CONTENTS

I. Outline of Ambulance Services in Japan

1. History of ambulance services

(1) Before legislation of ambulance services

Simultaneously with the enactment of the Constitution of Japan in May 1947, the Local Autonomy Law was enacted. The enactment of the Local Autonomy Law led to the enactment of the Law of Fire Service Organization in March 1948 and the fire department which had previously been included in the police department became an independent organization. This was the beginning of fire fighting services provided by municipal governments. However, there was no clear legal definition of the ambulance services performed by the fire departments. The few definitions which ambulance services were based on were "The role of fire department is to minimize the damage resulted from disasters such as a flood, fire and earthquake, etc.." in Clause 1 of the Law of Fire Service Organization and some descriptions in Clause 2-3 of Local Autonomy Law, including "-- to maintain the safety, health and welfare of residents and travelers ---" (Clause 2-3-1), "-- prevention of disaster and rescue of victims--- " (Clause 2-3-8) and "--- rescue the injured or patients of acute sickness ---" (Clause 2-3-9).

(2) History of legislation of ambulance services

Due to the lack of legal definition, ambulance services had been operated according to the arbitrary judgement of each municipal body, which resulted in significant differences between the services provided by each individual municipal body. In 1960, the lack of legal definition of ambulance services was pointed out and discussed at the 11th General Meeting of Kanto Branch of All Japan Association of Fire Department Chiefs (the former name of the Association of Fire Chiefs of Japan). At the 13th General Meeting in May 1961, the Association of Fire Chiefs of Japan decided the promotion of litigation and, since then, the petitions to the National Diet and government were made.

(3) Litigation of ambulance service

The government of Japan was also aware of the need to establish a standard nationwide ambulance service system. Responding to the government's request for advice, the Fire Service Counsel announced a judgment in May 1962, stating that "in principle ambulance services provided by fire departments must be written in law and proper measures must be taken to fund these services". In August of the same year, the Administrative Management Office of Japan also announced a recommendation to promote the improvement of ambulance service system. Under such circumstances, the "Law concerning the partial modification of the Fire Fighting Services Law" was passed in the 43rd session of National Diet in 1963, and announced on April 15 of the same year as Law No. 88, and enacted on April 10 in 1964.

2. Range of ambulance services

The definition of "Disaster" includes both natural and manmade disasters as specified in Clause 2-1 of the Disaster Prevention Law. As was with the interpretation of "Disaster" in Clause 1 of the Law of Organization for Fire Fighting Services, the "Disaster" for which fire fighting services are to be provided includes a wide range of disasters, and was interpreted based on previous disasters at which fire fighting services were actually provided, social history and expectation of residents for fire fighting services. The range of disasters and accidents requiring ambulance services should also be wider than that specified in the Disaster Prevention Law, and cover not only large scale disasters or accidents but also comparatively small scale ones.

After the aforementioned law modification in 1963, the Fire Fighting Services Law and Fire Service Ordinance have been modified several times, mainly concerning the capability of municipal bodies which are expected to provide fire fighting services. In the Fire Fighting Services Law, ambulance service is defined as "transfer service" and is separated from the "emergency rescue" which is a service provided by the fire department to save people at the site of a disaster such as a fire. In Clause 2-9 of the Fire Fighting Services Law, ambulance service is defined as the transfer of victims of a disaster or accident which falls into either one of the categories below:

a. Accidents resulting from a disaster
b. Accidents occurring at an outdoor place or a place open to public
c. Accidents occurring in an indoor place with no proper means available to transfer the victims to medical facilities

3. Organization of an ambulance company

(1) Ambulance company

The Clause 44-1 of Fire Fighting Services Law states that "an ambulance company must consist of one ambulance and three or more ambulance personnel or one helicopter and two or more ambulance personnel However, an ambulance company may also consist of one ambulance and two ambulance personnel if it is provided by the law of Ministry of International Affairs and Communications that there is no harm in providing first-aid to victims in such a case with such a team." The equipment to be installed in an ambulance is specified in Clause 44-2 of the same law as "an ambulance must have not only equipment suitable for transfer of victims but also equipment and materials necessary to provide first-aid to victims". The specific types of equipment and materials to be installed in an ambulance are designated in the Ambulance Services Operation Standards.

An ambulance company is a team consisting of ambulance personnel with proper qualification and an ambulance equipped with designated equipment and materials.

(2) Role of ambulance personnel

As clearly defined in Clause 2-9 of the Fire Fighting Services Law, the role of ambulance personnel is to transfer victims of a disaster or accident to medical facilities while providing proper first-aid.

Whether or not ambulance personnel can provide proper first aid based on the correct judgement of the victim's condition significantly influences the treatment and recovery of the victim. Therefore, ambulance personnel must acquire profound knowledge and high skills in first-aid, and the methods to handle victims.

Ambulance services must always be provided in a prompt and correct manner. To attain these purposes, good teamwork between ambulance personnel, chief personnel and driver is necessary.

(3) Qualification of ambulance personnel

The recommendation by the Fire Service Counsel announced in the process of litigation of ambulance service stated that "an ambulance team member must have some specified qualification". However, legal definition of qualification of ambulance personnel was not achieved for a long time due to the difficulty in finding a compromise among various opinions. Instead, the requirements for ambulance personnel qualification were included in Clause 44-3 of the Fire Service Law Enforcement Order.

According to the increasing importance of ambulance services and first-aid, the Emergency Care Standard was finally announced in 1978.

