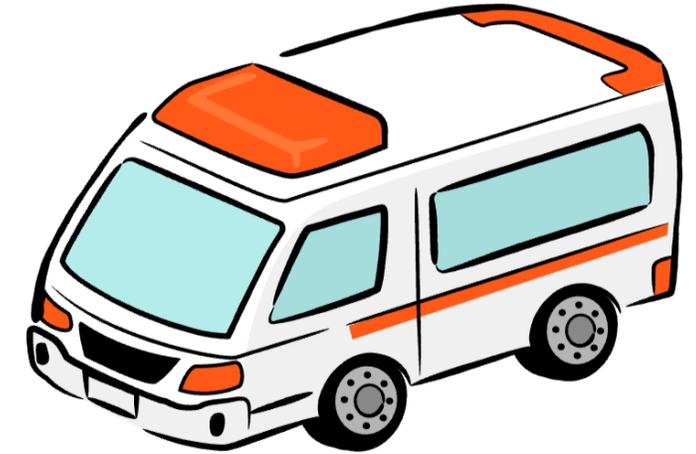


# Increasing EMS Demand in JAPAN

## Challenges and Solutions



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Pre-hospital & Emergency Research Centre  
Health Services and Systems Research  
Duke-NUS Medical School, Singapore

# Disclosure

Yohei Okada received the following research grant

- The KPFA Research Fellowship
- The JSPS Overseas Research Fellowship
- The ZOLL foundation research fund

These organizations have no role in this presentation.

The figures in this presentation from iStocks, いらすとや and 夕鳥獣戯画.



# Yohei Okada, MD, Ph.D.

## Clinical qualification

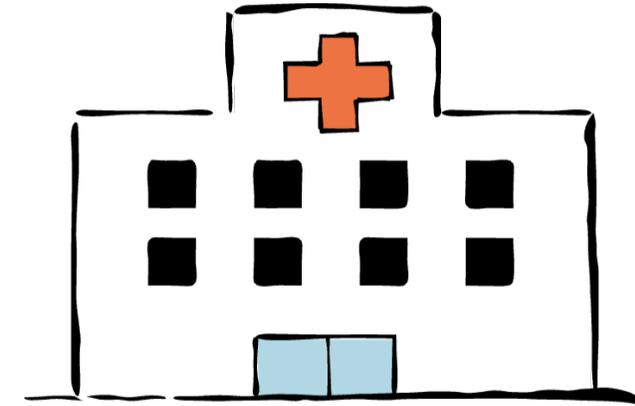
Certified Emergency physician (JAPAN)

Certified Intensive care physician(JAPAN)

## Research fields

- Resuscitation, ECPR
- Heat related illness
- Machine learning

# Background

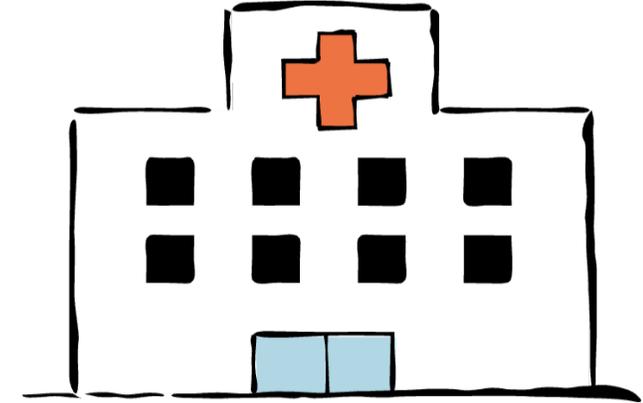


EMS demand is globally increasing.

Effective measures are needed to address this situation.

**This talk aims to introduce the EMS system in Japan,  
challenges and potential solution**

# Agenda



- **EMS system in Japan**
- **Challenges: Increasing EMS demand**
- **Potential solutions**

