

# **Risk Sense Approach for Risk of Emergency Medical Center**

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## **<Abstract>**

In the chemical industry, large plant accidents have been occurring in recent years, and various initiatives are being carried out for the purpose of "improving security" by industry, government and academia. Why could not this approach be addressed without noticing the signs before a major accident? What kind of organizations do organizations do not have accidents or scandals for a long time? It has been researched, developed and put to practical use by people who have an interest in anomaly sensing power to chemical plants such as chemical plants and who wanted to share the management method of the organization which is the model for continuing accidentless. In this method, as a person self-health care about everyday health, an organization corporate body acquires risk sense and self-health care of some organization is carried out so that accidents occur beforehand It is aimed at preventing it. Self-care item of health is blood pressure, body temperature, weight, etc. The items corresponding to these organizations correspond to 11 organizations and personal behavior. This method is beginning to be used under the slogan "to train organizational risks to individuals". In the manufacturing field, as a method to contribute to improving security, we began to expand from the chemical industry to the electrical and electronic industries, and it has begun to be used as a complementary method to raise the effect of ISO activities on quality, environment, occupational safety and so on. It is also spreading in the IT field, service field and emergency medical center such as our Saga university hospital advanced emergency medical center

## 응급 의료 센터의 위험에 대한 위험 감지 방식

유이치로 사카모토

사가 대학병원, 선진 응급 의료 센터

### 〈초 록〉

화학 공업에서 대형 공장 사고들이 최근 몇 년간 발생해왔으며, “안전을 개선하기 위한” 업계, 정부 및 학계의 다양한 계획들이 수행돼 왔습니다. 이런 접근 방식들은 대형 사고가 발생하기 전에는 왜 시도되지 않았을까요? 오랜 기간 사고나 스캔들이 없었던 기관들이 있나요? 화학 공장의 이상을 감지하는데 관심을 갖고 있는 사람들은 이에 대한 연구를 발전시켜 왔으며, 실용화 해왔습니다. 이들은 계속되는 사고를 줄이기 위한 모델로 한 기관의 경영 방식을 다른 사람들과 공유하고자 했습니다. 매일 스스로 건강을 챙기는 사람으로서, 이 방법을 통해 법인 조직은 위험을 감지하고, 또한 일부 조직 스스로 보건 관리를 수행하는 것은 사고가 발생하기 전에 이를 예방하는 역할을 합니다. 자가 건강 관리에는 혈압, 체온, 무게, 등이 포함됩니다. 이러한 항목들은 11 개 조직 및 개인 행동과 일치합니다. 이 방법은 “조직 위험의 개인 훈련”이라는 슬로건 아래 시행되기 시작했습니다. 제조 분야에서는 안전을 개선하기 위한 방법으로 시행되며, 우리는 화학 공업에서부터 전기 및 전자 공업까지 확장시켜 나갈 것입니다. 또한 품질, 환경, 직접 안전 등에 있어서 ISO의 활동력을 증가시키기 위한 보완책으로도 사용되기 시작했습니다. 또한, IT 분야, 서비스 분야, 사가 대학 병원 선진 응급 의료 센터와 같은 응급 의료 센터까지 퍼져나가고 있습니다.

# Department of Emergency and Critical Care Medicine Faculty of Medicine, Saga University



Yuichiro Sakamoto



## 사가현 (佐賀縣)

## 佐賀県。





An international hot air balloon convention is held every year in Saga Prefecture



Kyusyu Saga International Airport is the official name.

It is the international airport with the fewest number of departures and arrivals in Japan.



There is Saga Airport in Saga Prefecture.

Seoul flight is also in service, it is an international airport.



# ASIA PACIFIC ALLIANCE

FOR DISASTER MANAGEMENT

Since Our airport is  
the international  
airport with the  
smallest number of  
departures and  
arrivals,  
it was selected as the  
base airport of A-PAD.

**SUHTA**  
Saitama University of Health and Education

When disaster strikes  
somewhere in Asia,

アジア地域で災害が起きると、

1



**SUHTA**  
Saitama University of Health and Education



People from various nations  
support victims with their best efforts,  
but one by one...

それぞれの国で多くの人々が、被災者を救うため手を差し伸べる。

2



**SUHTAR**  
Supporting Victims of Natural Disasters



We have twelve rescue workers.  
Doctors and nurses are members  
of Saga University.

A-PAD Japan in Kumamoto



**SUHTAR**  
Supporting Victims of Natural Disasters

Kyusyu Saga International Airport Saga Airport  
which plays a role as a gas station  
in the Kumamoto earthquake



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It is the activity scenery of the  
rescue worker belonging to A-  
PAD.

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SAFETY UPGRADE TECHNOLOGY





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Sustainable Urban Technology



Japanese base of A-PAD  
is Kyusyu Saga  
International airport  
**Disaster dedicated  
aircraft will be  
deployed in May.**



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Sustainable Urban Technology



Crisis management is important  
for disaster response.









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SARAJEVO INTERNATIONAL AIRPORT



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SARAJEVO INTERNATIONAL AIRPORT





Please come to Saga by direct flight from Seoul.

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SAGA UNIVERSITY HOT AIR BALLOON FESTIVAL

Crisis management is also  
important for large-scale events  
like hot air balloon competitions.

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SAGA UNIVERSITY HOT AIR BALLOON FESTIVAL



#### 分類

界：動物界 Animalia  
 門：脊索動物門 Chordata  
 亜門：脊椎動物亜門 Vertebrata  
 綱：鳥綱 Aves  
 目：スズメ目 Passeriformes  
 科：カラス科 Corvidae  
 属：カササギ属 *Pica*  
 種：カササギ *P. pica*

朝鮮語ではカササギを「까치 (Kkachi、カチ)」

Kkachi is a prefecture bird in Saga prefecture.