The Lifesaving Law issued on April 23 and enacted on August 15 in 1991 and the modification of the Standards for Emergency Care, etc. Taken by Ambulance Personnel on August 5, 1991 led to the legal definition of the qualifications of ambulance personnel. An example is the "Emergency Medical Technician", who is authorized by the National government to allow them to provide a higher level first-aid according to the education and training they received.

a. Qualified ambulance personnel
   The "Education and Training Standards" modified on August 5, 1991 specify that ambulance personnel who provide conventional first-aid should have completed "First-Aid Course Grade I".

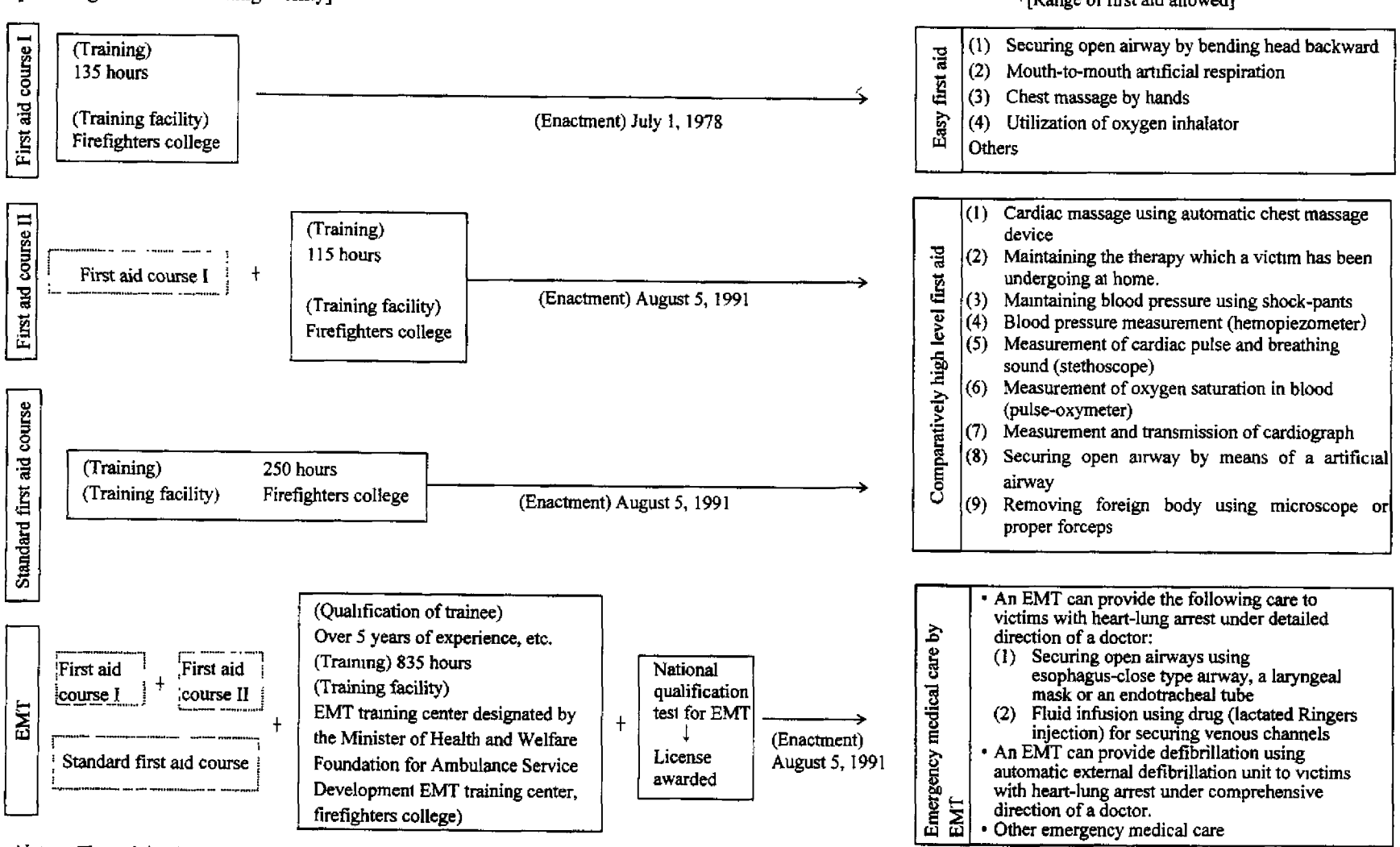
b. Among the qualified ambulance personnel in "a" above, those who completed the new "Standard First-Aid Course" or "First-Aid Course Grade II" (who completed more than 250 hours of education and training) are allowed to provide 9 first-aid items in addition to conventional first-aid, according to the knowledge and skill acquired during training.

c. Among the qualified ambulance personnel above, those who are further qualified as "Emergency medical technician" is allowed to

provide the 3 items of emergency medical care specified in Lifesaving Law (Clause 43-1), in addition to the conventional and higher level first aids in a and b above (see table 1).

Table 1

Education and training program of ambulance personnel and the range of first aid allowed to an ambulance personnel according to the qualification



Note. The training hours and training facility for EMT qualification apply to the training of ambulance personnel trained for EMT.

