USING ACTION PLANS TO COORDINATE MULTIPLE INSTITUTIONS: MEDICAL TRANSPORTATION ACTIVITIES FOR AN EARTHQUAKE IN THE SOUTHERN KANTO REGION

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(ABSTRACT)

1. A large-scale earthquake in the Southern Kanto Region will cause massive casualties and will also significantly reduce the capacity of medical institutions within the disaster area. It is therefore necessary to implement wide-area medical transportation activities with assistance and cooperation of areas outside the disaster area. Transportation of the injured was not necessarily satisfactory during the Great Hanshin-Awaji Earthquake, and the lessons learned in this must be used to improve disaster prevention administration, particularly disaster response for a potentially devastating earthquake in the Southern Kanto Region.

2. The "Outline of Emergency Countermeasure Activities against Earthquake Disaster in the Southern Kanto Region" and "General Principles relating to Countermeasures for Earthquakes directly Below the Southern Kanto Region" were amended in light of the lessons of the Great Hanshin-Awaji Earthquake and other disasters. The revised versions identify emergency response issues to be actively addressed by coordinated efforts on the part of relevant agencies (medical transportation, transportation networks etc.) and the need to make full, practical, advance preparations by drafting practical action plans for emergency responses. As part of this, the issues of medial care and transportation during large-scale earthquakes were studied, and in August 1998, the Steering Committee of the Central Disaster Prevention Council reached a First Decision on an Action Plan for Wide-area Medical Transportation Activities in the Event of a Large-scale Disaster in the Southern Kanto Region."

   The Action Plan for Wide-area Medical Transportation Activities contains arrangements for responses that provide for effective assistance by the

Headquarters for (Emergency/Major) Disaster Countermeasures and relevant agencies of efforts undertaken by local government. This is done in light of the need to provide care within twenty four hours of an earthquake in order to save the lives of the critically injured.

The Action Plan enables the government to establish a wide-area medical transportation system quickly in the initial stages immediately following an earthquake, and to effectively support local governments in wide-area medical transportation during the emergency countermeasures stage.

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1. INTRODUCTION

A large-scale earthquake in the Southern Kanto Region will cause massive casualties and will also significantly reduce the capacity of medical institutions within the disaster area. It is therefore necessary to implement wide-area medical transportation activities with assistance and cooperation of areas outside the disaster area. Transportation of the injured was not necessarily satisfactory during the Great Hanshin-Awaji Earthquake, and the lessons learned in this must be used to improve disaster prevention administration, particularly disaster response for a potentially devastating earthquake in the Southern Kanto Region. In this session, I will discuss the disaster response measures formulated for the Southern Kanto Region and the wide-area medical transportation activities to be provided by the central government.

2. RESPONSE TO AN EARTHQUAKE IN THE SOUTHERN KANTO REGION

The Southern Kanto Region contains large concentrations of population, social services, and economic functions. According to an expert report by the Central Disaster Prevention Council, there is a growing potential for an earthquake of approximately magnitude 7, and should such an earthquake occur, extensive damage is envisioned. The Central Disaster Prevention Council therefore adopted the "Outline of Emergency Countermeasure Activities against Earthquake Disaster in the Southern Kanto Region" ("Activities Outline" hereinafter) in December 1988 and the "General Principles relating to Countermeasures for Earthquakes directly Below the Southern Kanto Region"

("General Principles" hereinafter) in August 1992. The Activities Outline specifies procedures for the implementation of coordinated emergency response activities by relevant institutions under the leadership of the Emergency Headquarters for Disaster Countermeasures in the event of an earthquake; the General Principles provide basic guidelines primarily for preparatory measures.

3. LESSONS FROM THE GREAT HANSHIN-AWAJI EARTHQUAKE AND REVIEW OF MEASURES FOR THE SOUTHERN KANTO REGION

The Great Hanshin-Awaji Earthquake of January 17, 1995 was the first major earthquake to strike directly below a Japanese city in the postwar period and it underscored the need to engage in active earthquake countermeasures. It also taught the need for coordination among relevant agencies and practical advance preparations in order for disaster-related institutions to provide quick and accurate initial responses.

To achieve this, both the Activities Outline and the General Principles were revised in June 1998 to reflect the lessons of the Great Hanshin-Awaji Earthquake, subsequent policy developments, and recommendations (June 1998) by the Experts Committee on Countermeasures for Earthquakes in Large Urban Areas, a subsidiary organization of the Central Disaster Prevention Council, on the need for further promotion of practical coordination among relevant agencies.

The revisions of the General Principles provide systematic and comprehensive measures for specific fields, including preventive measures and emergency response. The content of measures has been enhanced, measures have been provided for high-risk areas such as crowded neighborhoods, high-rise buildings, and underground malls, and attempts have been made to address issues specific to the Southern Kanto Region, for example, the damage to government and economic functions and the large numbers of stranded workers unable to return home. In addition, the revisions deal with wide-area damage forecasting for the extended region, active ties among relevant agencies by through the sharing of information at ordinary times as well as times of disaster, and practical advance preparations in the form of Action Plans for emergency responses (for example, medical care and transportation). This last is given particular weight.

The revisions to the Activities Outline enhance provisions for information sharing, which is prerequisite to the involvement of the central government, and add new sections on activities to prevent secondary disasters, acceptance of voluntary assistance, transportation of the injured, and measures for the stranded. Among areas in which relevant agencies must coordinate their efforts to deliver

effective emergency responses, the Activities Outline lists medical activities, including the transportation of the injured, and transportation networks, including transportation bases, as new areas to be addressed action plans to be formulated in the future.