佐賀大学医学部附属病院



The symbol of Saga Prefecture is KKachi.



#ウイントスJマスコット総選挙  
J1 LEAGUE PHOTOS









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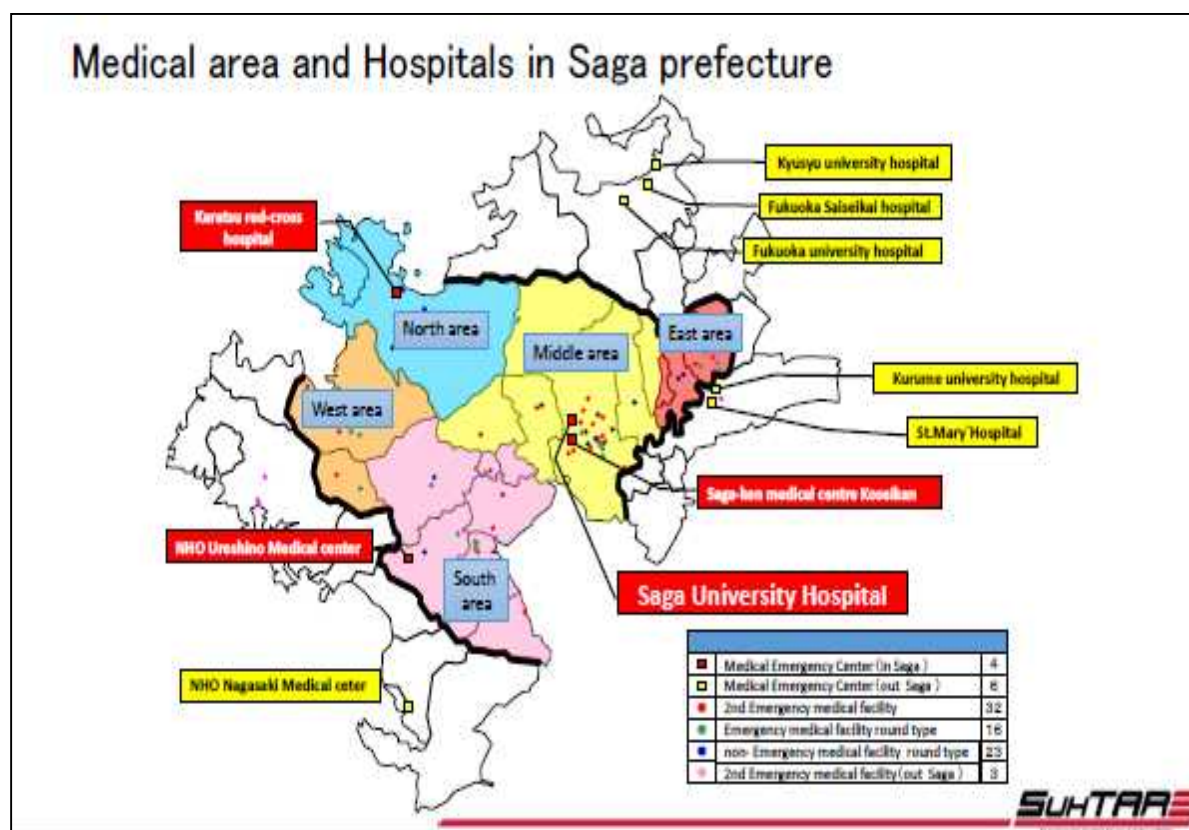
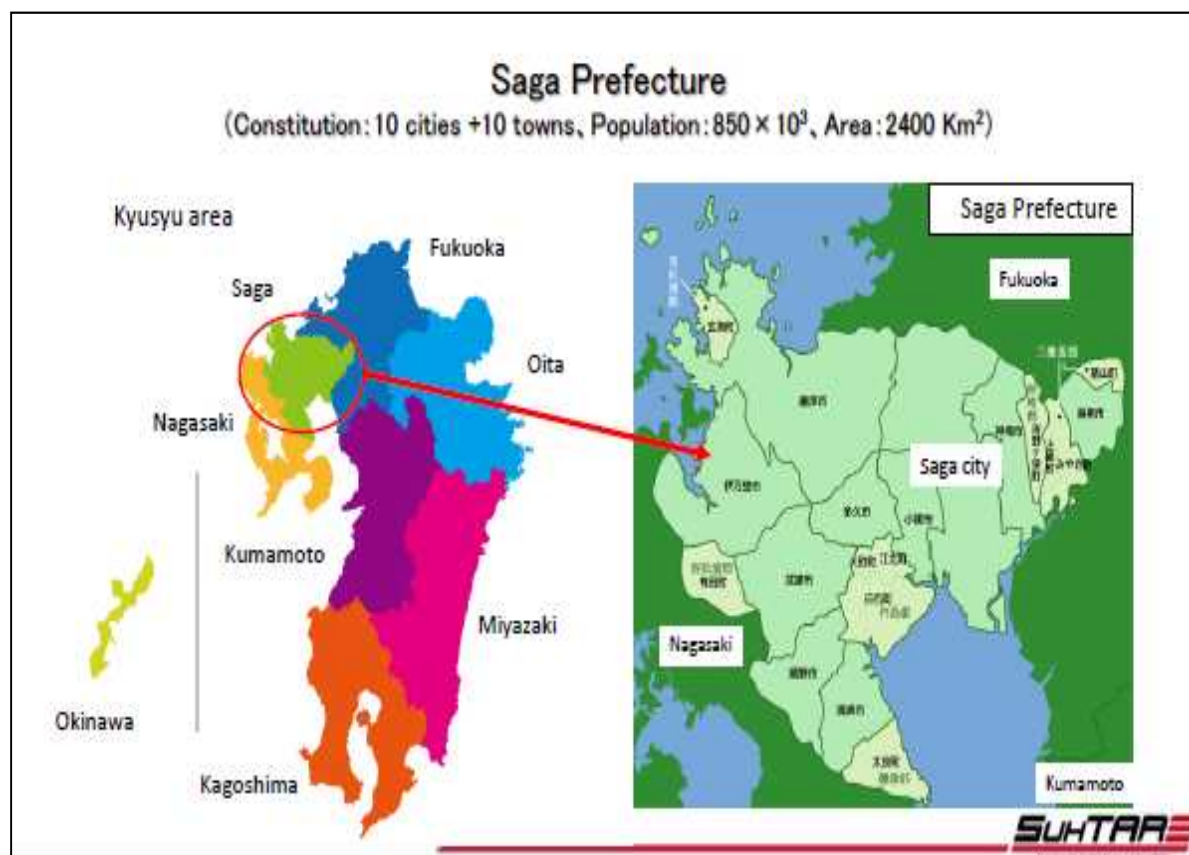