# EMS and Paramedics in Japan

FDMA: Fire and disaster management agency

## Fire-department based system

Call “**119**” in all regions

**724** Headquarters  
(in 1,690 cities/towns)

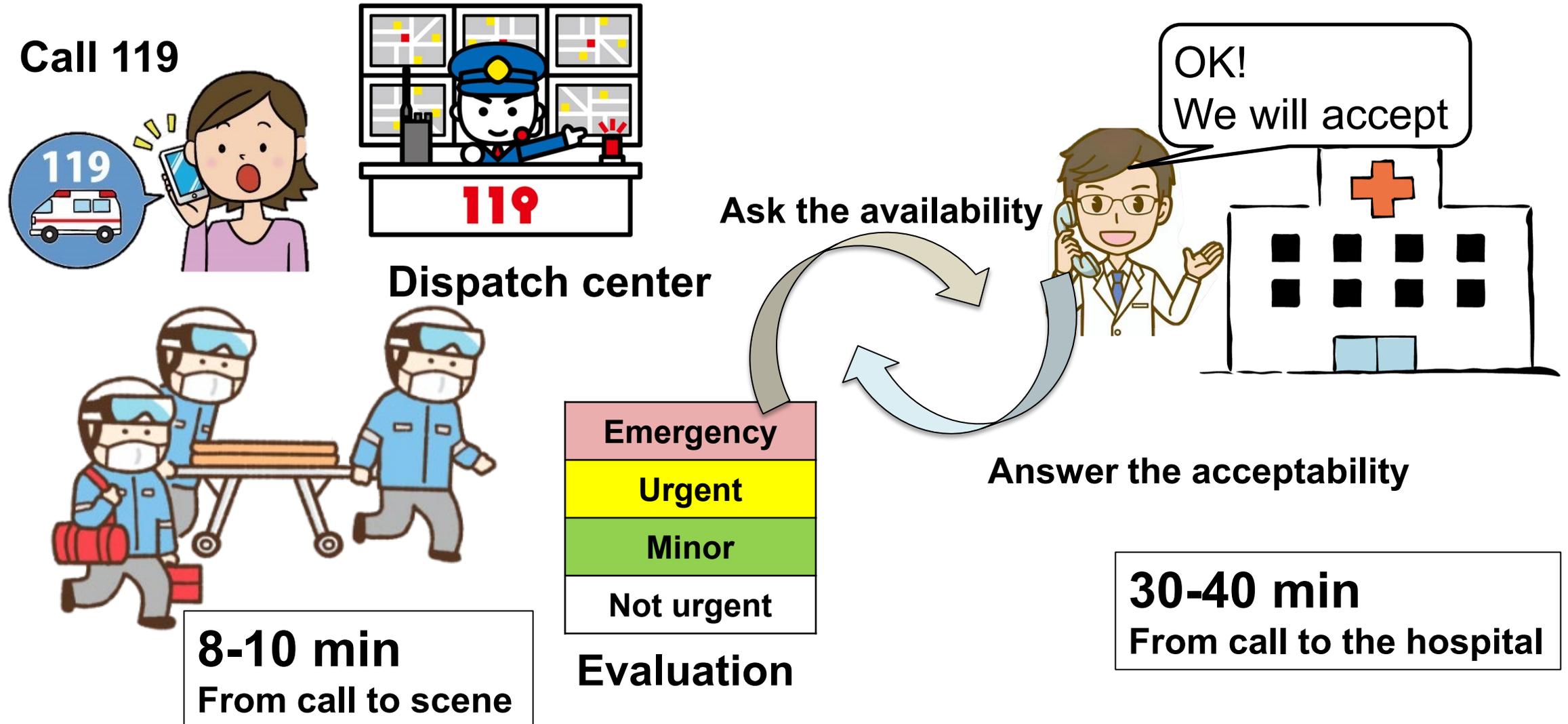
**5,275** units Paramedics

**3 crews** (1 EMT at least)

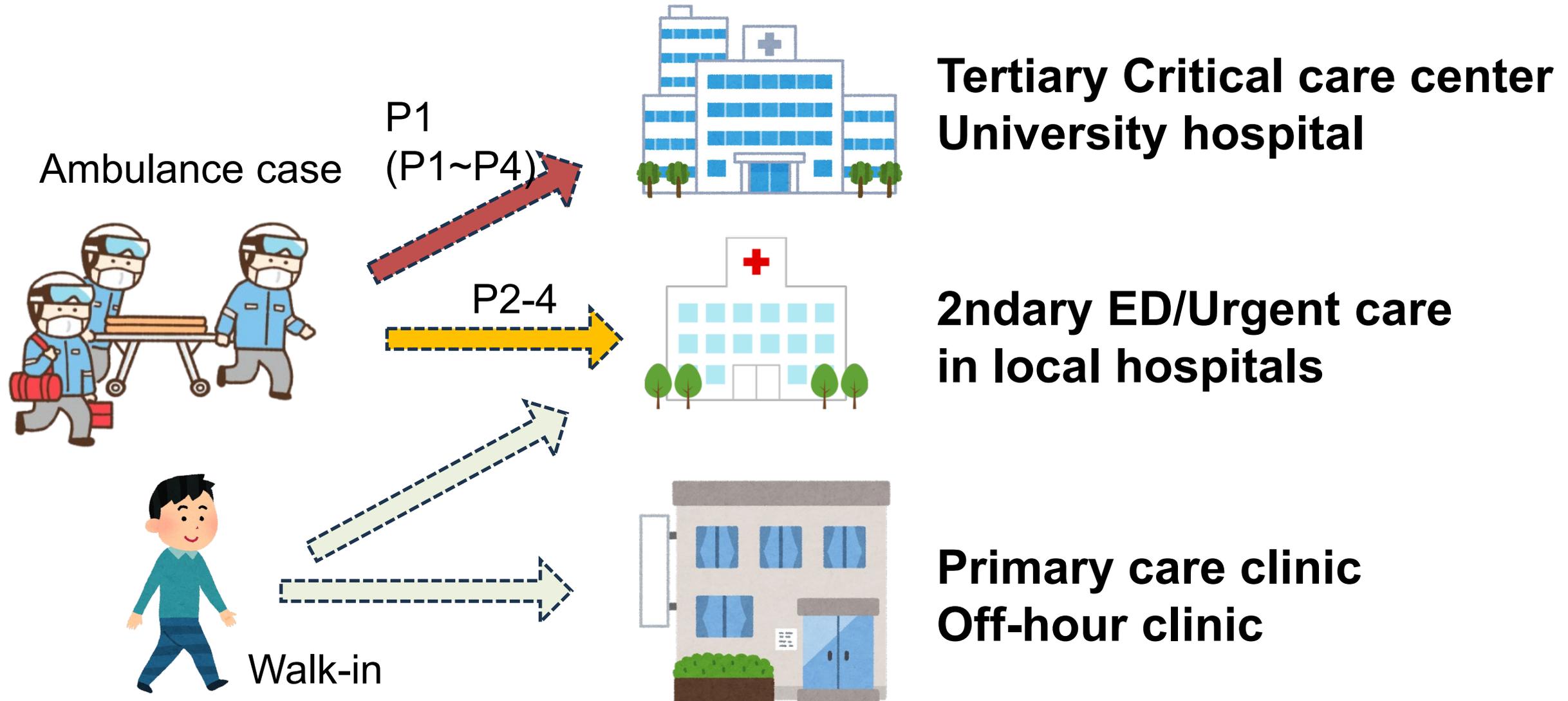
Statistics in 2021, FDMA



# General cases

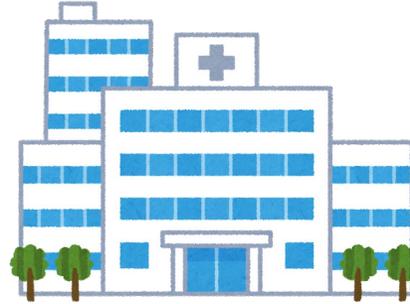


# 3-tier Emergency system in Japan



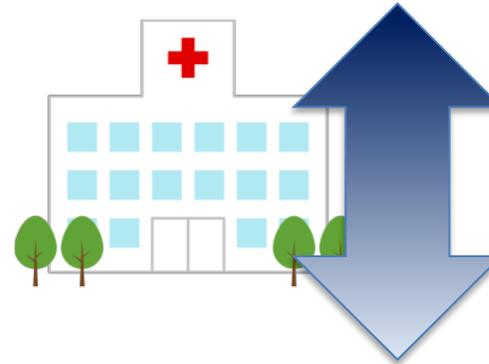
# Hospital function

**Tertiary Critical care center  
University hospital**



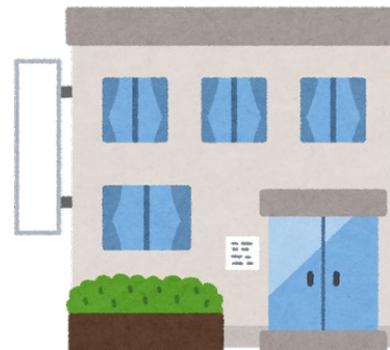
Emergency physician working  
ICU/Specialty care/Surgery: 24/7  
Trauma, cardiac arrest, Sepsis, etc.

**2ndary ED/Urgent care  
in local hospitals**



Varied capacity  
some are close to tertiary care  
others are like off-hour clinic

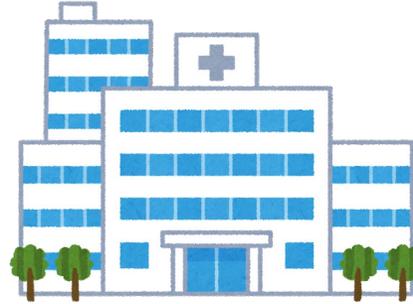
**Primary care clinic  
Off-hour clinic**



Primary care physician working  
Limited facility (Only Xray?)  
No admission

# In Osaka Pref, 8.7 mil people

**Tertiary Critical care center  
University hospital**



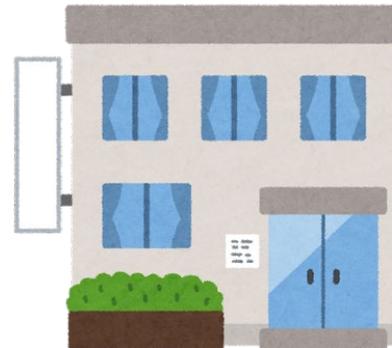
**16** centers (6 Univ hospitals)  
**3** centers for Pediatric centers