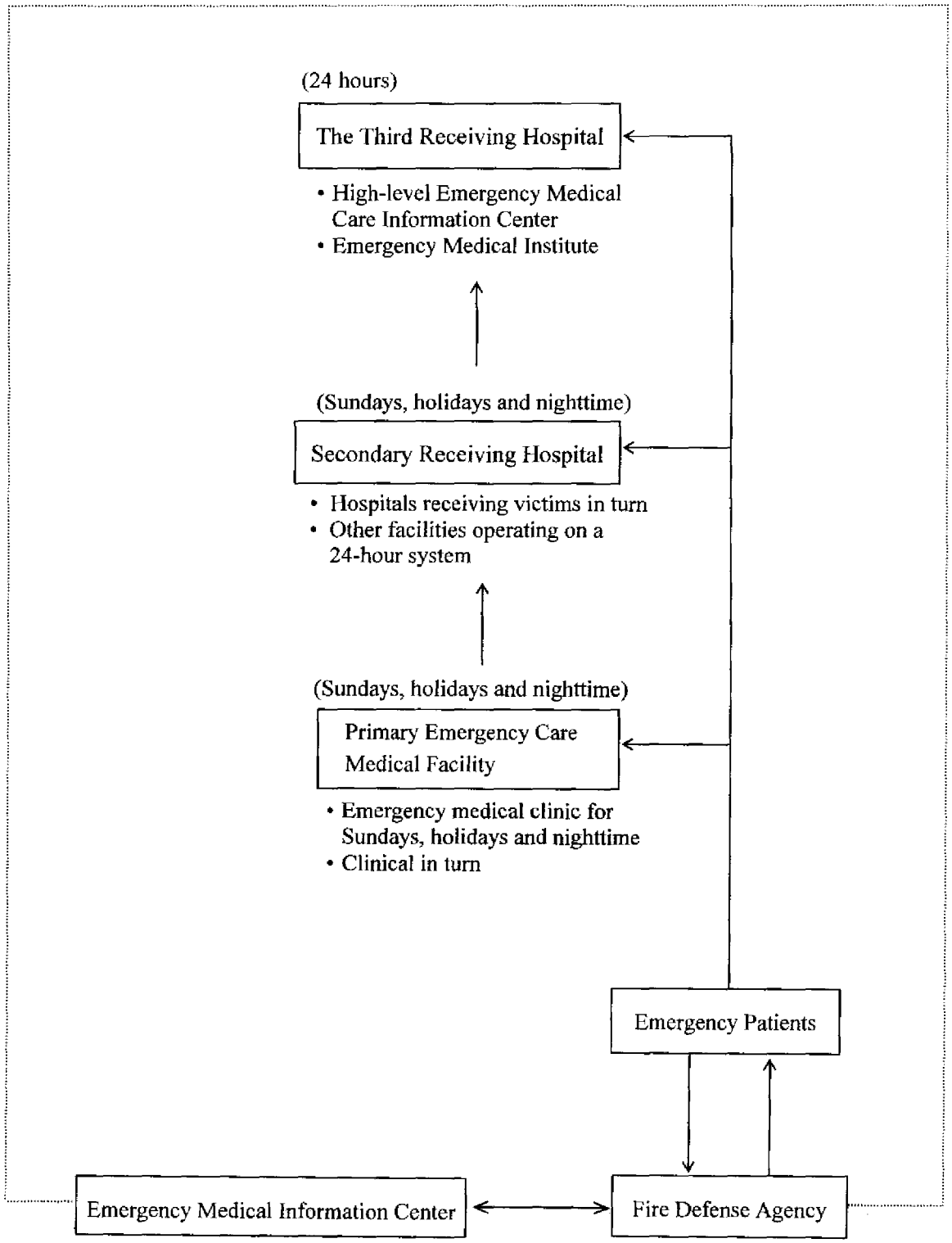
4. Systems of emergency medical facilities

The emergency medical systems consist of the following that permits them to provide medical care efficiently according to patients' symptoms:

First emergency medical facilities which take responsibility for first medical care of emergency patients with a slight sickness or injury not requiring hospitalization, mainly by outpatient examination and treatment, secondary emergency medical facilities which assume medical care of moderate or serious patients requiring treatment after admission, and third emergency medical facilities which provide comprehensive high-level medical care for serious patients requiring treatment involving more than one examination and treatment fields, above the capability of the secondary emergency medical facilities.

In addition, in order to collect all the information of victim acceptance from the receiving hospitals and to provide such information to ambulance cars so that they can transfer the victims to the proper medical facility according to their symptoms, the establishment of Emergency Medical Care Information Centers has been promoted.

Fig. 1 Emergency medical facility system



5. Ambulance services operation system

In Japan, ambulance services are provided by the fire departments. As shown in the table below, ambulance services are provided in 3,048 cities and towns as of April 1, 2004, which is equivalent to 98.3% of the total of 3,101 cities and towns in Japan, covering 99.9% of the total population.

Table 2 Ambulance service providers (as of April 1, 2004)

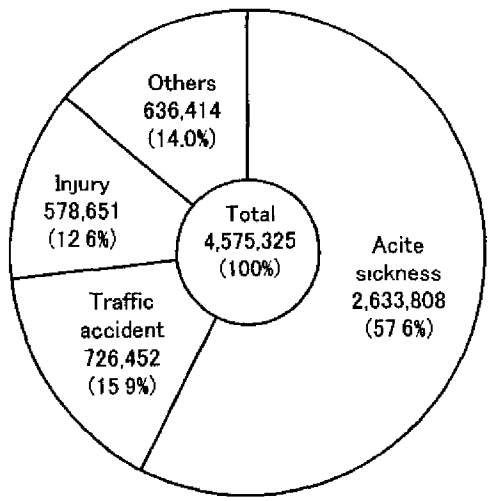
Fire departments	886 (Independent: 427, union· 459)
Cities and towns providing ambulance services	3,048 (696 cities, 1853 towns and 499 villages)
Ambulance companies	4,711
Ambulance personnel	57,936
Ambulance cars	5,636 (including 3,637 high standard ambulances)

6. Current state of ambulance services

The number of ambulance runs in 2003, including that of the ambulance runs by helicopter that was legislated in March 1998, was 4,832,900 and the number of victims or patients transported by ambulance was 4,577,403.