Crisis management is also important for on-site medical examination such as doctor helicopter and doctor car.



## Saga University Hospital Advanced Emergency Medical Service Center

- Number of beds : EICU 6 beds, ECU 20 beds
- 1985 Department of Emergency Medicine (North America ER type)
- 2005 Approved as an Emergency Medical Service Center from Ministry of HLW
- 2011 Doctor Car work station
- 2014 Doctor Helicopter service
- 2014 Trauma surgery
- 2015 Approved as an Advanced Emergency Medical Service Center from Ministry of HLW



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SAGA UNIVERSITY HOSPITAL

## Emergency Medical Information System in Saga Prefecture (99 Saga Net)

- Commenced in April, 2011

Objective : Enables EMS to Effectively choose right hospital and to distribute patients appropriately to emergency hospitals.

- Medical information of available hospital
- Information on hospitals receiving patients
- Real time information sharing between Emergency Medical Service and Fire Service
- Records of patients delivery information for 24/7
- Medical statistics



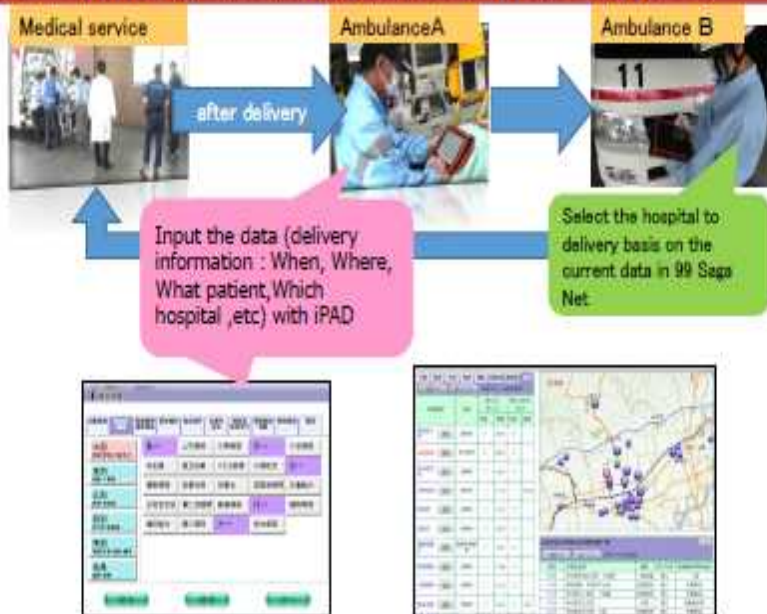
Collected data : about 60000 cases/ 2 years

99さがネット  
SAGA UNIVERSITY HOSPITAL

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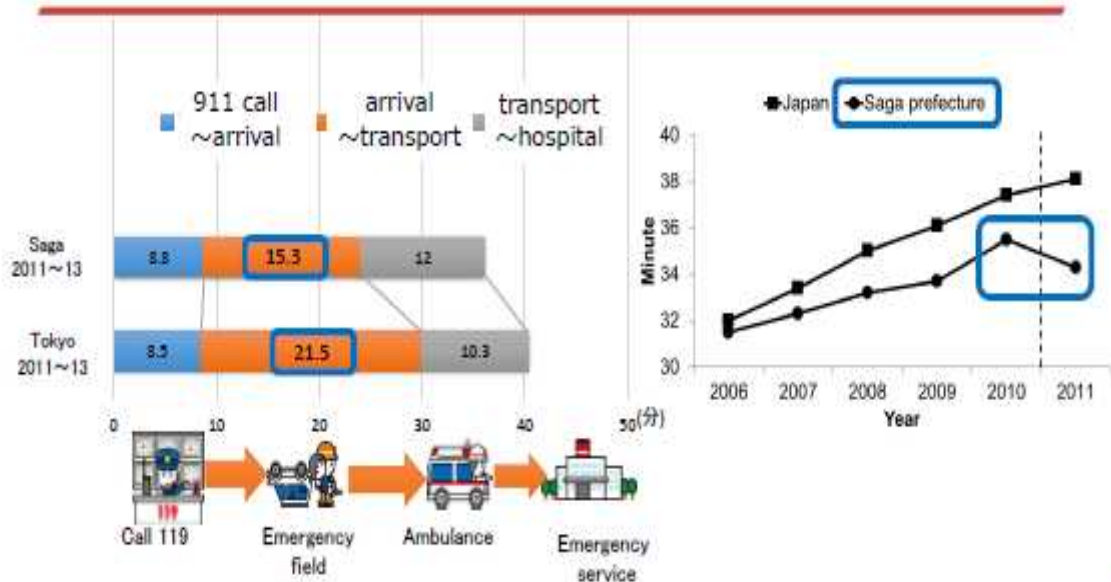