**2ndary ED/Urgent care  
in local hospitals**



**250** hospitals

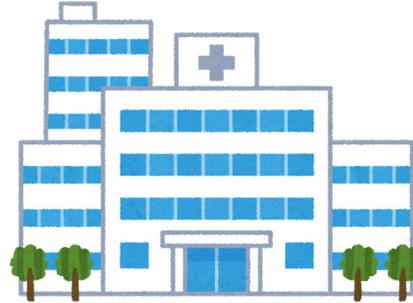
**Off-hour clinic**



**49** polyclinics

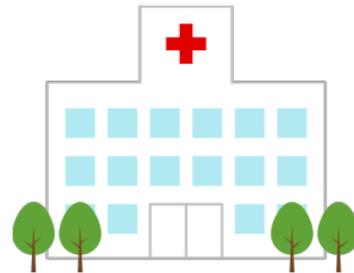
# In Osaka Pref: 500,000 ambulance cases

**Tertiary Critical care center  
University hospital**



**18~20%** of the cases

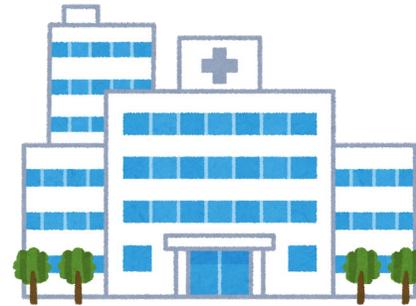
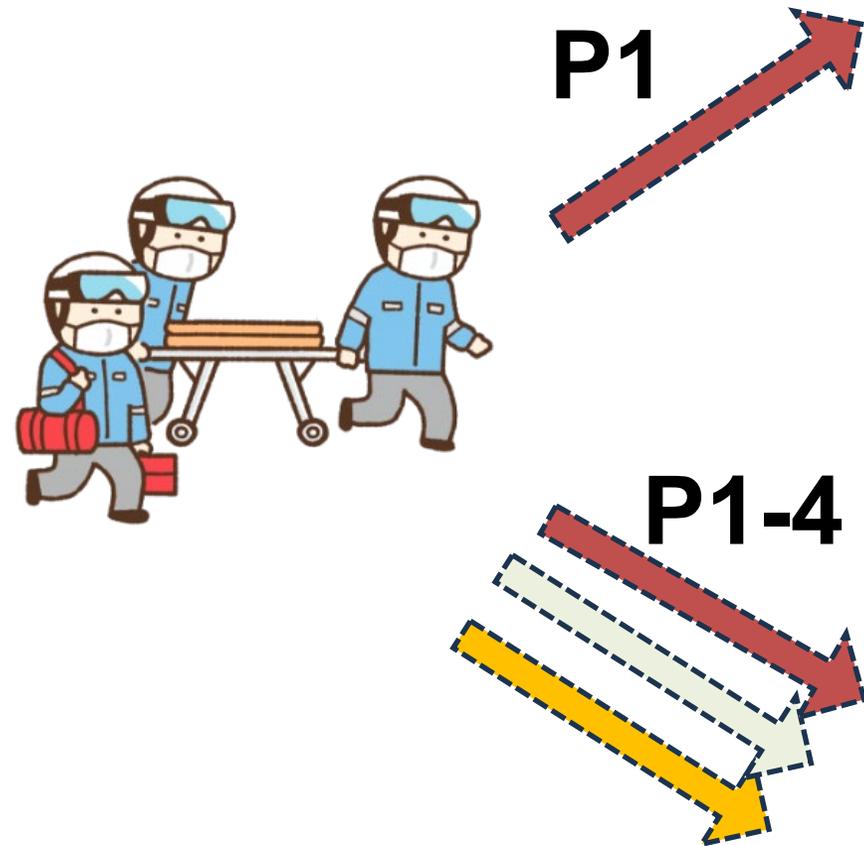
**2ndary ED/Urgent care  
in local hospitals**



**80%** of the cases

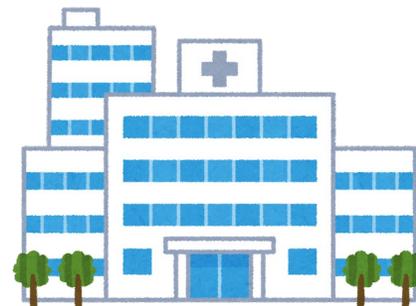
- Tertiary care hospitals can focus on severe patients
- Efficient to save the pts with life-threatening condition
- Sometimes, under-triage occurs

# Tertiary care center: 2 types of EDs



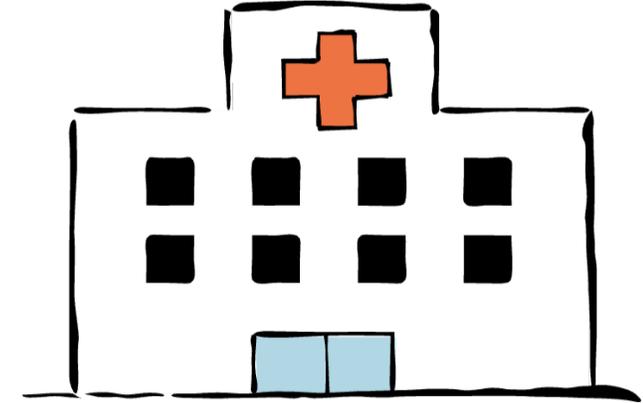
**ICU based individual  
Tertiary Critical care center**  
3-10 patients/day

Only trauma, OHCA, stroke, sepsis



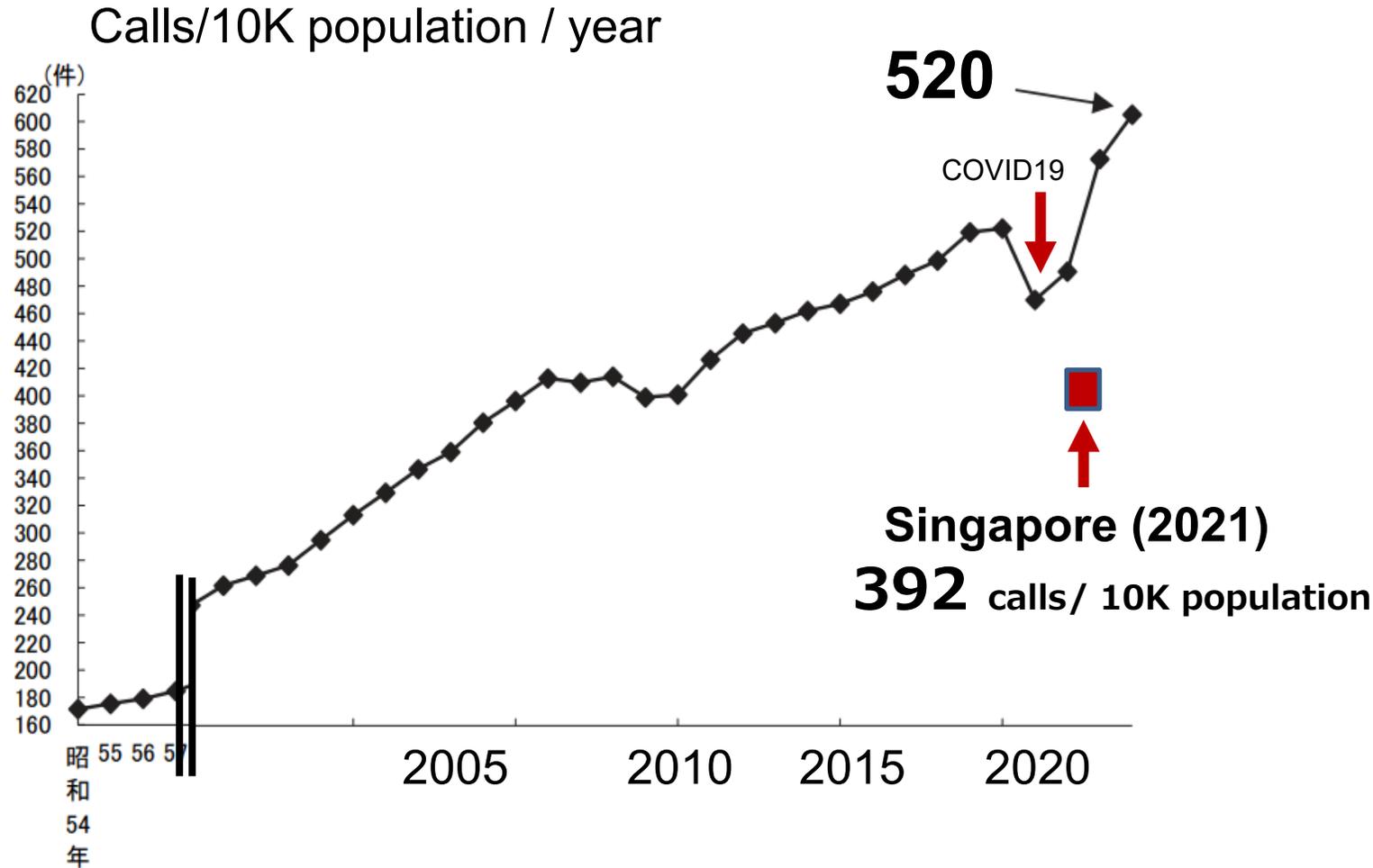
**ER based or Mixed type  
Tertiary Critical care center**  
50-100 patients /day