4. STUDIES OF WIDE-AREA MEDICAL TRANSPORTATION

The National Land Agency established a Study Committee on Medical Care and Transportation in the Event of a Large-scale Earthquake in the Southern Kanto Region" (chaired by Professor Hiroaki Yoshii of Bunkyo University) to move forward with the development of emergency measures based on the Activities Outline. With the participation of relevant central government ministries and agencies and local governments, the Committee studied specific, practical coordination for medical transportation activities and published its conclusions in August 1998. In its conclusions, the Committee emphasized the need for the following in order to implement effective, practical medical transportation activities in the event of a large-scale earthquake:

(1) Organic coordination of response measures

Medical transportation covers a wide range of activities, beginning with local-level rescue activities, the establishment of aid stations, and ambulance etc. transportation to the nearest medical institution and extending to transportation between medical institutions and transportation to the outside. It is important that there be organic coordination of the entire range of activities.

(2) Wide-area response

Given the potential for large numbers of critically injured in the aftermath of a large-scale earthquake, there will be cases in which it is necessary to transport patients outside the Southern Kanto Region. The central government must create a system for wide-area patient transportation in order to effectively assist local governments, particularly those within the disaster area, in the implementation of medical and transportation activities.

(3) Response before information is available from the disaster area

Medical activities impinge directly on human life, and speed is therefore of the essence. A key point is whether appropriate treatment can be provided within twenty-four hours, so it will be important to have systems quickly in place at the time of disaster. Without detracting from the importance of gathering on-site information from the disaster area, it will also be necessary to use estimates from the Earthquake Damage Early Estimation System (EES) in a system that enables relevant agencies to provide maximum assistance as quickly as possible.

(4) Resources for medical transportation activities

1) Means of transportation
   - Helicopters and fixed-wing aircraft are vital to fast, wide-area response. Measures must be enacted so that these means of transportation are speedily secured in times of disaster. Other issues to be addressed include training during non-disaster times, and equipment for the transportation of critical patients.
   - The helicopters and other means of transportation used for medical transportation activities are also used for other emergency responses, including transportation of supplies, rescue, and fire-fighting. Further, specific studies to medical transportation will be required in light of considerations of the overall demand for emergency response activities.
   - The Headquarters for Disaster Countermeasures in disaster-stricken prefectures will have an important role to play in the operation of means of transportation. In terms of practical operation, it will also be effective to study disaster procedures jointly with the medical institutions that will serve as key points within disaster areas.

2) Transportation stations
   - Heliports within disaster areas must be listed up and this information shared in advance. Lists should include size, distance from medical institutions, potential for nighttime use, and competition with evacuation areas. In addition, discussions should be held in advance with the managers of heliports etc. to establish systems for their speedy utilization in times of disaster.
   - The central government must make systematic preparations for wide-area transportation stations, including facilities to be used as wide-area transportation stations in the event that patients are transported outside the Southern Kanto Region.

3) Medical institutions
   - Hospitals able to serve as center points during times disaster should be identified in advance and information shared on the number of critically injured patients they are able to accept. This should focus on their surgical capacity, not the number of ordinary beds they have open.
   - A wide-area disaster/emergency medical care information system must be put in place to enable information to be shared over a wide area in the event of disaster.

4) Doctors

- Lists of doctors available to accompany patients in transit and provide medical services at transportation stations should be created in advance, and systems should be put in place to enlist the cooperation of medical institutions in areas located near the disaster area in times of disaster.

(5) Coordination among relevant agencies

1) Networks of persons involved in medical transportation
   - A large number of people are involved in this area, and fast responses are required in the very unusual circumstances of a disaster. Networks among these people must be created in advance so that information is communicated in times of disaster. This holds true for communications among relevant central government ministries and agencies, the central government and local governments, and medical institutions and disaster-related institutions.

2) Means of communication
   - It is extremely important to have facilities and equipment available for the communication and sharing of information in order to coordinate the activities of a wide range of relevant agencies. Further consideration should be given to coordination in light of the status of the Central Disaster Prevention Wireless and DIS systems at the central level, the Fire-fighting/Disaster Prevention Wireless System between the central and local governments, and the Wide-area Disaster/Emergency Medical Information System between individual medical institutions and between medical institutions and disaster-related institutions, and more disaster-resistant means of communication should be put in place.

(6) Systematic preparations

Plans and manuals were reviewed by relevant agencies after the Great Hanshin-Awaji Earthquake. In the future, it will be necessary to focus on coordination among relevant agencies as we make systematic, practical preparations. It is particularly urgent that practical preparations be made in the area of medical transportation, and these efforts should be steadily enhanced in light of the progress made by the central and local governments.

5. DRAFTING OF PRACTICAL ACTION PLANS FOR EMERGENCY RESPONSES

In light of the recommendations above, the Steering Committee of the Central Disaster Prevention Council approved a "First Decision on an Action Plan for

Wide-area Medical Transportation Activities in the Event of a Large-scale Disaster in the Southern Kanto Region" in August 1998. The purpose of the decision was to move forward with the drafting of the action plans mandated by the General Principles and Activities Outline.