## Input data about emergency patients transported by emergency medical personnel



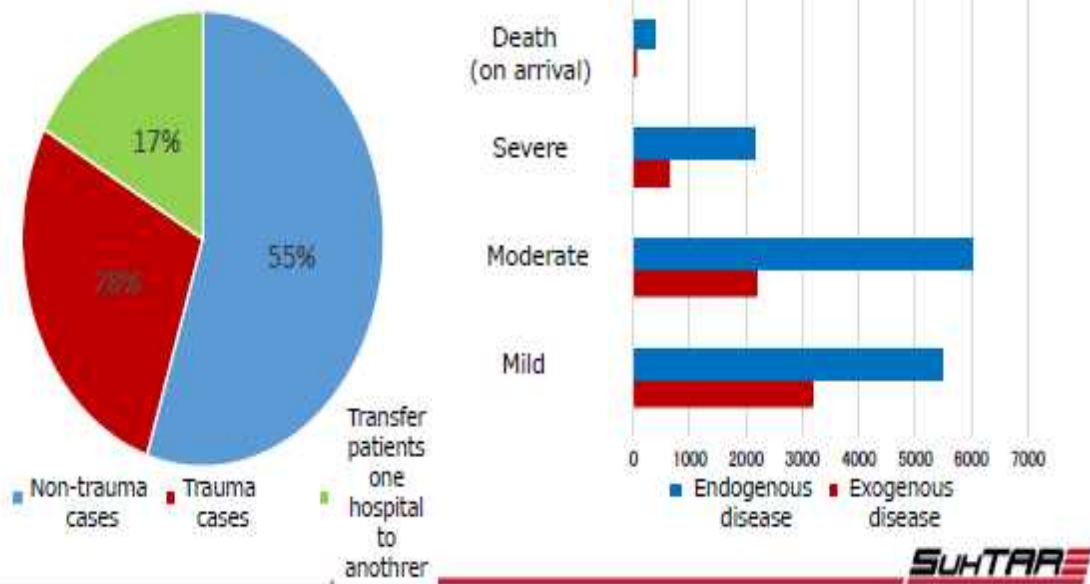
**SUHTAA**  
SAGA UNIVERSITY HOSPITAL TRANSPORTATION ANALYSIS

## Lapse of time from 911 Call to arrive at the Hospital

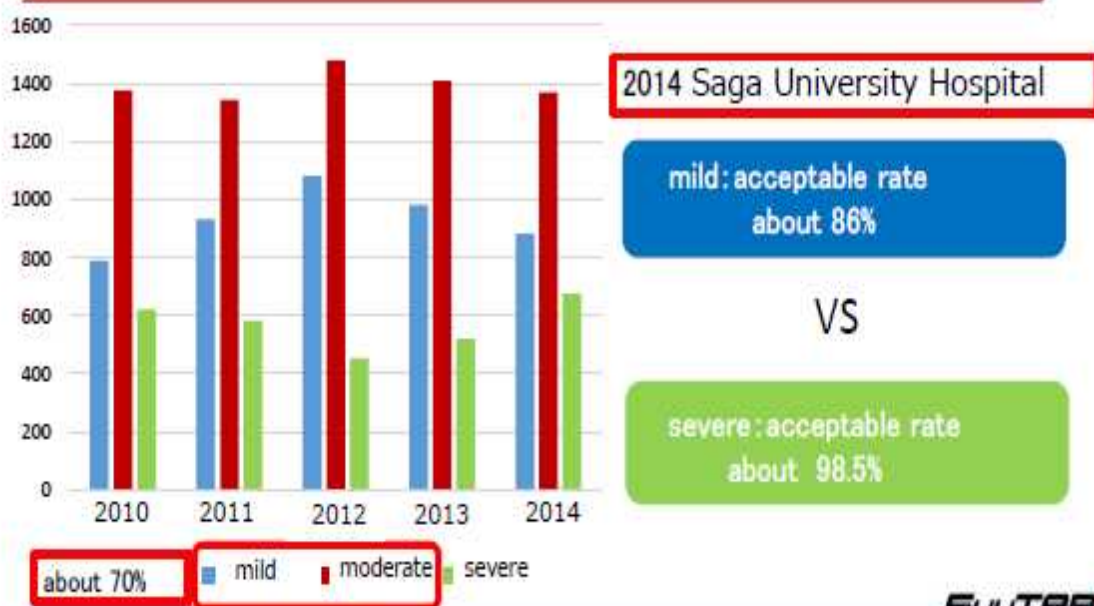


**SUHTAA**  
SAGA UNIVERSITY HOSPITAL TRANSPORTATION ANALYSIS

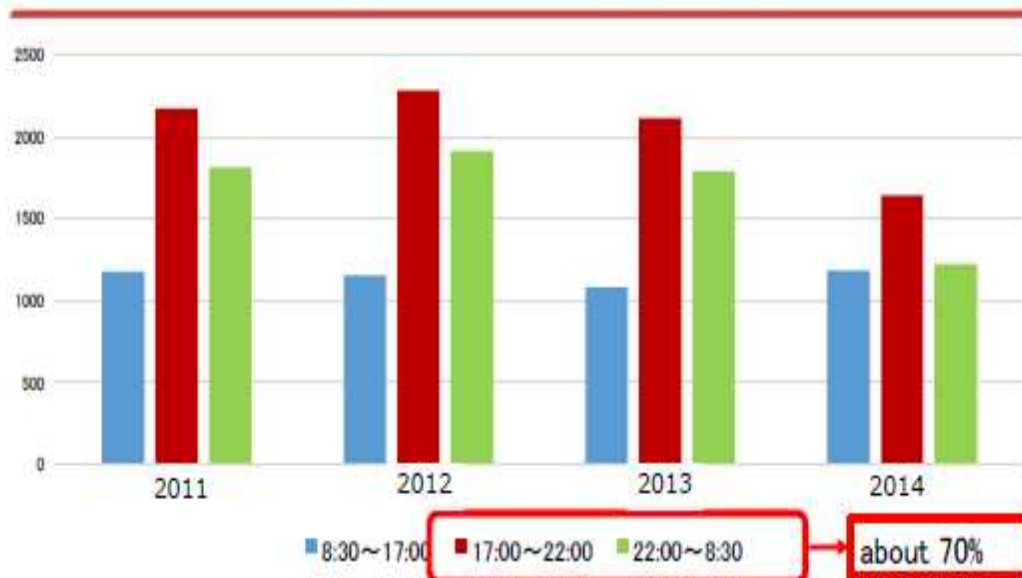
## Emergency transportations in Saga prefecture



