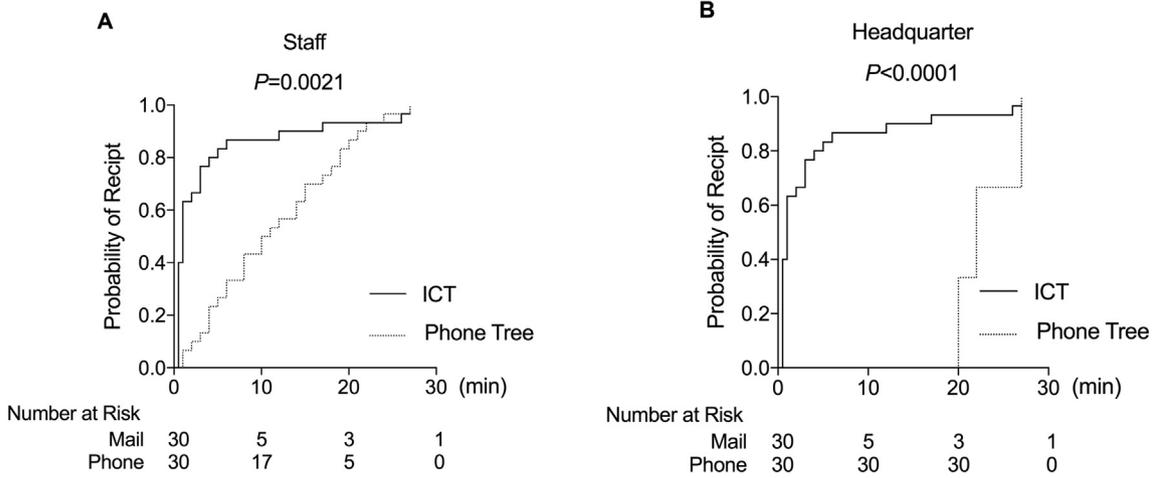


Fig. 3. Kaplan–Meier probability curve of receipt. Panel A: Staff outside hospital. Panel B: Headquarters.