The Action Plan for Wide-area Medical Transportation Activities contains arrangements for responses that provide for effective assistance by the Headquarters for (Emergency/Major) Disaster Countermeasures and relevant agencies of efforts undertaken by local government. This is done in light of the need to provide care within twenty four hours of an earthquake in order to save the lives of the critically injured. The Action Plan enables the government to establish a wide-area medical transportation system quickly in the initial stages immediately following an earthquake, and to effectively support local governments in wide-area medical transportation during the emergency countermeasures stage.

6. CONCLUSIONS

There are still further issues to be addressed. The content of the Action Plan for Wide-area Medical Transportation Activities must be enhanced, and action plans must be drafted for other emergency response activities for an earthquake in the Southern Kanto Region, including wide-area transportation activities and stranded workers.

Earthquake countermeasures for the Southern Kanto Region

I Central government (Central Disaster Prevention Council)

Disaster Prevention Basic Plan (Earthquake Countermeasures)

General Principles relating to Countermeasures for Earthquakesdirectly Below the Southern Kanto Region (August 1992)

- ○ Basic guidelines for earthquake countermeasures, focusing on preventative measures.
- ○ Defines measures to create more disaster-resistant urban structures with antiseismic retrofittings, and measures to enhance and strengthen disaster prevention organizations.

Outline of Emergency Countermeasure Activities against Earthquake Disaster in the Southern Kanto Region (December 1988)

- ○ Procedures for the implementation of emergency responses primarily by the Headquarters for Emergency Disaster Countermeasures.
- ○ Defines activities for specific fields: information gathering, publicity, emergency transportation, rescue, supply procurement etc.

Action plans for individual emergency response activities

- ○ Build practical response patterns for emergency activities
- ○ Medical transportation (August 1998)
- ○ Wide-area transportation (scheduled for 1999)
- ○ Programs for the stranded etc.
- ○ Effective use of helicopters etc., establishment of operational systems.

* General Principles and Activities Outline revised in June 1998
More practical coordination among relevant agencies in light of the lessons of the Great Hanshin-Awaji Earthquake.

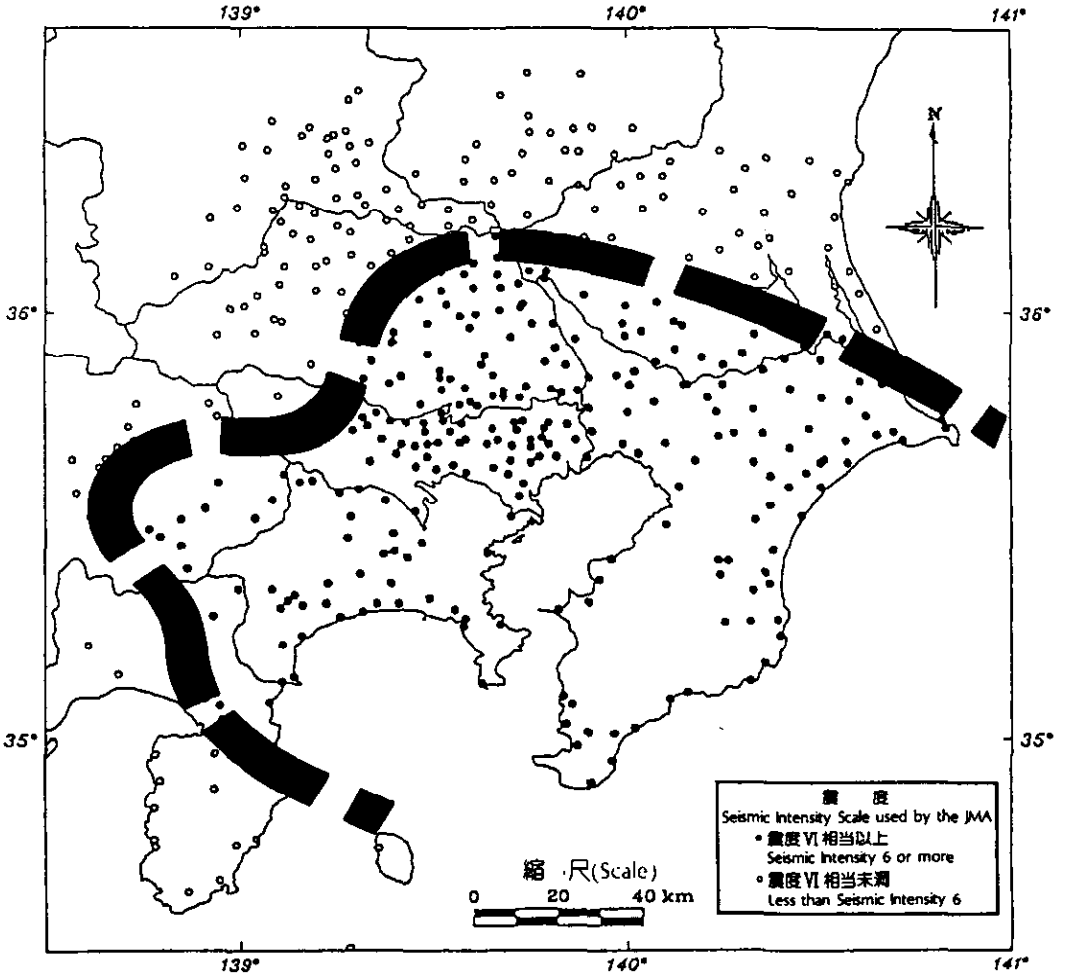
II Local governments

Local Plan for Disaster Prevention

III Designated public agencies

Operational Plan for Disaster Prevention

Areas covered in the "General Principles relating to Countermeasures for Earthquakes directly Below the Southern Kanto Region"