## The number of yearly emergency transportations in Saga University Hospital



## The busiest time of emergency transportations in Saga University Hospital



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SAKAHARA UNIVERSITY HOSPITAL TRAUMA CARE CENTER

## Trauma care in Saga University Hospital Advanced Emergency Medical Service Center

### **Complete Pre-hospital care**

- Collection of severe Trauma cases with Doctor Heli
- Short staying time in the trauma field
- Pre-hospital activation of Damage control strategy, Massive Transfusion Protocol

### **Damage control resuscitation**

- Establishment and application of MTP
- Hemostatic resuscitation /Permissive hypotension /Tranexamic acid /Calcium etc

### **Speedy and Suitable Damage control strategy**

- Decision making for an appropriate treatment strategy by Trauma surgeon
- The robust trauma system for quick and suitable hemostasis (operation, IVR, collaboration between anesthesiologist, intensivist and ER physician)

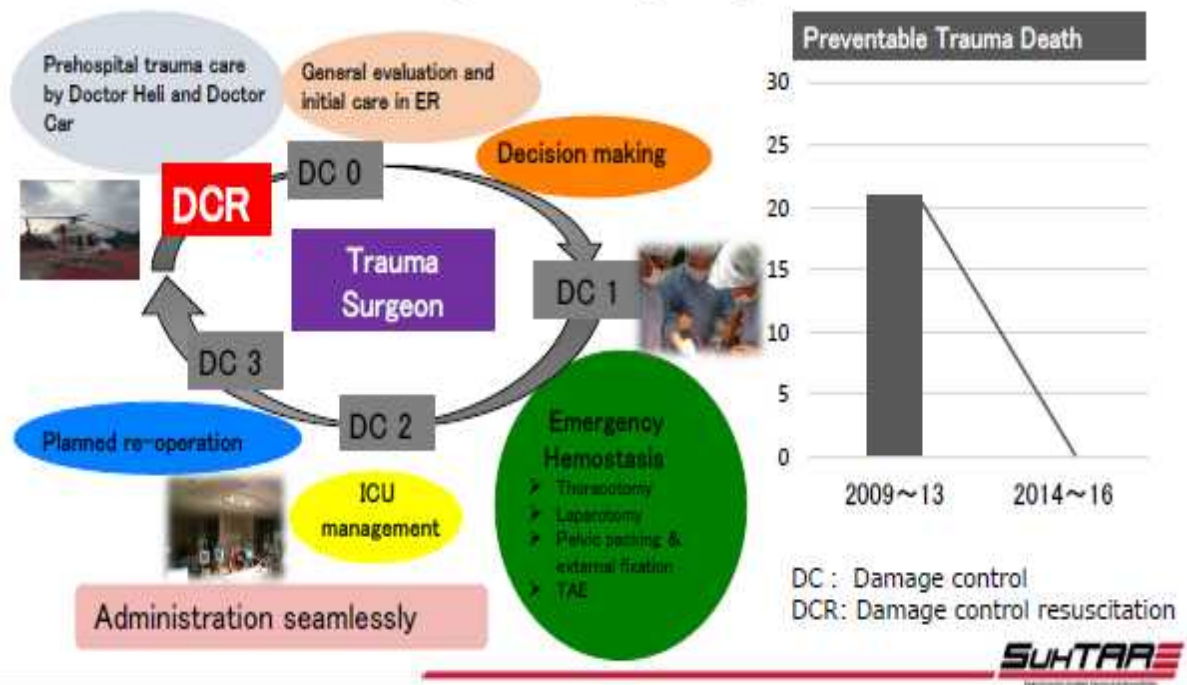
### **Education for Trauma care**

- Implementation of Trauma simulation
- Making Action cards for Trauma
- Taking "off the job training course" (SSTT, ATOM, DSTC etc)
- Combined conference with ER physicians, Trauma surgeons, Intensivists, Nurses, Paramedics

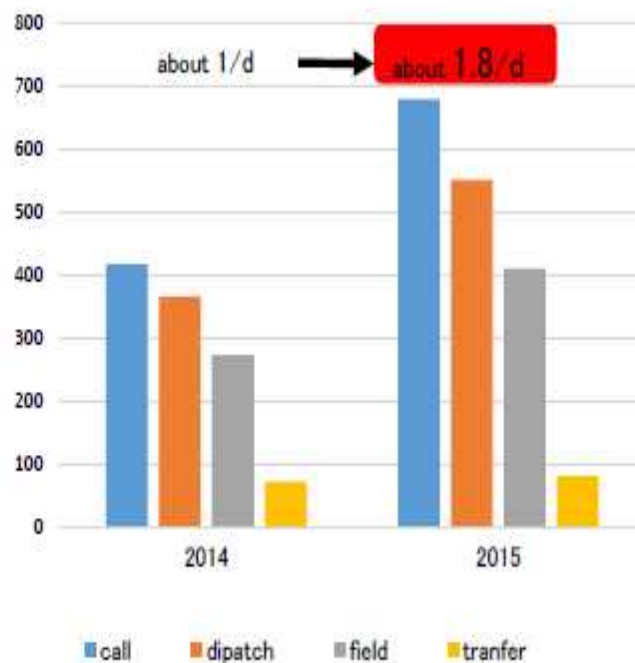
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## Trauma Care in Saga University Hospital