# Agenda

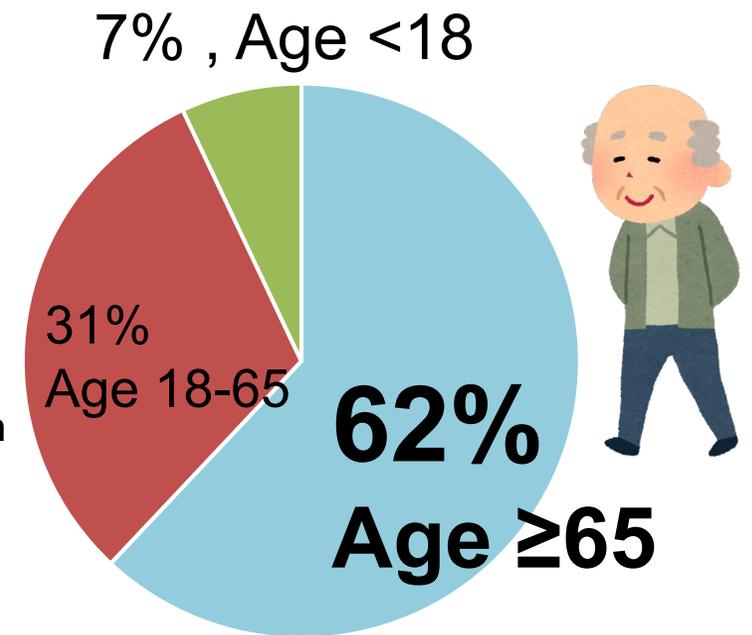


- EMS system in Japan
- **Challenges: Increasing EMS demand**
- Potential solutions

# Call 119 is increasing

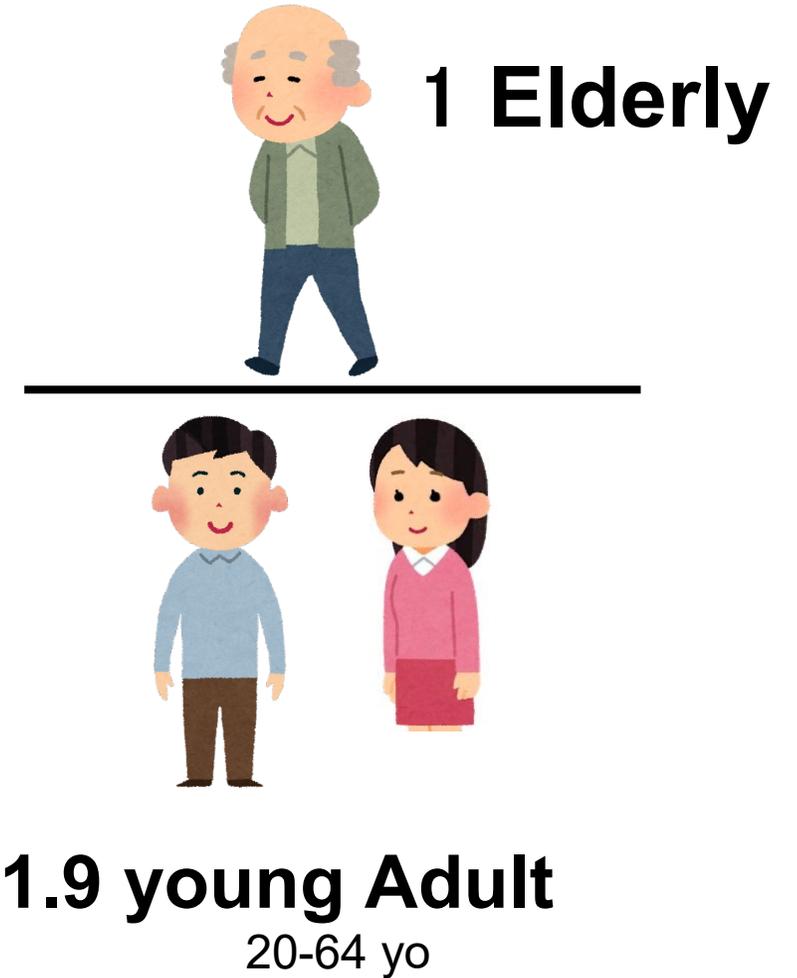
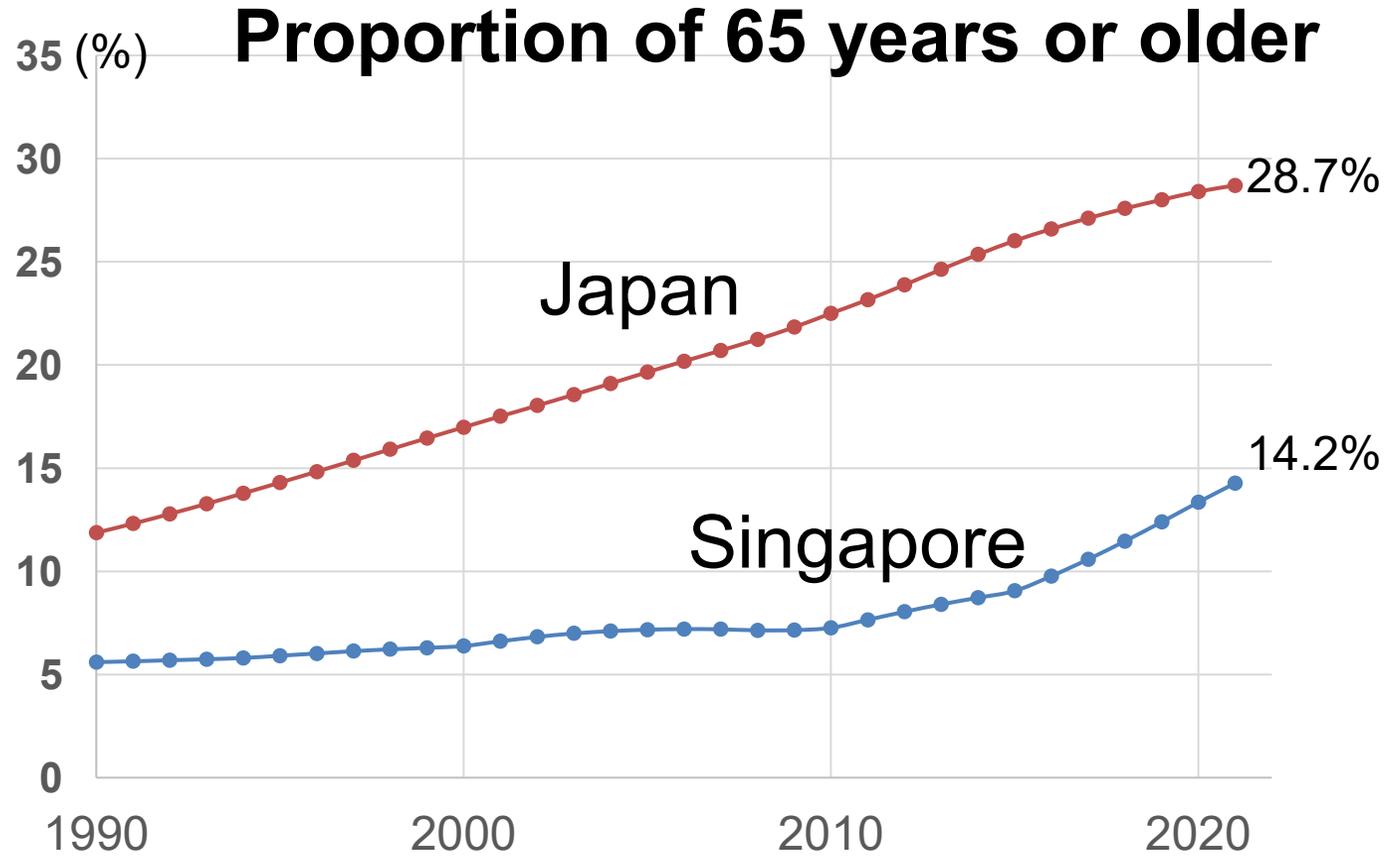