（注）●○は市区町村役場の所在地（うち●は７都県の282市町村）
(note)
● and ○ indicate the locations of city, ward, and municipal offices (of which 282 cities, wards, and municipalities in 7 prefectures including the Tokyo Metropolis are indicated by ●)

（備考）
一つの直下の地震の発生により上の地域の全域が震度Ⅵ相当以上になるものではない。同報告では、一つの直下の地震が発生した時に震度Ⅵ相当以上になると推定される地域の範囲は、同報告の地震モデルによると概ね半径30km程度であるが、更に局地的になることも考えられるとされている。

(Remarks)
This is not to infer that whole area in the map would suffer an earthquake equivalent to Seismic Intensity 6 or more on the Japanese scale of seven in the occurrence of a single vertical-type earthquake. Although earthquake models in the report generally take a radius of around 30km as the extent of the area which is expected to suffer an earthquake equivalent to Seismic Intensity 6 or more on the Japanese scale of seven in the occurrence of a single vertical-type earthquake, the report assumes the that area could be even more localized.

The Action Plan for Medical Transportation

The first action plan to be formulated; finalized in the August 1998 "First Decision on an Action Plan for Wide-area Medical Transportation Activities in the Event of a Large-scale Disaster in the Southern Kanto Region."

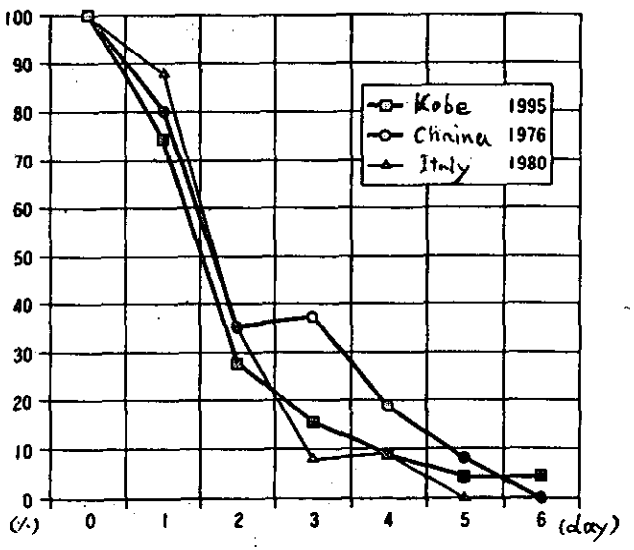
This action plan was formulated by central government ministries and agencies to secure, coordinate, and administer the following in order to provide wide-area transportation by helicopter etc. of the critically injured within twenty-four hours of a major earthquake disaster:

1) Disaster center hospitals located near the disaster area and able to accept the injured, and doctors to accompany the injured in transit.
2) Heliports and other facilities to serve as transportation stations.
3) Helicopters and other means of transportation.

Lessons from the Great Hanshin-Awaji Earthquake.

(1) The critically injured suffering from "Crash syndromes" during earthquakes require treatment at advanced medical institutions within twenty-four hours.

○ Survival rates over time of those buried in earthquake damage



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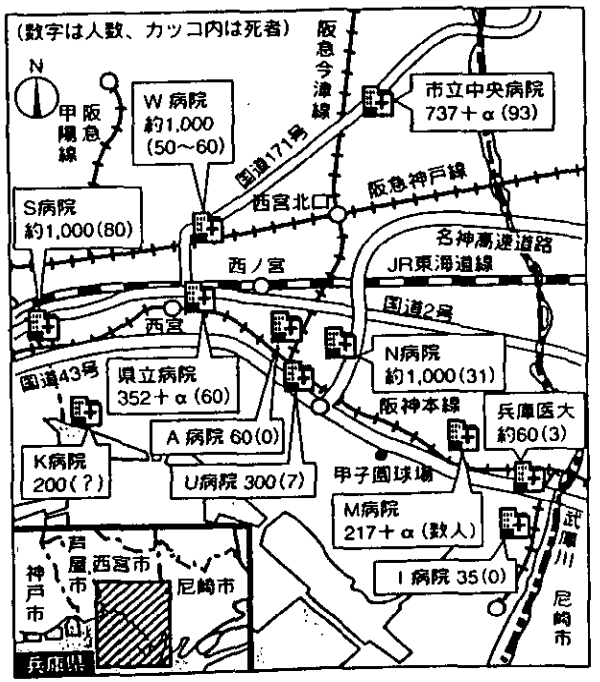
○ Relevant agencies must establish systems quickly, relying on estimates from the EES (Earthquake Damage Early Estimation System) in addition to on-site information.

(2) The capacity of medical institutions in the disaster area declines because of damaged facilities and staff unable to report for work. Patients also tend to congregate at specific hospitals.