## Doctor Heli system in Saga prefecture



## Cover area of Saga Doctor Heli

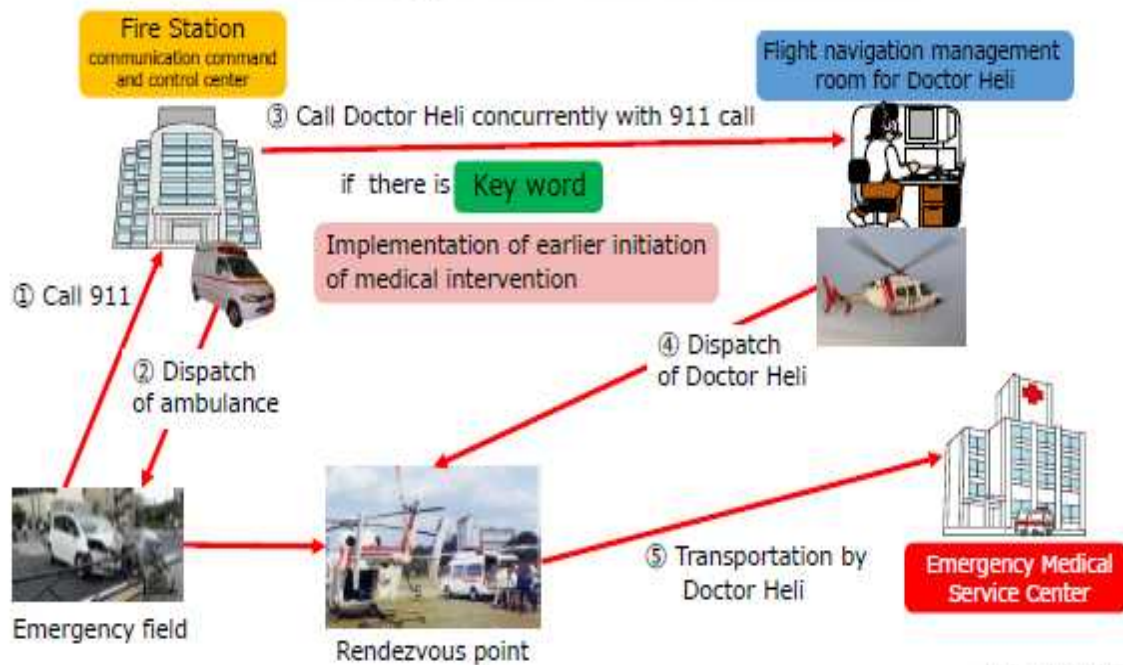


50km : 15 minutes area

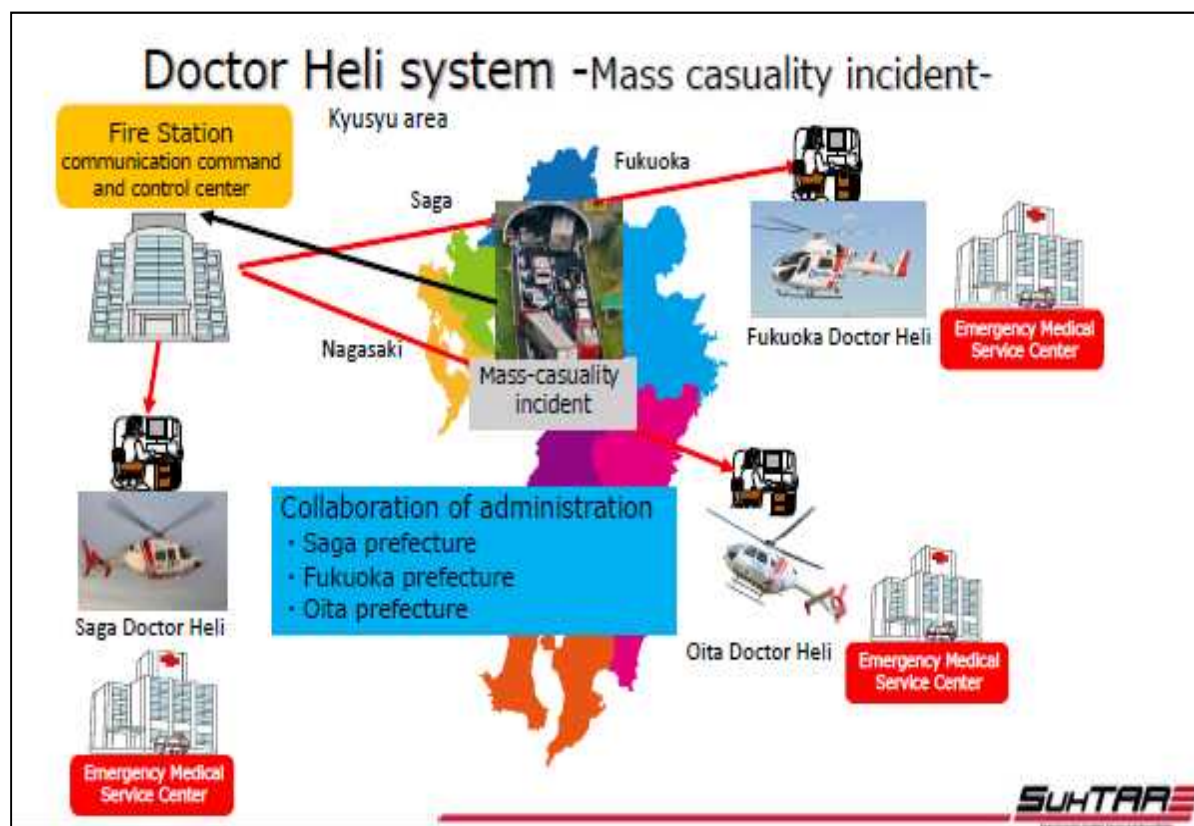
70km : 20 minutes area

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## Doctor Heli system -KEY WORD method-