## Age of the patients



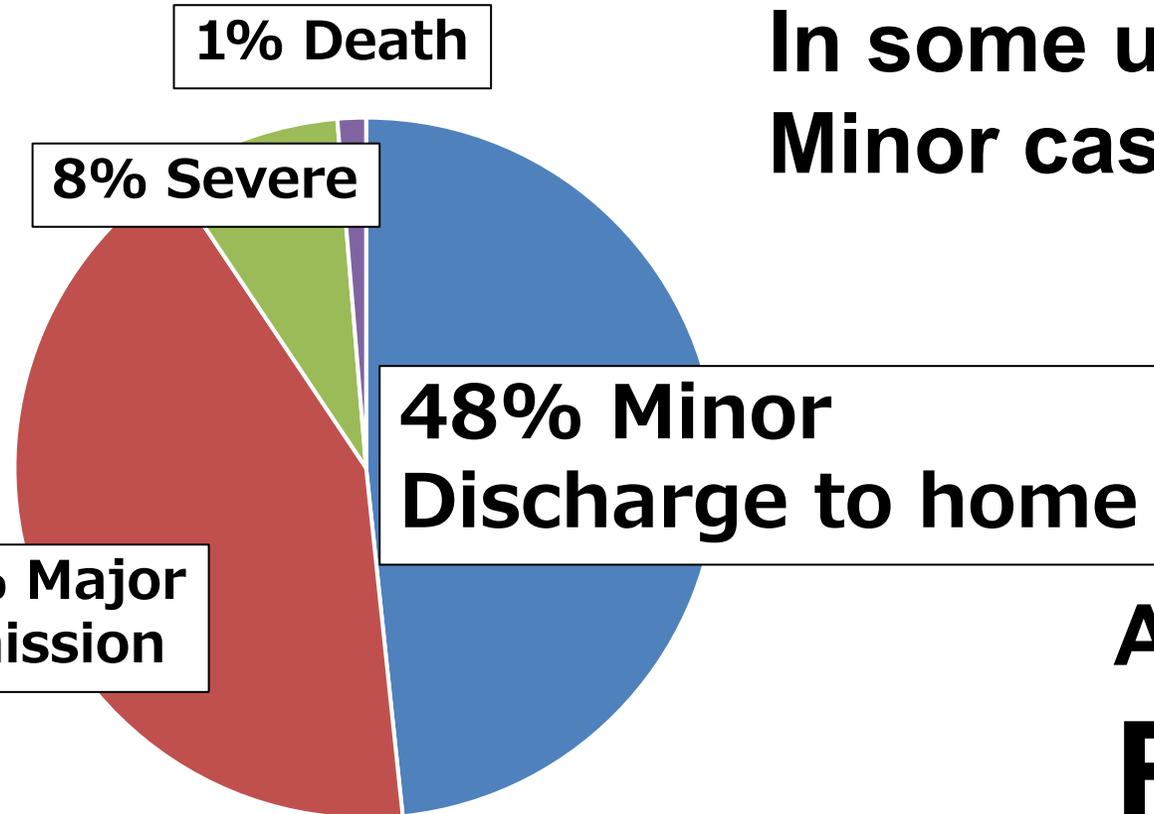
**Annually 520 calls/10k population**

# Super Aged society in Japan



**Japan is Top of the world**

# Half of the cases are Minor



**In some urban areas,  
Minor cases are up to 60%.**

**Ambulance is  
FREE in all case**

# No refuse policy



**I cannot sleep.  
I am lonely.  
I need ambulance.**



# This men needs ambulance?



**95 yo male**

Long stay in a nursing home  
Post-stroke disability  
Bedridden, no communication  
Need fully assistance