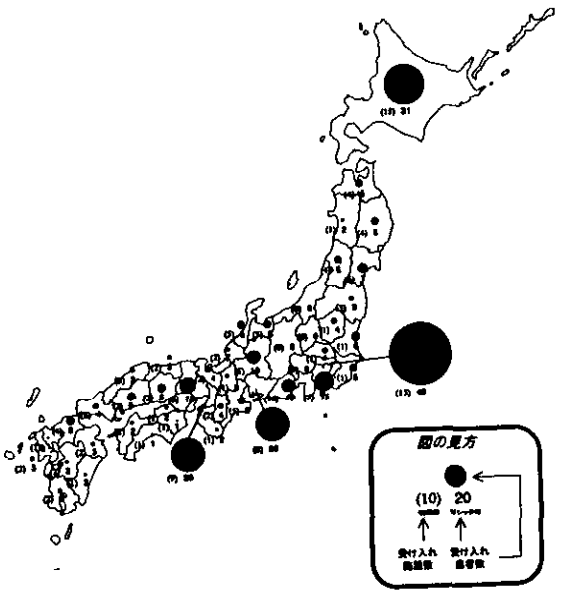
○ It is important to transport the critically injured out of the disaster area in order to save their lives.
○ Medical care systems must be enhanced.
- Designation of disaster center hospitals, enhancement of information systems
- Systems oriented to surgical capacity.

- Designation of disaster center hospitals (as at April 1998)
  Nationwide : 502 Tokyo : 60 Kanagawa : 28
  Chiba: 17

- Distribution of lifesaving/emergency care centers and critically injured acceptance capacity.

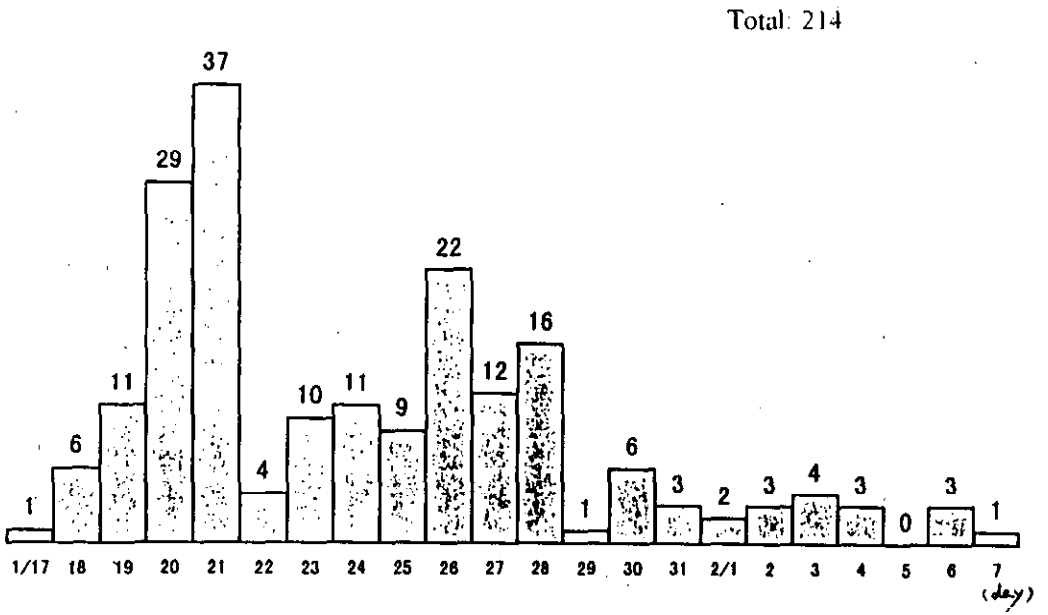
○ Distribution of lifesaving/emergency care centers

○ Number of critically injured that can be accepted



(3) The importance of helicopters in inter-hospital transportation was confirmed during the Great Hanshin-Awaji Earthquake; roads were congested and impassable. However, helicopters were not necessarily used effectively, and in many cases, they were not used until two and three days after the earthquake. Medical institutions were also inconsistent in how they used helicopter services.

· Number of patients transported by helicopter during the Great Hanshin-Awaji Earthquake