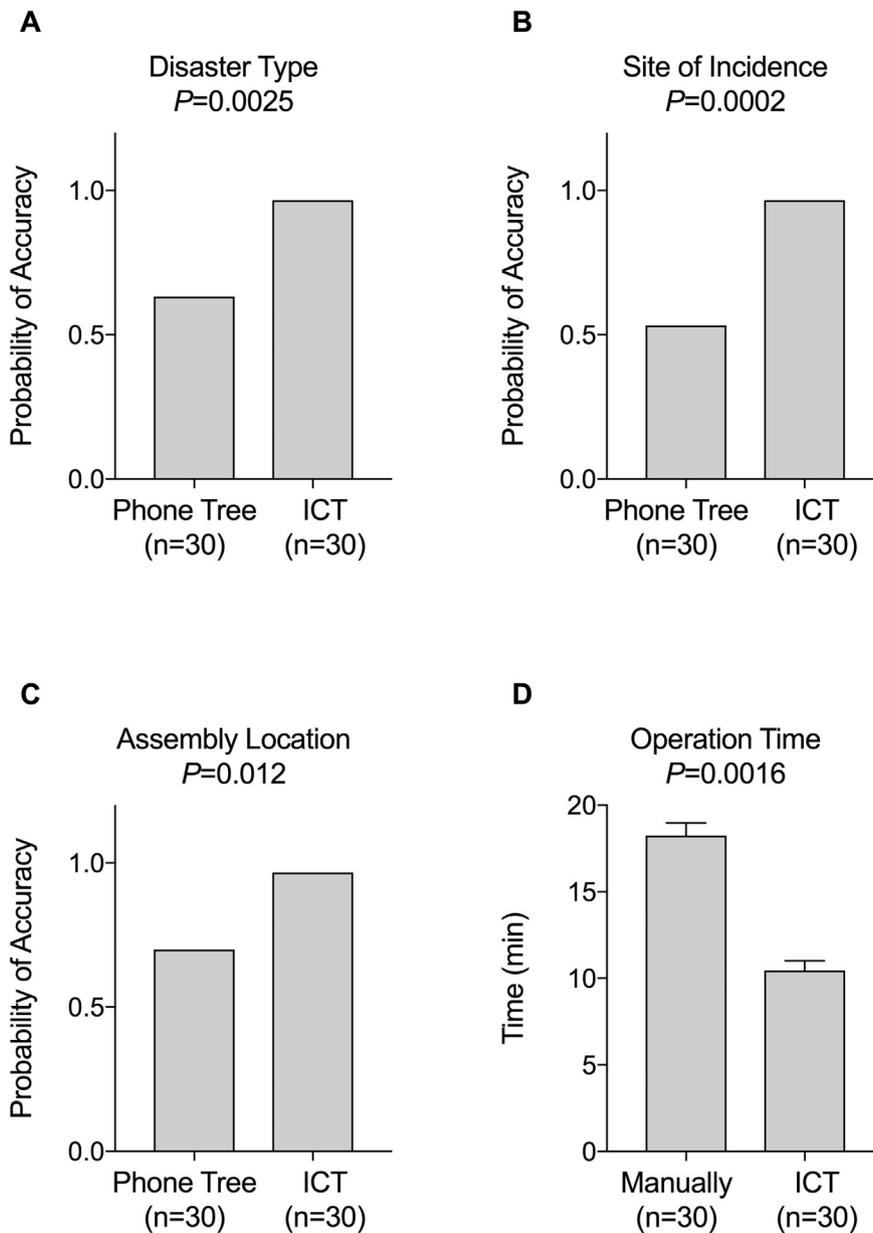


Fig. 4. Accuracy and quickness of transmitted information. Panel A: Information about disaster type. Panel B: Information about site of incidence. Panel C: Information about assembly location. Panel D: Operation time of personnel assignment simulation.

In keeping with their prevalence, mobile phones have been used to improve the initial hospital response to disasters [13, 20]. Specifically, the utility of short message service (SMS) text messaging to notify medical staff has been tested in a simulated mass casualty incident using a ready-made SMS mobile phone application [11, 13]. The studies showed that the simultaneous transmission to multiple persons—a basic ICT function—is effective. Similarly, our study showed the utility of simultaneous transmission using ICT. Moreover, our system had several advantages over existing mobile phone applications such as SMS text messaging or messenger applications. Firstly, ICT can notify thousands of people at once, whereas SMS text messaging or messenger applications are limited in the number of destinations which a single message can simultaneously send to [21]. Secondly, our system enables a user with an insufficient experience to transmit information easily, quickly, and accurately, with contents that are both necessary and sufficient without opening the instruction manual. Furthermore, the system was designed with various considerations and specialized to provide high effectiveness during the initial response to disaster. For example, to promote a prompt system activation by headquarters who are uncertain whether they need to send a request of attendance during the initial phase due to insufficient information, the input screen for system activation has a predefined format of a standby request. To provide flexibility, users can select the destination of each transmission from a list of staff categories by clicking a button. To prevent notification failure, the system repeatedly sends e-mail requests after activation (e.g., every 5 min).

We also developed the system to facilitate subsequent assignment of staff members who have arrived at the assembly point. Specifically, the system was designed so that the headquarters of hospital disaster control could easily and quickly place staff by checking the inputted information necessary to optimal personnel assignment. The present study results showed that the system significantly shortened operation times.

To conclude, our novel ICT system transmitted information more accurately and promptly to staff. Headquarters more quickly received staff responses and the information was effectively utilized for subsequent personnel assignment. It appears that the system improves staff resource management during the initial hospital response to a major incident.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ajem.2018.06.007>.