**In these 2 weeks,**  
**Less appetite**  
**Lost the body weight**  
**Mild fever**  
No vital sign change



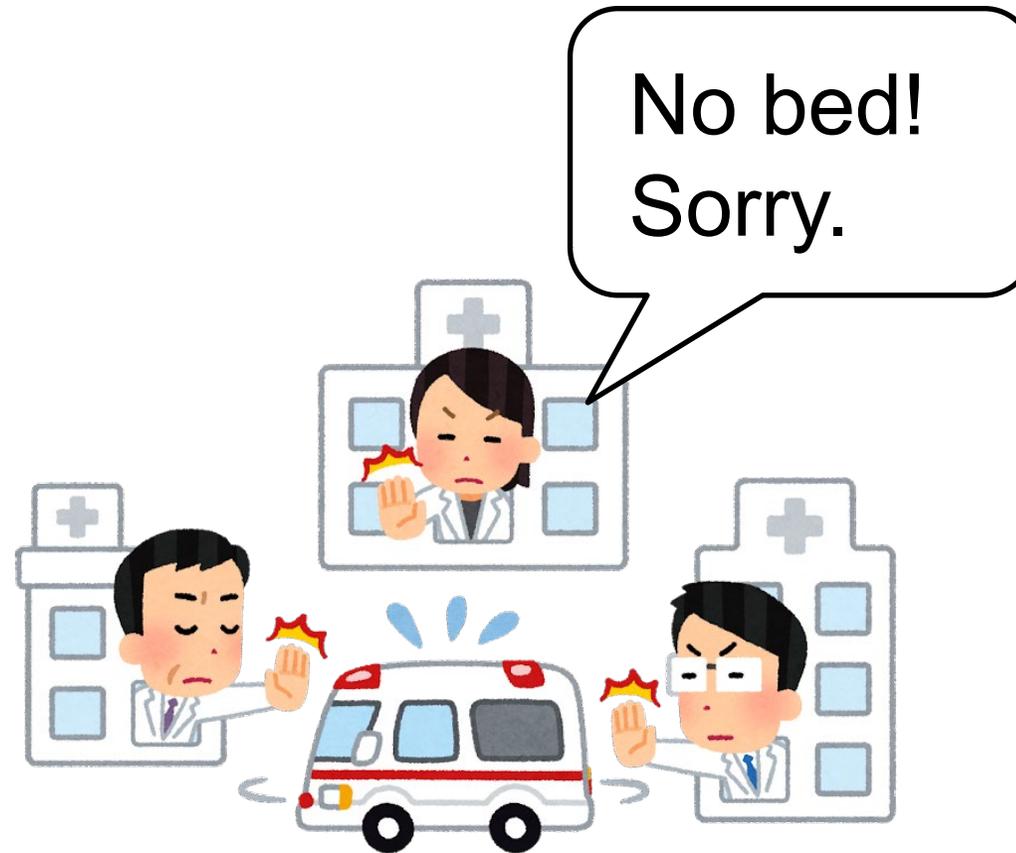
# Hospitals can refuse them!

**30 yo Male**

Drunken

Fight with mafia

Shouting & arguing



Patients with social problem have a risk of refusal.

# Difficult case in COVID19 era



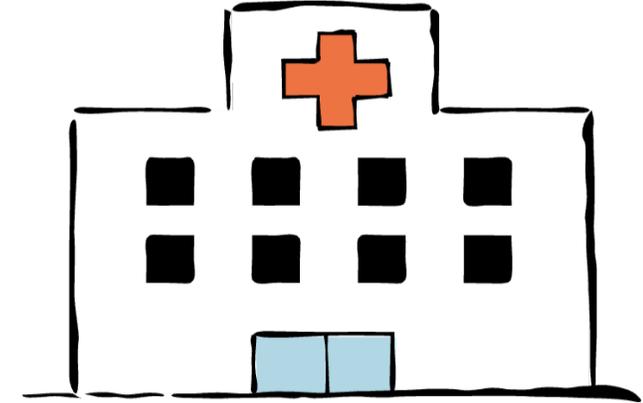
70 yo female  
COVID19 diagnosed  
Observing at home  
But she felt difficulty of breathing

No bed due to surge of the demand



**More than 100** hospitals refused  
➤ **48 hours stay** in the ambulance

# Agenda



- EMS system in Japan
- Challenges: Increasing EMS demand
- **Potential solutions**

# Tele-triage system

- #7119
- Consultation with nurse
  - Protocol based advice
  - Only in some urban areas
  - **2~10% ↓ Amb cases** after implementation

急な「病気」や「ケガ」で **救急車を呼ぶか** **病院に行くか** **迷った時に!**

高知家の **救急医療電話**

- 看護師や医師による救急医療電話相談
- 応急手当の方法のアドバイス
- 相談内容により、119番や高知県救急医療情報センター等へ転送

令和4年8月1日から  
はじまります。

365日  
24時間  
対応  
無料通話

**#7119**  
シャープ

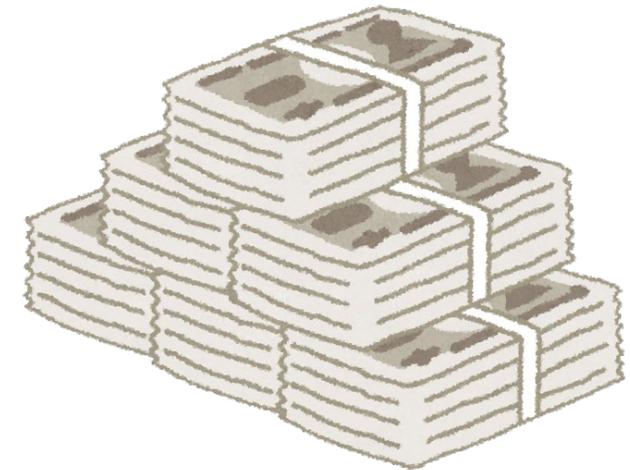
ダイヤル回線・IP電話からは **088-823-9922** (有料通話)



# Drawbacks

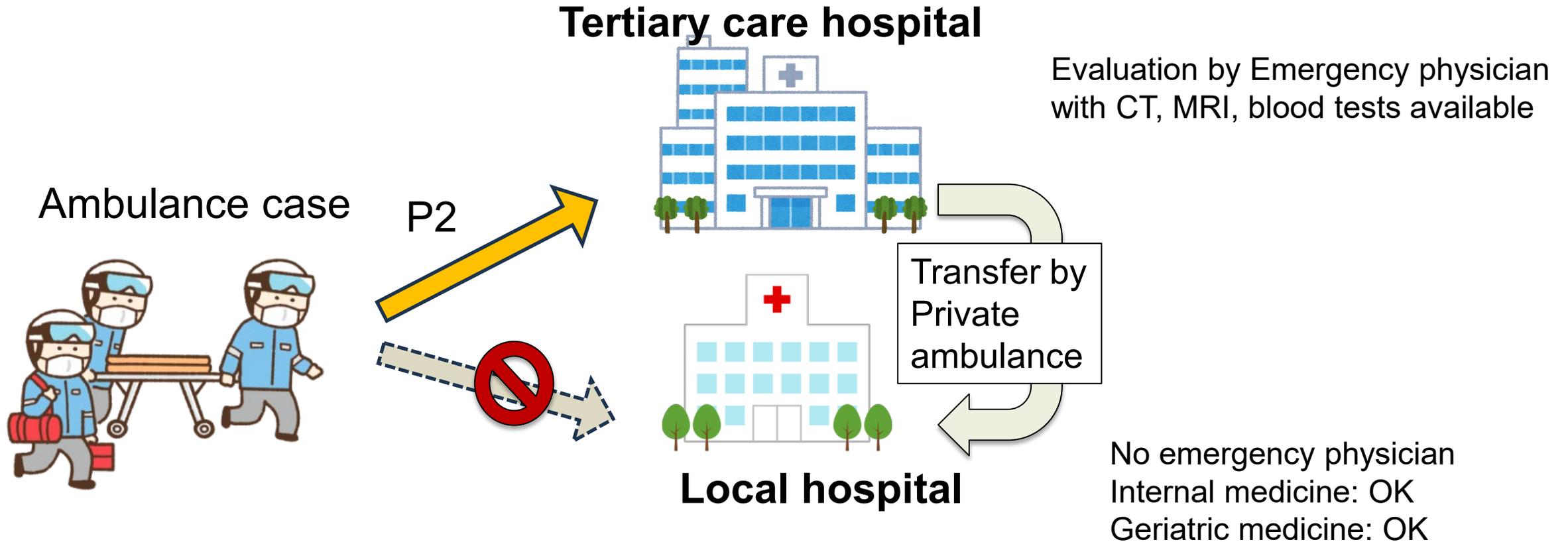
Examples in Osaka Pref (24/7 works)