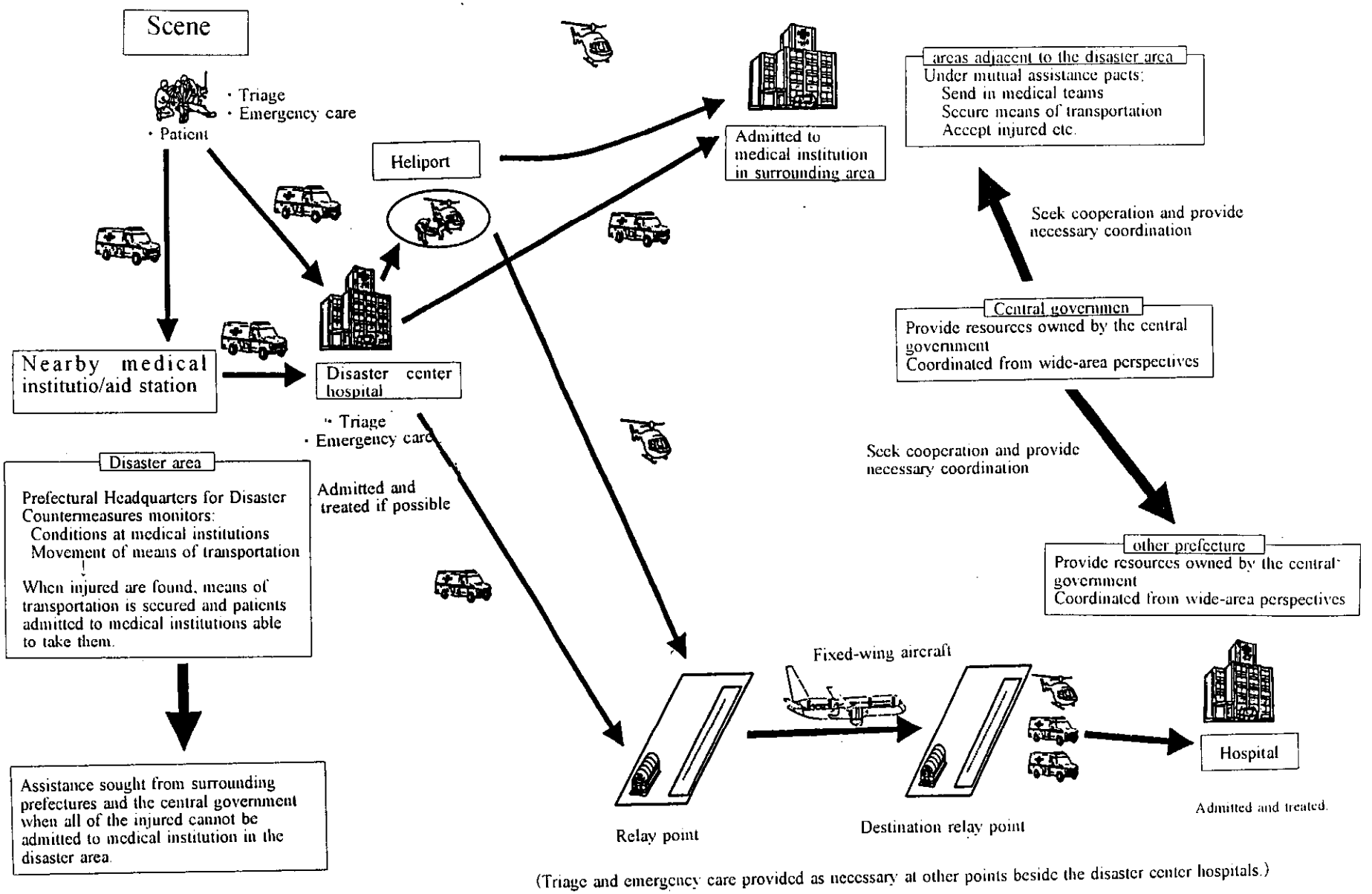


○ Systems must be put in place to allow the early utilization of helicopters and fixed-wing aircraft as means of transportation.
- Establish helicopter operations system.
  - Create list of heliports and improve conditions at them.

○ Build wide-area transportation systems to remove patients to areas outside the Southern Kanto Region (Osaka, Nagoya etc.).

- Means of transportation owned by the Police, Self-Defense Forces, Maritime Safety Agency, and fire-fighting organizations:
  Helicopters : Approx. 450
  Fixed-wing : Approx. 90
- Designation of temporary heliports in prefectural disaster plans:
  Tokyo (23 metropolitan wards) : 162
  Tama district : 69
  Kanagawa : 180
  Chiba : 454

Medical Transportation Image Diagram



(Triage and emergency care provided as necessary at other points beside the disaster center hospitals.)

Actions Envisioned for Relevant Agencies Under the Action Plan for Wide-area Medical Transportation Activities

(1) Establishment of wide-area medical transportation system immediately after an earthquake (initial stage, 1-2 hours after earthquake)

Systems are quickly established in parallel with those on the scene as soon as possible after an earthquake strikes.

① National Land Agency provides EES results
- Scale and extent of damage.
- Estimated number of critically injured and geographical distribution.

② Headquarters for Emergency Disaster Countermeasures establishes basic systems
- Formulates projections of areas the critically injured will be "Removed from" and Accepted by."
- Formulates projections of the required numbers of helicopters and doctors.
- Requests and endeavors to speedily secure means of transportation, transportation stations, medical institutions, and accompanying doctors based on projections and on lists created in advance by relevant ministries and agencies.
- Local governments in the disaster area implement medical transportation activities within the disaster area on the assumption that wide-area medical transportation systems will be in place.
- Local governments outside of the disaster area speedily initiate acceptance and assistance systems.

(2) Coordination and implementation of effective, wide-area medical transportation activities in the emergency response stage (important to provide within 24 hours of the earthquake)

Headquarters for Emergency Disaster Countermeasures, relevant ministries and agencies, and disaster-stricken local governments share information, and implement coordinated wide-area medical transportation activities.

① Monitor the damage to and patient concentration levels at disaster center hospitals etc. in the disaster area
Headquarters for Emergency Disaster Countermeasures coordinates the number of patients admitted to disaster center hospitals etc. outside the disaster area.
② Headquarters for Emergency Disaster Countermeasures coordinates the number of doctors sent in (accompanying doctors, rescue teams).
③ Headquarters for Emergency Disaster Countermeasures makes effective use of means of transportation and transportation stations, coordinates them as required by conditions, and provides assistance for medical transportation activities in the disaster area.
④ Headquarters for Emergency Disaster Countermeasures monitors the entire process and works to alleviate bottlenecks.