The number of ambulance runs by ambulance car was 4,830,813 and the number of victims or patients transported by ambulance was 4,575,325. This means that the average number of ambulance runs per day was 13,235, which was equivalent to a run every approx. 6.5 seconds, and one of every 28 Japanese people was transported by ambulance.

Disaster/accident classification and number of victims transported by ambulance cars (2003)



Others include

Fire	7,481
Natural disaster	304
Flood	2,255
Occupational accident	46,325
Sports accident	35,222
Crime	48,725
Self-damaging act	46,694
Other	449,408

Fig. 3 Response time and number of patients transported by ambulance cars(2003)

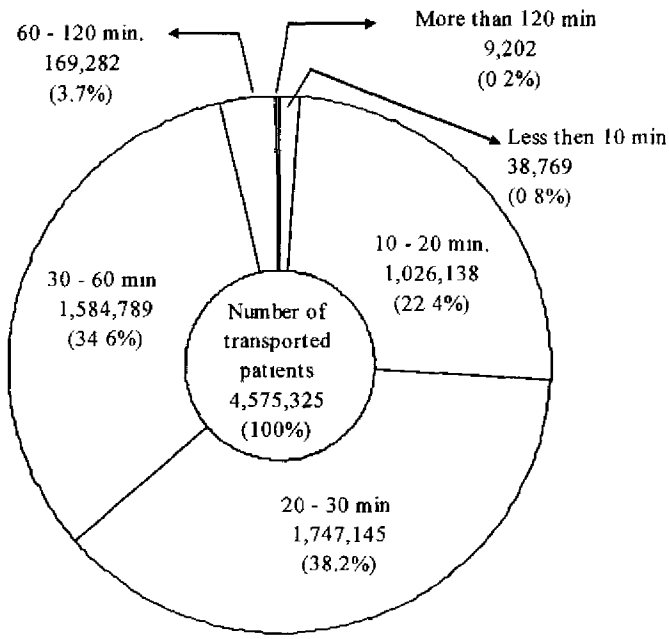
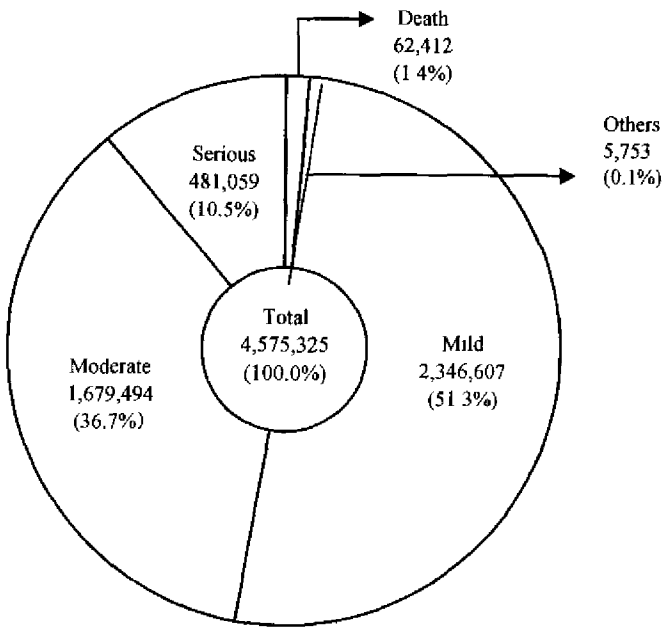


Fig. 4 Severity of sickness or injury of transported patients by ambulance cars(2003)



(1) Promotion of education and training of emergency medical technicians

In order to improve the pre-hospital care (emergency medical care provided at the rescue site or during ambulance transportation), this qualification for Emergency Medical Technicians was established by law (Emergency Medical Technicians Law #36, 1991) to allow a qualified emergency medical technician to provide high level emergency care, under the direction of doctors, to patients with heart-lung arrest during ambulance transportation.

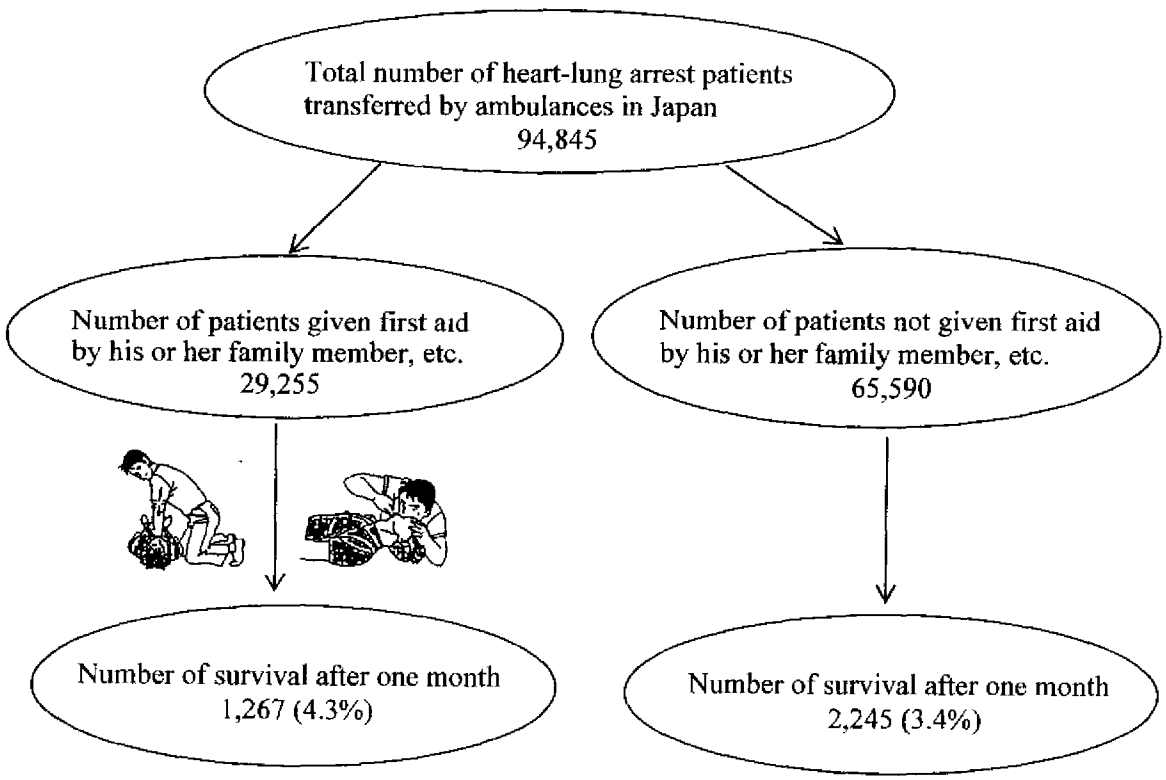
To be qualified as an emergency medical technician, an ambulance personnel must first complete "Standard First-Aid Course" or "First-Aid Course Grade II", work as an ambulance personnel for more than 5 years or for 2,000 hours, then complete Emergency Medical Technician Training Course of more than 835 hours, and finally pass the qualification examination. Today, the training of emergency medical technician is provided by the Foundation for the Promotion of Emergency Medial Services established and funded by collaboration of municipal governments and the training institutes operated by fire departments of large cities. High level emergency care by the qualified emergency medical technicians has been provided from August 1992, and is proven to be effective to save lives of victims.