Mami Yamada, MD

Rinku General Medical Center, Senshu Trauma and Critical Care Center, 2-23 Rinku Orai Kita, Osaka 598-8577, Japan

Taka-aki Nakada, MD, PhD

Rinku General Medical Center, Senshu Trauma and Critical Care Center, 2-23 Rinku Orai Kita, Osaka 598-8577, Japan

Chiba University Graduate School of Medicine, Department of Emergency and Critical Care Medicine, 1-8-1 Inohana, Chuo, Chiba 260-8677, Japan

Corresponding author at: Chiba University Graduate School of Medicine, Department of Emergency and Critical Care Medicine, 1-8-1 Inohana, Chuo, Chiba 260-8677, Japan.
E-mail address: taka.nakada@nifty.com.

Shota Nakao, MD

Rinku General Medical Center, Senshu Trauma and Critical Care Center, 2-23 Rinku Orai Kita, Osaka 598-8577, Japan

Eiji Hira, MD

Rinku General Medical Center, Senshu Trauma and Critical Care Center, 2-

23 Rinku Orai Kita, Osaka 598-8577, Japan

Shimane University Faculty of Medicine, Department of Acute Care Surgery, 89-1 Enya-cho, Izumo, Shimane 693-8501, Japan

Koichiro Shinozaki, MD, PhD

Chiba University Graduate School of Medicine, Department of Emergency and Critical Care Medicine, 1-8-1 Inohana, Chuo, Chiba 260-8677, Japan

The Feinstein Institute for Medical Research, Northwell Health, 350 Community Dr., Manhasset, NY 11030, United States

Rui Kawaguchi, MD

Chiba University Graduate School of Medicine, Department of Emergency and Critical Care Medicine, 1-8-1 Inohana, Chuo, Chiba 260-8677, Japan

Yasuaki Mizushima, MD, PhD

Tetsuya Matsuoka, MD, PhD

Rinku General Medical Center, Senshu Trauma and Critical Care Center, 2-23 Rinku Orai Kita, Osaka 598-8577, Japan

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Gastric ultrasonography in evaluating NPO status of pediatric patients in the emergency department



Pulmonary aspiration of gastric contents is uncommon but still considered a potential risk in patients who may require emergent intubation or procedural sedation [1, 2]. This normally occurs during induction, which tends to be technically variable for pediatric patients. The incidence of pulmonary aspiration is about four to ten times higher in pediatric populations than adults [3, 4]. Typically, preprocedural fasting time is recommended and used to determine the risk of aspiration. The American Society of Anesthesiology (ASA) 2011 Practice Guidelines recommends at least a 2-hour wait for clear fluids and 6 h for solid foods prior to general anesthesia [5]. However, NPO status is not an independent predictor of aspiration and a definitive assessment of gastric contents and NPO status in pediatric patients is either unavailable in emergency department (ED) [3, 6].

Given the variations in reliability of parent/self-reported NPO status and gastric emptying times, NPO status may not truly reflect whether or not contents are present in the stomach. In an effort to assess the application of point-of-care-ultrasound (POCUS) in detecting gastric contents, we conducted a prospective observational study at an academic pediatric emergency department (ED). We postulated that gastric US may offer an objective, alternative approach to assessing gastric contents in pediatric patients. Gastric US has been reported as highly sensitive and specific to detect or rule out gastric contents [7, 8].

In this study, we included patients aged 2 to 18 years with no prior history of esophageal or gastric surgery, hernia, or diabetes. After obtaining informed consents from the parent or legal guardian, EM US fellows performed gastric US on each patient. The sonographers were blinded to the patient's time of the last ingestion and only gathered that data after performing and storing the US images. Either a Sonosite M-Turbo or a Mindray® M-9 with curvilinear probe was used to perform gastric ultrasonography. Patients were placed in a right-lateral decubitus position, which is the position that can detect minimal fluid volume, and the antrum of the stomach was viewed in a sagittal orientation (Fig. 1). The gastric antrum was scanned and measured and the presence and type of contents (fluid versus solid) determined. The US images were then reviewed by two EM attending sonographers independent of each other and blinded to the other study data to assess reproducibility.