アクションプラン作成等による複数機関の連携について（要約）

ー南関東地域における震災時の医療搬送活動を中心にー

国土庁防災局震災対策課 課長補佐　四日市正俊

１．南関東地域の大規模な震災においては、重傷患者等が大量に発生する一方、被災地内の医療機能が大きく低下する中で、被災地外の支援・協力も得ながら、広域医療搬送活動を迅速に実施しなければならない。阪神・淡路大震災においては、負傷者の搬送活動が必ずしも十分に行われなかったことから、この教訓を今後の防災行政、特に、甚大な被害が想定される南関東地域の震災対策に活かしていく必要がある。

２．阪神・淡路大震災の教訓等を踏まえて改訂された「南関東地域震災応急対策活動要領」及び「南関東地域直下の地震対策に関する大綱」では、関係機関の連携により積極的に進めるべき応急対策の課題（医療搬送、輸送ネットワーク等）を位置付けるとともに、特に応急対策における実践的な行動計画（アクションプラン）の作成により平常時から実践的な備えを十分講じておくことが位置付けられた。これを受け、大規模震災時の医療と搬送について検討を行い、平成10年８月に中央防災会議主事会議において、「南関東地域における大規模災害時の広域医療搬送活動アクションプラン第１次申し合わせ」が行われた。

広域医療搬送活動アクションプランは、速やかに適切な処置を講じなければ人命が損なわれるおそれのある重篤患者を救うため、地震発生後24時間以内を想定し、重篤患者を広域搬送する観点から、緊急（非常）災害対策本部及び関係省庁が地方公共団体レベルの取り組みを効果的に支援するための対応等を申し合わせたものである。

これにより、政府として、地震発生直後の初動段階における広域医療搬送体制の迅速な確立と、応急対策実施段階における広域医療搬送活動について、被災地方公共団体を効果的に支援することが可能となる。

アクションプラン作成等による複数機関の連携について

ー南関東地域における震災時の医療搬送活動を中心にー

国土庁防災局震災対策課

課長補佐　四日市正俊

１．はじめに

南関東地域の大規模な震災においては、重傷患者等が大量に発生する一方、被災地内の医療機能が大きく低下する中で、被災地外の支援・協力も得ながら、広域医療搬送活動を迅速に実施しなければならない。阪神・淡路大震災においては、負傷者の搬送活動が必ずしも十分に行われなかったことから、この教訓を今後の防災行政、特に、甚大な被害が想定される南関東地域の震災対策に活かしていく必要がある。本セッションでは、南関東地域の地震対策と国における震災時の広域医療搬送活動の取り組みについて紹介する。

２．南関東地域の震災対策

人口及び社会・経済の諸機能が集中している南関東地域においては、中央防災会議の専門委員会報告により、マグニチュード７程度の地震発生の切迫性が高まっていることが指摘されており、地震が発生した場合には、著しい被害が生じることが想定されている。このため、中央防災会議において、昭和63年12月に地震発生時に緊急災害対策本部を中心に関係機関が連携して応急対策を実施する場合の手順等を定めた「南関東地域震災応急対策活動要領」（以下「活動要領」）を、平成４年８月に事前対策を中心とした震災対策の基本方針を示す「南関東地域直下の地震対策に関する大綱」（以下「大綱」）を決定している。

３．阪神・淡路大震災の教訓と南関東地域の震災対策の見直し

平成７年１月１７日に発生した阪神・淡路大震災は戦後の我が国の大都市直

下を襲った初めての大震災であり、震災対策をさらに積極的に推進する必要のあることが再認識されるとともに、防災関係機関の初動対応を迅速かつ的確に行うため、関係機関の連携のもと実践的な備えを事前に講じておくことの必要性が指摘されたところである。

このため、阪神・淡路大震災の教訓とその後の新たな施策の進展や中央防災会議に設置された大都市震災対策専門委員会の提言（平成10年６月）で指摘された関係機関の実践的連携の一層の推進の必要性を踏まえ、平成10年６月に大綱及び活動要領の改訂を行った。

このうち、大綱の改訂においては、予防対策、応急対策の備えなどの分野ごとに、体系的・網羅的に対策を整理し、内容を充実するとともに、密集市街地、高層ビル、地下街など危険性の高い地域の特性に応じた対策や、行政・経済機能の被災対策、帰宅困難者対策など南関東地域特有の課題に対する対策について新たに位置づけがなされた。また、圏域を対象とした広域的な被害想定の実施や、平常時及び災害時の情報共有の推進など関係機関の連携により積極的に進めるべき課題を位置付けるとともに、特に応急対策における実践的な行動計画（アクションプラン）の作成（医療と搬送活動など）により平常時から実践的な備えを十分講じておくことが位置づけられた。

また、活動要領の改訂においては、国の積極的な活動の前提となる情報の共有化について内容を充実するとともに、二次災害の防止活動、自発的支援の受け入れ、傷病者の搬送活動、帰宅困難者対策等の分野を新たに追加した。さらに、関係機関が実践的な連携を図りながら効果的に応急対策活動を実施する必要がある分野として、傷病者の搬送を含めた医療活動、輸送拠点等を含めた輸送ネットワーク等を挙げ、これをアクションプランを作成すべき課題として新たに提示し、今後順次検討を進めていくこととした。

４．広域医療搬送活動に関する検討

国土庁においては、活動要領等に基づく応急対策の具体化を推進するため、「南関東地域の大規模震災時における医療と搬送に関する調査検討委員会」（座

長：吉井弘明 文教大学教授）を設置し、関係省庁、関係公共団体の参画を得て、医療搬送活動の具体的かつ実践的な連携方策を中心に検討を行い、平成10年８月に大規模震災時における医療搬送活動を効果的かつ実践的に行うために必要な方策について、次のような検討結果がとりまとめられた。