(2) Promotion of first aid by residents and its effect

The average response time of an ambulance, which is the time required from an emergency call to the arrival of an ambulance at the disaster site, was approx. 6.3 minutes in 2003. Proper first aid provided by people around the victim before the arrival of an ambulance will be quite effective to save the life of the victim. Therefore, it is critical to promote the knowledge and skill of first aid among citizens. Currently, various training courses for promotion of knowledge and skill of first aid have been provided to citizens, focusing on CPR training to save the lives of heart-lung arrest victims.

The rate of one-month survival of patients with heart-lung arrest transferred by ambulances in 2003 was compared by separating them into those who were given first aid by a family member, etc. and those who were not. The rate of survival of those who were given first aid was as high as 1.3 times that of those who were not given first aid (See Fig. 6).

Fig. 6 Effects of first aid (January to December in 2003)



Result: Clearly demonstrated an increase in the survival rate of 0.9 points (approx. 1.3 times).

7. Future issues

For further perfection of ambulance services under the circumstance described in the previous sections, there are various issues to be resolved in the future, including:

(1) Find methods to ensure the smooth operation of ambulance services and enhance the cooperation between ambulance companies and medical facilities

(2) It is important to improve the ability of each ambulance crewmember, while at the same time implementing hardware improvements such as the utilization of helicopters for ambulance services and medical equipment and high-standard ambulance cars capable of coping with the need of higher level pre-hospital care.

(3) Find methods to provide better pre-hospital care and to reduce the death rate, not only perfection of ambulance service system but also the ability of first aid of each individual person is necessary. It is necessary to further promote the awareness and training of first-aid for each individual citizen.

II. Current State of Ambulance Services in Osaka

1. Current state of the ambulance service system

Ambulance service operation system (as of March 1, 2005)

Population	2,633,685 (estimated as of October 1, 2004)
Area	221.96 km^2
Number of ambulance companies	50
Number of ambulance personnel	500
Ambulance services provided in 2004	
Number of ambulance runs	194,685
Number of patients transferred	172,572

Ambulance services in Osaka city started with only one ambulance in April, 1948. After the enactment of the law in 1963, ambulance services in Osaka have been significantly improved year by year and as of March in 2003, 50 ambulance companies are allocated to 25 fire stations and 22 fire branch stations to cope with various disasters and accidents.

The ambulance services have been subject to significant change during this period both in quality and quantity, and the number of ambulance runs has been ever increasing due to the aging of society, changes in the type of illnesses and injuries most often experienced, and an increased demand for ambulance services.

The ambulance runs and the number of patients transferred in 2004 were as many as 194,685 and 172,572 respectively, showing an increase of 3.9% in ambulance runs and 4.1% in the number of patients, both of which are the largest increases we have had. These numbers mean that there was an ambulance run every 2.7 minutes and one resident per 15.3 people was transferred to medical facility by ambulance.

In order to cope with such challenging conditions, the Osaka municipal government is making every effort to promote smooth operation of ambulance services including the allocation of high-standard ambulance cars to each ambulance company. One ambulance company was also additionally formed on October 1, 1998. To reduce the death rate of victims, new systems have also been implemented to allocate an EMT to each ambulance car as well as to ensure and enhance the collaboration of ambulance cars, medical facilities and doctors.

Based on what we learned from the Hanshin-Awaji Great Earthquake in 1995, Osaka City has been promoting the training of Self-Help ability and first aid skills of residents. Current efforts focus on offering training courses and seminars to provide the knowledge and skill of first aid to save lives of people at an the site of disasters.

2. Current state of emergency medical facilities

Osaka City has 100 receiving hospitals as of March 1, 2005.

For patients and victims requiring higher level medical care, there are 10 third receiving hospitals, which are greatly contributing to survival of patients and victims in serious condition.

(As of March 1, 2005)

Operating body	Designated receiving hospitals and clinics	Third receiving hospitals
Total	93	10
National	-	1
Public	-	4
Public other than above	3	1
Private	90	4 (3)

Note) The number in ( ) repeatedly shows the number of receiving hospitals.