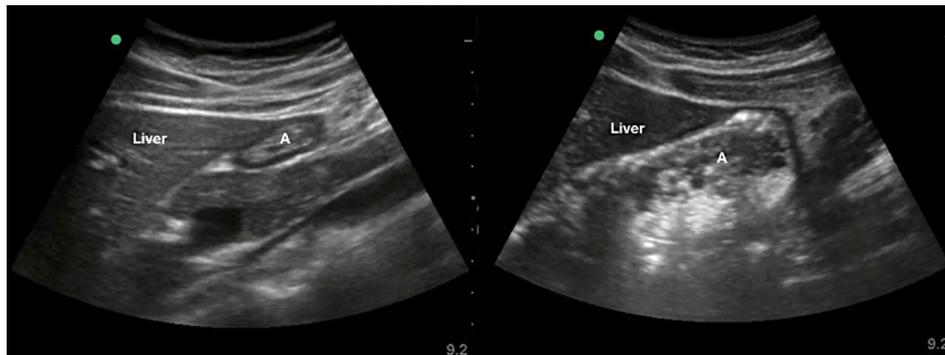


Fig. 1. Ultrasound scans of an empty and content-filled gastric antrum.

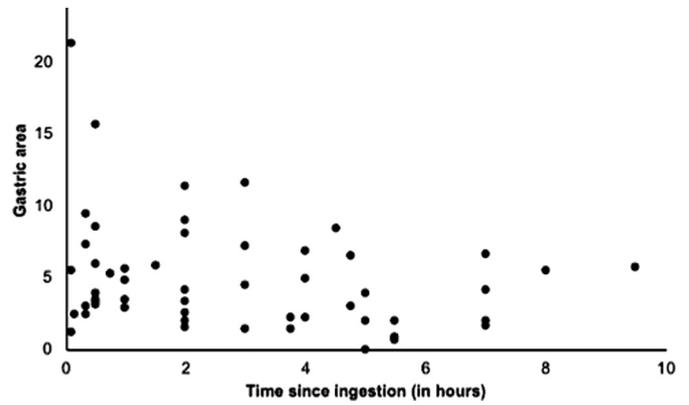


Fig. 2. Correlation of gastric area and time since oral food or drink ingestion.

1. Ultrasound findings

In this group of pediatric patients, we were able to demonstrate the use of US images of the gastric antrum to distinguish the presence or absence of gastric contents. Overall, we detected gastric contents in 83% of patients (43/52). In 69% of patients ($n = 36$), gastric US was able to detect expected gastric contents based on positive meal history. In 13% ($n = 7$) ultrasound showed gastric contents in patients who were NPO by history. In another 13% ($n = 7$) patients were not NPO by history but US showed no gastric contents. In only 22% (2/9) of patients who reported an NPO status were no gastric contents seen. In patients where US showed gastric contents, the average time since last ingestion was 2.3 h for any type and 4.7 h for solid foods. Fig. 2 shows a significant yet modest negative correlation between the gastric area observed on US and time since ingestion of solids and liquids (Pearson $r = -0.24$, P -one-tailed = 0.04). Both reviewers agreed on US findings in 49 out of 52 patients with a weighted kappa of 0.90.

2. How reliable is the self-reported NPO?

In 52 patients who were included in this study, only 9 patients (17%) reported no food/liquid intake in past 2–6 h. The estimated sensitivity of gastric US was 84% (95% CI 69–93%) and specificity was 22% (95% CI 4–60%) when compared to patient anamnesis as a gold standard. The positive likelihood ratio (LR+) was 1.08 (95% CI 0.74–1.56) and the negative likelihood ratio (LR–) was 0.73 (95% CI 0.17–3.09).

This suggests gastric contents as seen on US correlated only modestly with patient history of ingestion. In 26% of patients there was discordance between the gastric US findings and the self-reported NPO status. There were only two instances where the patient's history aligned with the negative finding of gastric contents on US.