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## KEY WORD -Exogenous disease -

(1) **Trauma**  
(common) loss of consciousness, consciousness disorder, high energy trauma

**<motor vehicle accident>**

- ① confined in the vehicle
- ② car overturned
- ③ patient discharged from the vehicle
- ④ massive deformity of car body
- ⑤ walker or bicycle run over or pulled down by car
- ⑥ two or more injured persons cannot move
- ⑦ passenger is dead
- ⑧ crushed under the car
- ⑨ broken windshield
- ⑩ vehicle fire

**<motorcycle accident>**

- ① crashed or fallen down with exceeding speed
- ② driver thrown out from the motorcycle
- ③ walker or bicycle crashed by motorcycle
- ④ driver cannot move

**<fall・tumble accident>**

- ① fall or tumble from highland
- ② fall topsy-turvy
- ③ numbness in hands and feet or don't move after fall
- ④ lumbago・hip pain due to pain

**<drowning・choking accident>**

- ① drowning
- ② choking
- ③ buried alive

**<other accident>**

- ① caught in a machine
- ② buried under the heavies
- ③ ablation of finger or limb
- ④ a lot of casualties
- ⑤ accident by train,bus,airplane,ship,explosion, thunderbolt

**<injury case>**

- ① loss of consciousness, consciousness disorder due to striking
- ② stabbed
- ③ shot

**<others>**

- ① extensive burns or inhalation burn

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## KEY WORD -Endogenous disease-

### (2) *Cardio-pulmonary disorder*

- ① acute chest pain or back pain on adult
- ② dyspnea
- ③ pale face, cold sweat

### (3) *Stroke*

- ① splitting headache suddenly
- ② speaking inarticulately
- ③ salivate suddenly
- ④ paralysis of hands and feet
- ⑤ loss of consciousness, consciousness disorder
- ⑥ collapse with vomiting, convulsion

### (4) *Severe toxicosis*

- ① take agricultural chemicals or organic phosphorus insecticide
- ② loss of consciousness due to inhalation of foul smell gas

### (5) *Others*

- ① the most suspicious decompression disease
- ② the most suspicious emergent and serious cases from report contents

### (6) *Neonatal and Pregnant*

- ① loss of consciousness and torso injury in latter pregnancy period, emergent cases in perinatal period
- ② precipitate delivery

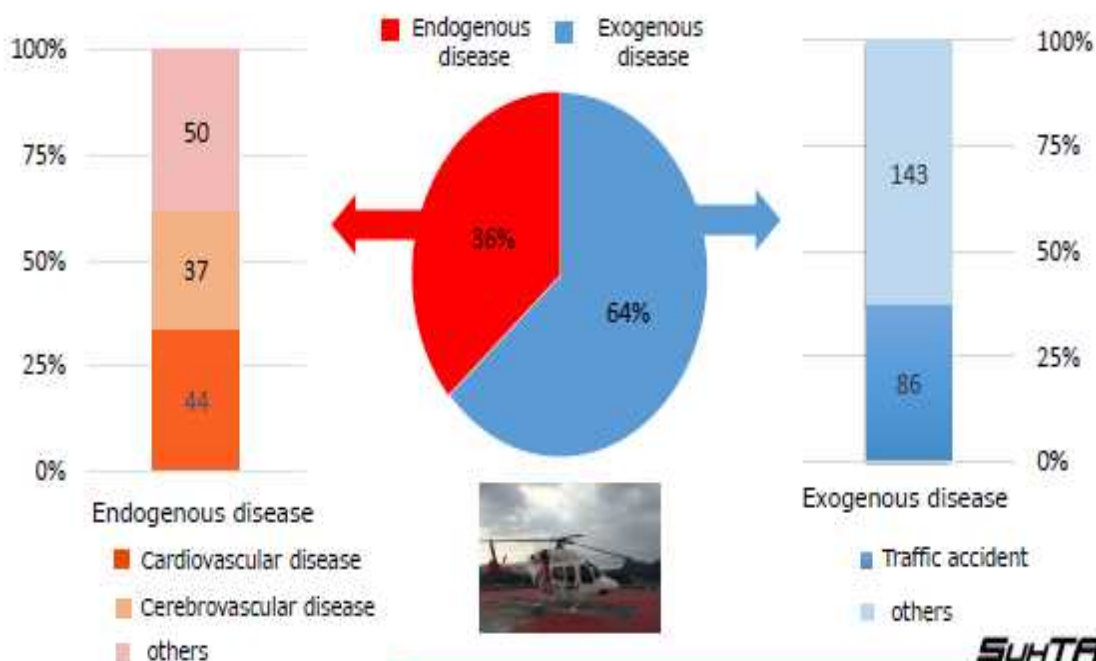
### (7) *Children*

- ① convulsion more than ten minutes, epileptic seizure
- ② condition worse of specified diseases

### (8) *Others*

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Sustainable Urban Health and Transportation

## Breakdown of Doctor Heli cases



## Major points we concentrate on

- Pre-hospital care ( Doctor Heli, Doctor car)
- ER medicine
- Intensive care
- Trauma care
- Disaster medicine



NPO Risk sense study group

Crisis management is important at  
our work site





Seoul Tokyo Friendship Walk

Friendship walk.