3. Emergency medical information system

(1) Emergency medical information

The Emergency medical information system of Osaka was launched in 1979. Data, such as the availability of doctors, hospital beds for male and female patients, and surgical operation capability in 30 medical categories, are entered from the terminal computer installed in each medical facility and distributed to the emergency medical information system via relay computers.

The terminal computers are installed at 106 hospitals in the city area of Osaka.

This system contains the availability information of 726 medical facilities, located both in the city area and suburbs of Osaka, according to the day, time and medical unit.

The ANSIN system started in April, 1998 has enabled each ambulance to access real time medical information.

(2) Medical facilities assisting EMT

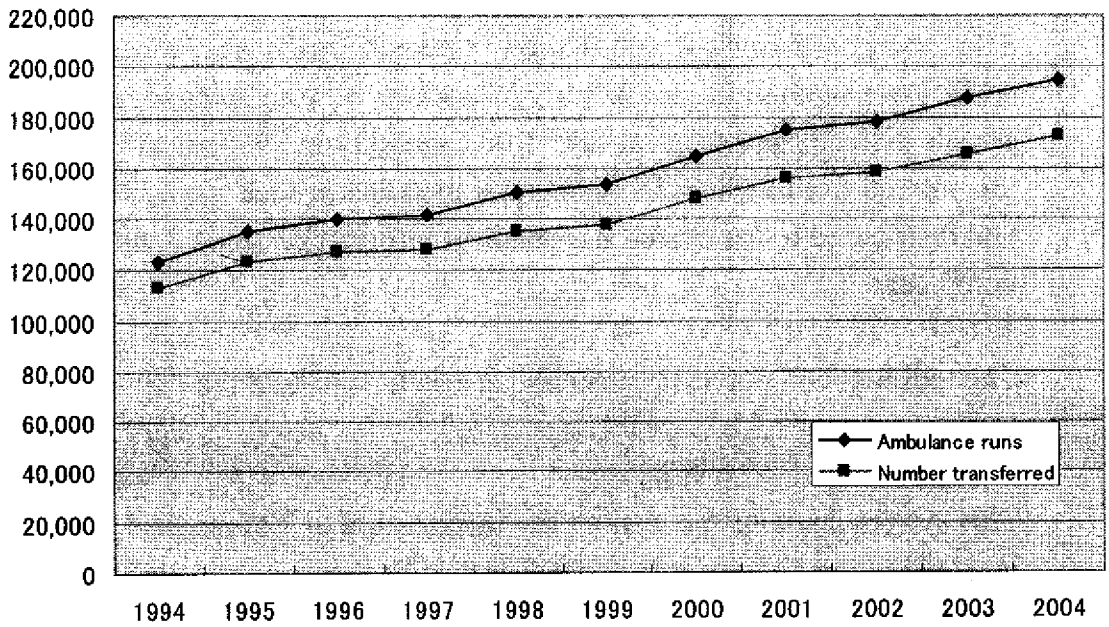
When an EMT provides special care to victims in serious condition, he or she must send information and a cardiogram to doctor(s) and obtain proper instructions from the doctor.

Therefore, the Patient Information Communication System was established between an ambulance and medical facilities such as the Emergency Centers to improve the survival rate of the patient or victim.

* Medical facilities assisting EMT

- 7 facilities and 1 supplementing facility (as of March 31, 2005)

4. Trends in ambulance services (for the previous 10 years)



Year	Ambulance runs	Index	Number transferred	Index
1994	123,438	100.0	113,029	100.0
1995	135,026	109.4	123,161	109.0
1996	139,887	113.3	127,540	112.8
1997	141,687	114.8	128,559	113.7
1998	150,687	122.1	135,235	119.6
1999	153,578	124.4	137,976	122.1
2000	164,973	133.6	148,075	131.0
2001	174,881	141.7	155,554	137.6
2002	178,349	144.5	158,044	139.8
2003	187,396	151.8	165,760	146.7
2004	194,685	157.7	172,572	152.7

5. Current state of qualified ambulance personnel

An ambulance crewmember must be a qualified fireman who completed the education required by the National government. Osaka City has ambulance personnel training programs to promote smooth rescue activities.

Education and training course	Graduates as of April 1, 2005
First Aid Course I (135 hours)	1,400 (including 17 female fire personnel)
Standard First Aid Course (250 hours)	616 (including 37 female fire personnel)
First Aid Course II (Course I + 115 hours)	364
EMT course (250 hours + 835 hours)	423 (including 1 female fire personnel)
Total number of qualified ambulance personnel	2,803 (including 55 female fire personnel)

6. Promotion of first aid ability

As aforementioned, based on what we learned from the Hanshin-Awaji Great Earthquake in 1995, Osaka City has been promoting not only the improvement of ambulance services but also the training of Self-Help ability and first aid skill of residents and company employees through various training courses. These training courses include the First Aid Introductory Course (3 hours), the First Aid Advanced Course (8 hours) and the First Aid Promotion Course (24 hours). All of these training courses are tailored so that the residents and company employees can acquire the knowledge and skill of first aid and self-help.

To attain better awareness of first aid trainers and to enhance the first aid promotion system, "Certificate of completion of ordinary life-support procedures training" has been issued to each of the participants of these training courses conducted by first aid trainers since April 1, 2001.

Current state of first aid promotion

Training courses	Participants (cumulative)
First Aid Introductory Course	263,189
First Aid Advanced Course	7,121
First Aid Promotion Course	6,165
Participants of training course performed by First Aid Trainers	37,958

Note: The number of participants means the cumulative number of participants from April 1, 1994 to the end of December, 2004.