- 242,473 calls/year in Osaka
- 10~16 Nurses in each shift
- 5-7 min talk in each call
- Cost 2.8 M (SGD) / year
- Free for patients



**Some local governments cannot implement it.**

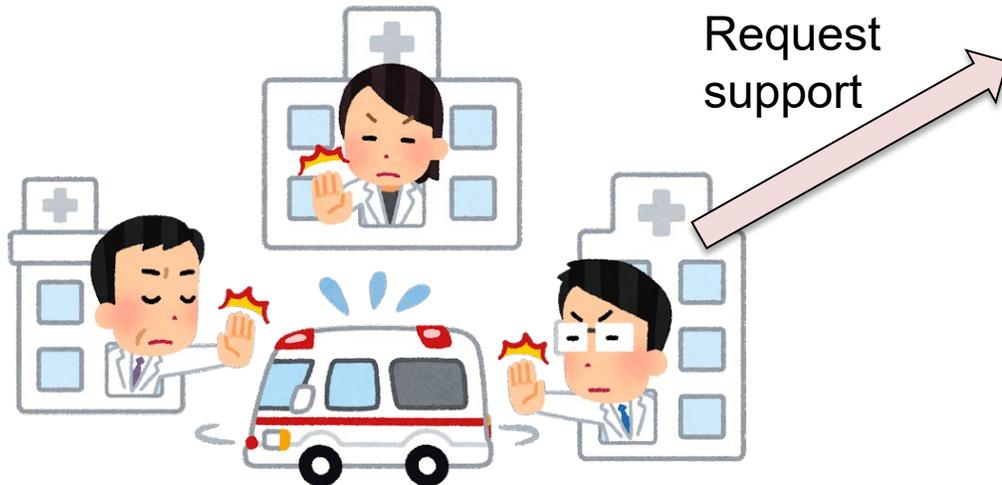
# Step-down inter-hospital transfer



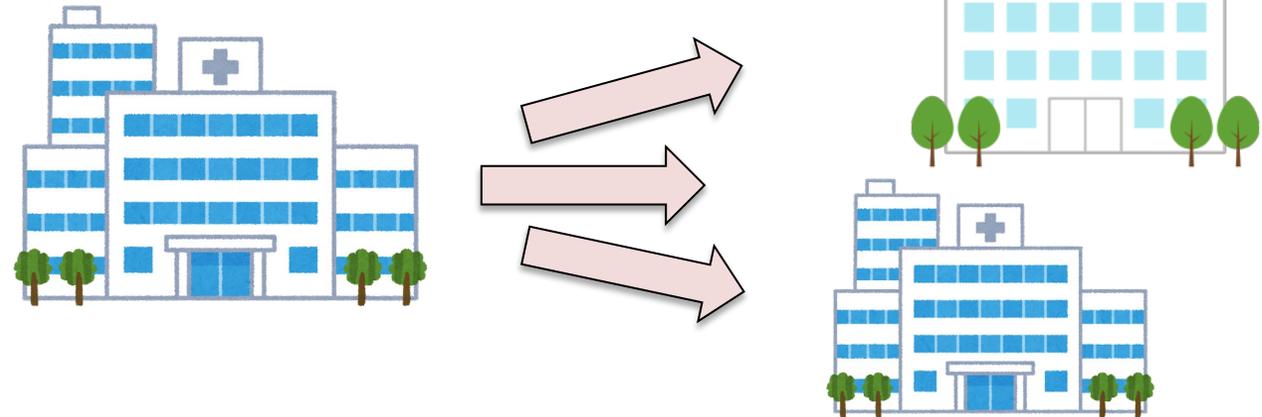
To Reduce the demand and  
To maximize the capacity in tertiary care hospitals

# Designated Area Coordinator

Rejected by more than 5 hospitals  
Waiting time >30 min  
AND P1 cases



Designated tertiary care hospital



Accept the patient  
or Coordinate to decide the hospital

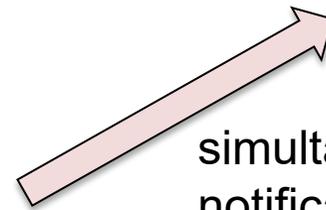
**Designated hospital has a responsibility to accept (with incentives)**

# Request to multi hospitals at one moment

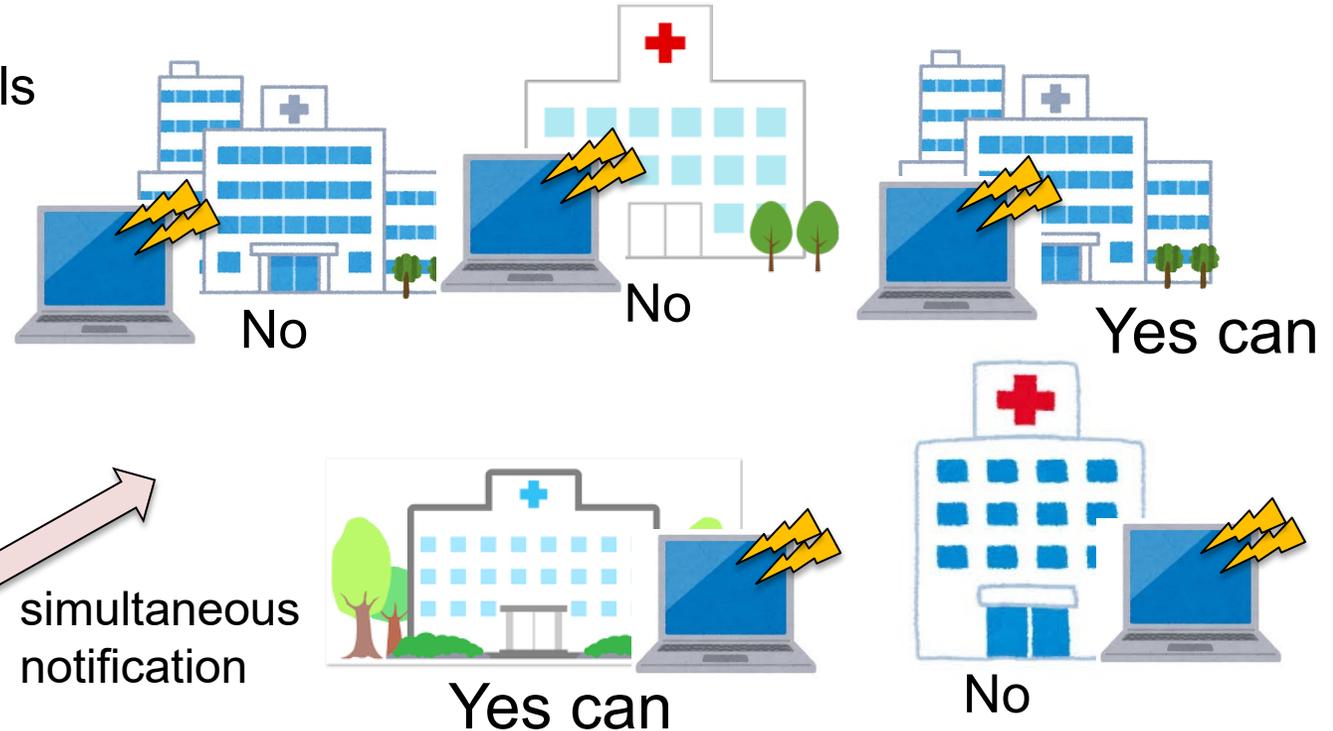
Rejected by more than 5 hospitals  
Waiting time >30 min  
(but not P1)