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 THE KOREAN CULTURE TRAVEL & TOURISM



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 THE KOREAN CULTURE TRAVEL & TOURISM





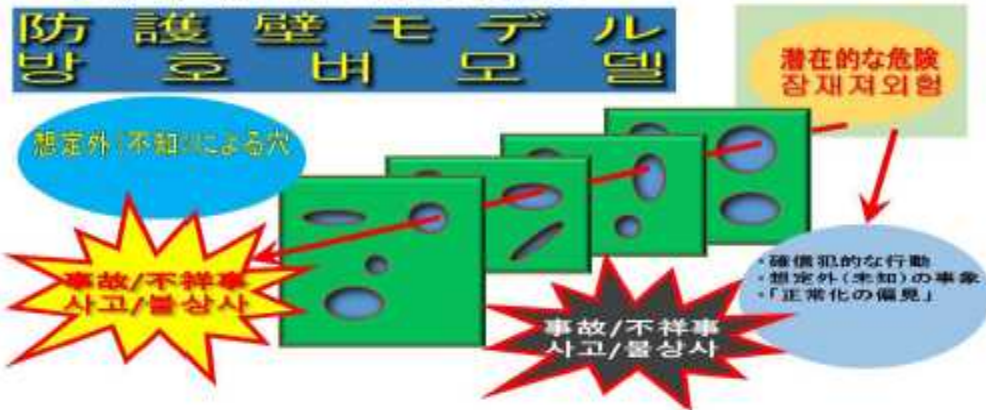
NPO Risk sense study group

We have tests on site risk assessment.



## 組織事故の発生モデル／조직사고의 발생 모델

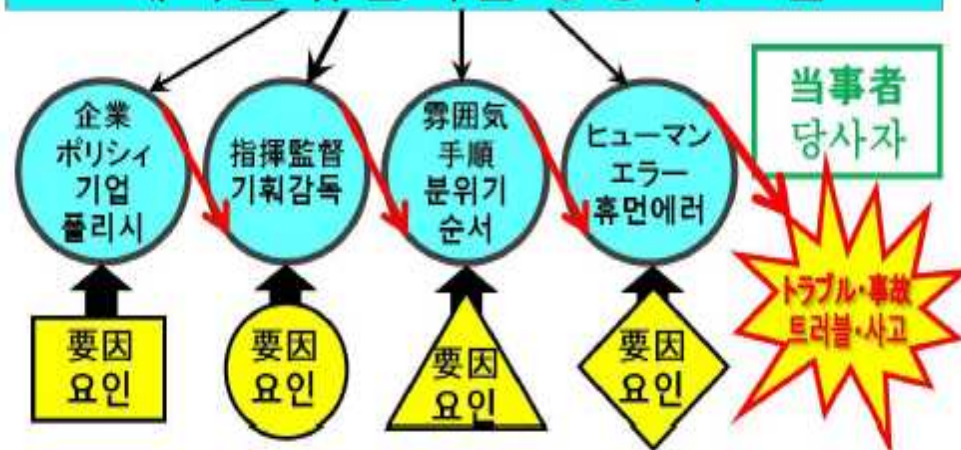
スイスチーズ・モデルを日本国内向けに言い換えた  
스위스치즈모델을 일본국내용으로 전환시킨



We can not take measures if we can not confirm the weak points of our protective walls.

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## エラーを誘発する状況の流れ 에러를 유발하는 상황의 흐름



Chain of events

Visualize the problem.

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L: Learning

C: Capacity

B: Behavior



NPO Risk sense study group check list

Learning (Acquire risk sense)

L1 Risk management

L2 Learning attitude

L3 Education / training



NPO Risk sense study group check rist

Capacity (Keep risk sense)

C1 Monitoring organization

C2 Audit

C3 Internal reporting system

C4 compliance



NPO Risk sense study group check rist

Behavior (Train risk sense)

B1 Top practicality

B2 HH&KY

(near miss or minor incident to risk prediction)

B3 Change management

B4 Communication







## Question

## Safety lecture from administrator to site manager

1. Lecture of safety and management
2. Lecture of safety and recent accidents
3. Only the safety lecture
4. Lecture on safety and delay in response
5. Lecture of safety and workplace environmental problems

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SAFETY MANAGEMENT SYSTEM



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SAFETY MANAGEMENT SYSTEM



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## サガン鳥栖 사간 토수



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SAMSUNG QLED TV



## 宣銅烈(ソン・ドンヨル)



無等山爆撃機(무등산 폭격기)、韓国の至宝(국보급 투수)

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Sports & Health Technology

We are applying risk sense test to medical care. I omit the details today.

The effect of medical application of risk sense

**SUHTAR**  
Sports & Health Technology







Should the top go to the scene?

Should the top take command at the local level?



I have coordinated acceptance of patients in the prefecture in the prefectural government of Saga.





Fellows worked locally at the Kumamoto earthquake.



**SUHTAR**  
Supporting people, building lives, and saving time.

Dr. Heli came from all over Japan to Kumamoto.  
Many helicopter transfers were done.



**SUHTAR**  
Supporting people, building lives, and saving time.





It was necessary to transport a large number of patients from Kumamoto to other prefectures.

The adjustment of the destination from Kumamoto was too heavy.



**SUHTAR**  
Supporting Health, Safety and Environment

Saga prefecture promptly accepted all patients from Kumamoto. Hospitals in the prefecture functioned like a single hospital.



**SUHTAR**  
Supporting Health, Safety and Environment





Normally it collects in airport etc and distributes it.  
 Saga prefecture controlled the present condition of the four  
 hospitals in one unit and dispatched it over the sky.



Risk management is particularly important when  
 emergencies occur.





In order to avoid risks, we divided the person responsible for earthquakes and the person responsible for normal emergency response. The members also color-coded





The doctor helicopter's staff work as usual.



**SUHTA**  
High-Speed Emergency Transport Service





**SUHTAR**  
Safety. Health. Training. Awareness.

I think that the Behavior is most important.

B1 Top practicality

B2 HH&KY

(near miss or minor incident to risk prediction)

B3 Change management

B4 Communication

**SUHTAR**  
Safety. Health. Training. Awareness.



Thank you