7. Ambulance services for each accident

(1) Rate of ambulance runs

The ambulance runs for transportation of patients of acute sickness was the most frequent (127,411) and occupied 65.4% of the total ambulance runs. The second most frequent was general injury (25,572 runs and 13.1%) and the third was traffic accidents (20,575 runs and 10.6%). The transportation of patients or victims of acute sickness, general injury and traffic accidents increased by 5,143, 1,407 and 516 cases as compared with in the previous year, respectively.

The total number of ambulance runs for these 3 reasons was 173,558 and occupied 89.1% of total runs.

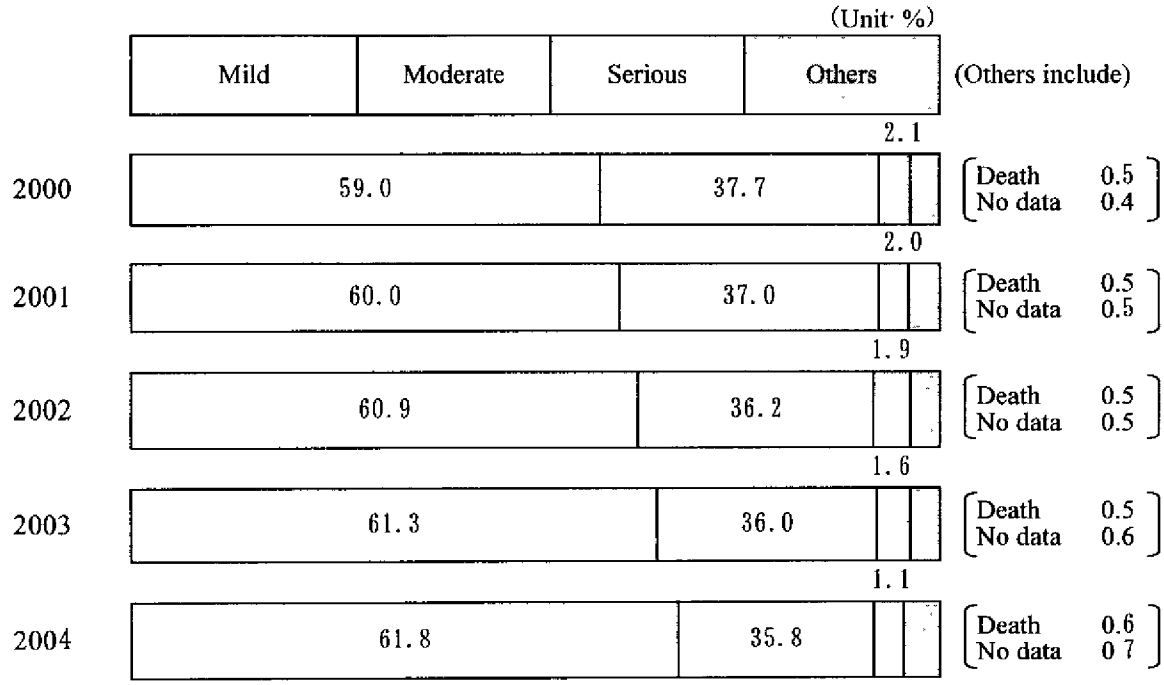
The figure in ( ) is %.

Type of Accident	2003		2002		(2003) - (2002)	
	Ambulance runs	Victims transferred	Ambulance runs	Victims transferred	Ambulance runs	Victims transferred
Total	194,685 (100.0)	172,572 (100.0)	187,396 (100.0)	165,760 (100.0)	7,289	6,812
Fire	1,412 (0.7)	227 (0.1)	1,547 (0.8)	274 (0.2)	△135	△47
Natural disaster	25 (0.0)	21 (0.0)	- (0.0)	- (0.0)	25	21
Flood	30 (0.0)	19 (0.0)	42 (0.0)	30 (0.0)	△12	△11
Traffic accident	20,575 (10.6)	20,382 (11.8)	20,059 (10.7)	19,924 (12.0)	516	458
Occupational accident	1,313 (0.7)	1,297 (0.7)	1,251 (0.7)	1,237 (0.7)	62	60
Sports accident	783 (0.4)	784 (0.5)	816 (0.4)	809 (0.5)	△33	△25
General injury	25,572 (13.1)	21,541 (12.5)	24,165 (12.9)	20,424 (12.3)	1,407	1,117
Crime	4,505 (2.3)	4,016 (2.3)	4,476 (2.4)	4,097 (2.5)	29	△81
Self-damaging act	2,247 (1.2)	1,715 (1.0)	2,237 (1.2)	1,671 (1 0)	10	44
Acute sickness	127,411 (65.4)	113,159 (65.6)	122,268 (65.3)	108,240 (65.3)	5,143	4,919
Other	10,812 (5.6)	9,411 (5.5)	10,535 (5.6)	9,054 (5.5)	277	357

8. Patients transferred

(1) Changes in the level of illness/injury of transferred patients (for the previous 5 years)