Could you accept this patients?



simultaneous  
notification



This system is also activated in mass casualty incidence

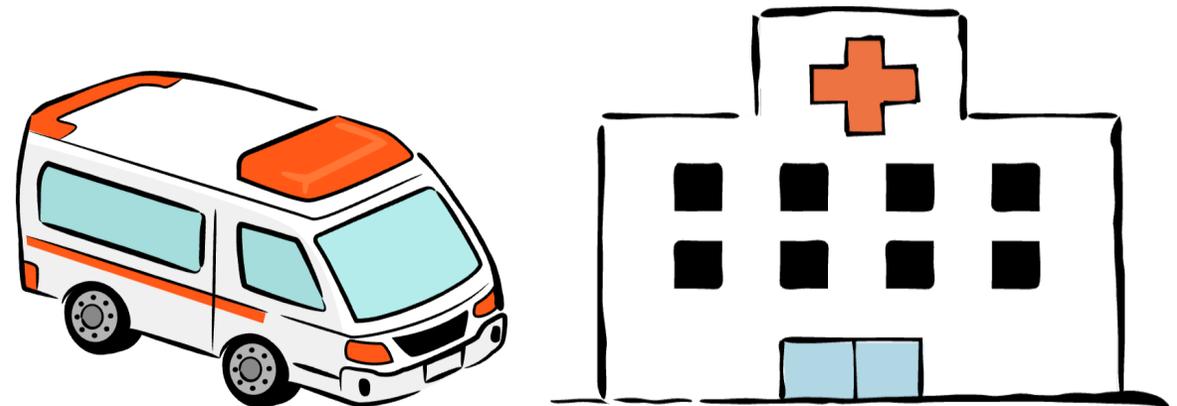
**To Reduce the waiting time to decide the destination hospital**

# Summary



Pre-hospital &  
Emergency Research Centre

- I have introduced EMS in Japan, challenges and potential solutions.
- 3-tier EMS is an original approach to save severe patients.
- Several initiatives has been implemented to address the challenges.
- We are struggling to handle the over demands.
- I hope to find a good solution by data and further research.



# Physician staffed car/Heli

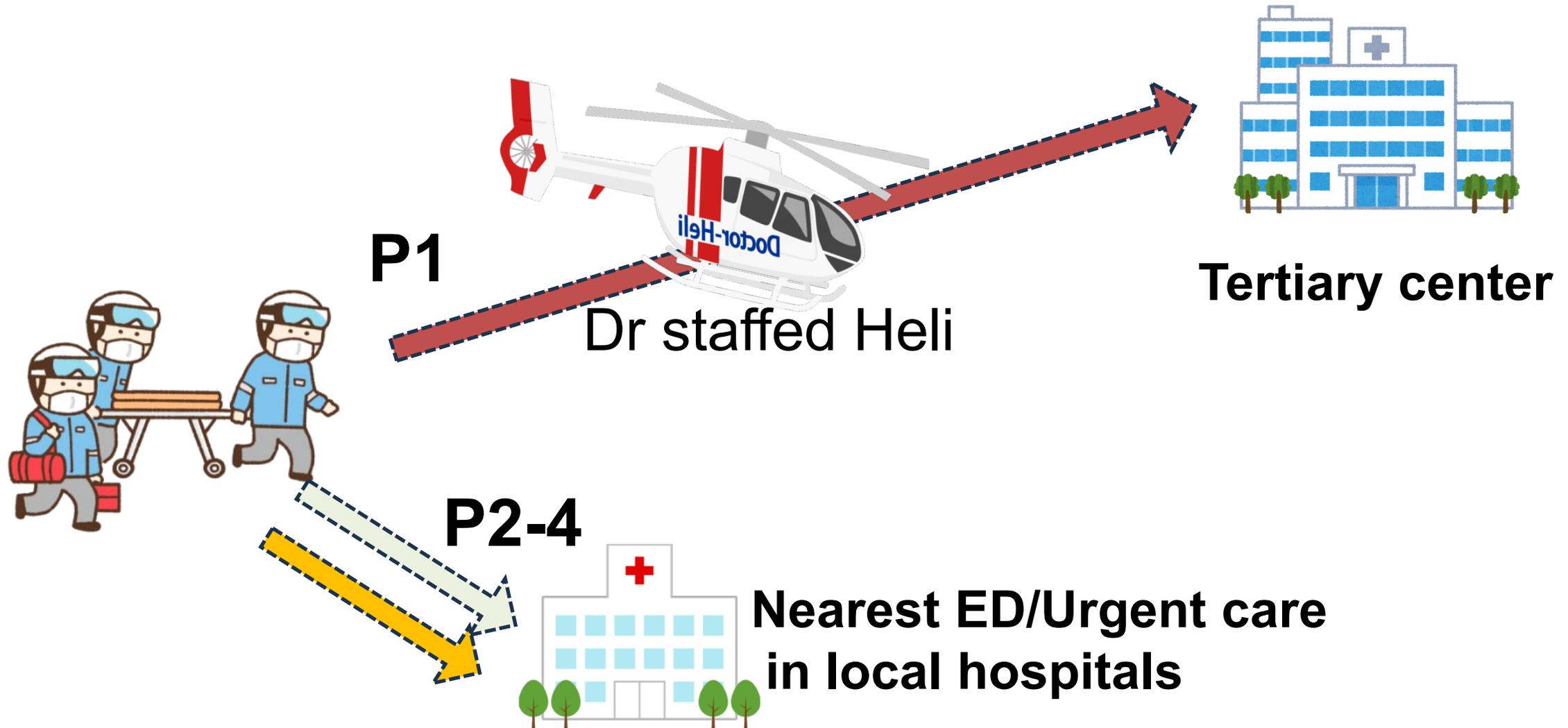
56 Heli flying in Japan



Dr & Ns collaborating with Paramedics

Good tools for Rural or mountain area

# In Rural area, trauma bypass



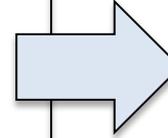
# Everyone wants Zero risk

40 yo male  
Hit the head



Looks very minor injury.  
I would suggest cancel  
ambulance and observe  
by yourself?  
Sign the document of  
cancellation?

8 hours



Severe disability



Got Sued  
Paid  
\$1.3M (SGD)

2009

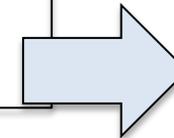


20 yo male  
living alone



You looks very minor  
You can go to primary  
care clinic by Taxi?  
Ok, pls try it.

24 hour



Dead found at home

Got Sued  
\$1M (SGD)

2011

## Defensive policy...