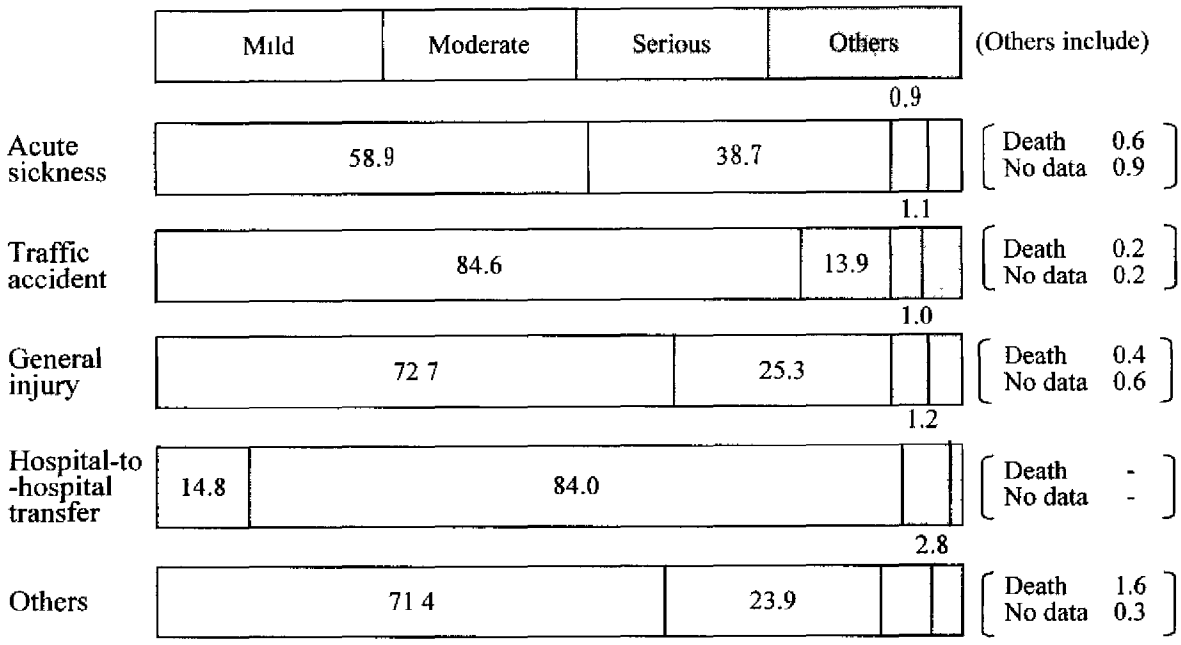
In the patients transferred by ambulance to medical facilities, the rate of those with a slight injury or slight sickness was 61.8% (106,712) in 2004.



(2) Rate of victims transferred according to the type of accident (2004)

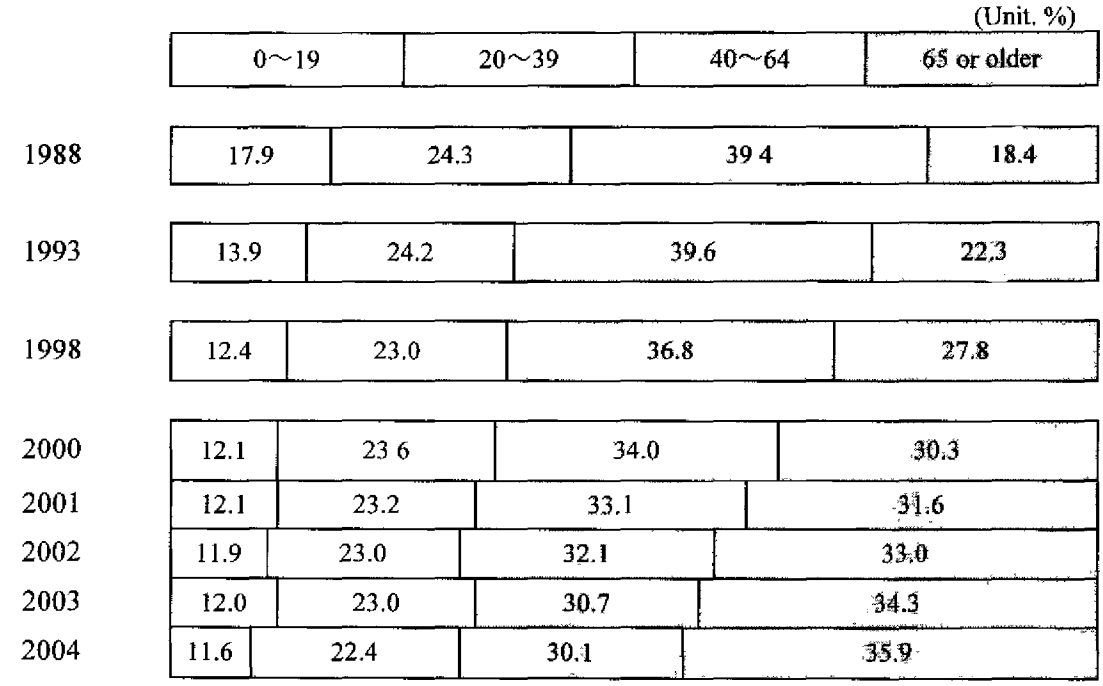
Among the victims of traffic accident and those with general injury who were transferred by ambulance to medical facilities, those with slight injuries were the most frequent and occupied 84.6% (17,235) and 72.7% (15,659), respectively.

In the case of the acute illness, the rate of slight injury or slight sickness occupied 58.9% (66,659), and was lower than its of the traffic accident or the general injury, whereas the rate of moderate injury or moderate sickness occupied 38.7% (43,737), and was higher than that.



(3) Transitions of the constituent ratio of the patients transported by ambulances

As shown in the graph below, the age bracket of over 65 constitutes more than 30% of the total number of people transported by ambulances, and the ratio has been still increasing year by year.



9. Future issues

(1) Promotion of education, training and re-education of ambulance personnel for EMT qualification and higher level emergency care
(2) Promotion of utilization of high technology emergency equipment for further perfection of first aid and emergency care
(3) Promotion of education and training of residents for proper first aid and self-help ability and promotion and enhancement of collaboration with medical facilities and doctors