(1) 一連の対応の有機的な連携の必要性

医療搬送活動については、現地レベルの救護活動、救護所の設置、救急車等による最寄りの医療機関への搬送等から始まり、医療機関間の搬送、さらにその外側の搬送にまでわたるものであり、その一連の対応が有機的な連携のもとに行われることが重要である。

(2) 広域的な対応の必要性

大規模な地震が発生した場合の重篤患者の発生状況を勘案すれば、南関東地域外に患者を搬送する必要性が生じる場合がある。被災地内を中心に医療や搬送を実施する地方公共団体を効果的に支援するため、国は広域的に患者を搬送するための体制を構築する必要がある。

(3) 現地情報が収集できな段階における対応の必要性

医療搬送活動は、人命に直接関わるきわめて迅速な対応が必要な活動である。２４時間以内に適切な処置が施せるか否かが一つのポイントであり、災害時にはそのための体制を早急に立ち上げることが重要である。このためには、現地情報の収集等の重要性に加えて、地震被害早期評価システム（ＥＥＳ）による推計結果を活用して、関係機関ができる限りの対応を迅速に行う体制を構築する必要がある。

(4) 医療搬送活動に係る資源の確保

① 搬送手段

・迅速かつ広域の対応のためには、ヘリコプター、固定翼機等の搬送手段が

重要であり、そのような搬送手段を災害時には迅速に確保するための方策を講じるとともに、平常時からの習熟、重篤患者を搬送するための装備等の問題についても検討を進めていく必要がある。

・医療搬送活動に使用されるヘリコプター等の搬送手段は、物資の輸送や救助活動、消火活動等様々な応急対策に使用されるものであるから、応急対策全体の需要等について検討した上で医療搬送活動について、さらに具体的な検討を行う必要がある。

・搬送手段の運用については、被災都県の災害対策本部の役割が重要である。また、さらに実践的な運用として、災害時の被災地内の拠点となる医療機関との間で、災害時の運用について検討を進めておくことが効果的である。

② 搬送拠点

・地域内のヘリポート等については、広さ、医療機関との距離、夜間の利用可能性、避難地との競合の有無等を的確に判断し、平常時からリストアップし、情報を共有しておく必要がある。さらに、平常時から、管理者等と協議を進め災害時に迅速に活用できる体制を整備しておく必要がある。

・広域的な搬送拠点について、国としても、南関東地域内の医療機関に搬送する場合のヘリコプターのための搬送拠点、さらに南関東地域外へ搬送する場合の広域搬送拠点として活用する施設も含め、体系的な整備を進めておく必要がある。

③ 医療機関

・一般的な空床でなく外科手術可能量等に着目し、平常時から災害拠点病院等の大規模地震発生時の重篤患者受け入れ可能数を把握し共有しておくことが重要である。

・広域災害・救急医療情報システム等の整備により、災害時には広域的に情報を共有することが可能であるような体制を構築する必要がある。

④ 医師

・搬送手段に同乗する医師、搬送拠点等で医療活動に従事する医師等の確保について、平常時からリストアップしておき地震発生時に被災地周辺の関係機関に対応を要請できる体制を構築しておく必要がある。

(5) 関係機関の連携

① 医療搬送に係る関係者ネットワークの構築

関係者が多岐にわたり、しかも災害時という特殊な状況において迅速な対応が必要とされることから、国の関係機関間、国と地方公共団体間について、さらには、医療機関と防災機関間について、災害時に情報や連絡のやり取り等を行う関係者のネットワークを平常時から構築しておく必要がある。

② 情報手段の整備

多岐にわたる関係機関が連携するためには、情報の連絡や共有のための設備の整備がきわめて重要である。国の関係機関を結ぶ中央防災無線やＤＩＳ、国と地方公共団体を結ぶ消防防災無線、医療機関間や医療機関と防災機関を結ぶ広域災害・救急医療情報システム等の整備の状況を踏まえ、さらに連携に配慮し、災害に強い情報手段を整備していく必要がある。

(6) 計画的な備えの推進の必要性

阪神・淡路大震災後、関係機関においては計画やマニュアルの見直しが進められた。今後は、関係機関の連携に着目し、実践的な備えを計画的に進めていく必要がある。医療搬送活動は実践的な備えが急がれる分野であり、国、地方公共団体における取り組みの進展を踏まえ、順次充実させていく必要がある。

4．応急対策における実践的な行動計画（アクションプラン）の作成

大綱及び活動要領で位置付けられたアクションプランを推進するため、上記の検討を踏まえ、平成10年８月に中央防災会議主事会議において、「南関東地域における大規模災害時の広域医療搬送活動アクションプラン第１次申し合わせ」が行われた。

広域医療搬送活動アクションプランは、速やかに適切な処置を講じなければ人命が損なわれるおそれのある重篤患者を救うため、地震発生後24時間以内を想定し、重篤患者を広域搬送する観点から、緊急（非常）災害対策本部及び関係省庁が地方公共団体レベルの取り組みを効果的に支援するための対応等を申し合わせたものである。これにより、政府として、地震発生直後の初動段階における広域医療搬送体制の迅速な確立と、応急対策実施段階における広域医療搬送活動について、被災地方公共団体を効果的に支援することが可能となる。

５．おわりに

今後も広域医療搬送活動に関するアクションプランの内容を充実するとともに、広域輸送活動や帰宅困難者など南関東地域震災応急対策活動要領においてアクションプランを策定することが位置付けられたその他の課題についても、検討を進めることとしている。

南関東地域の地震対策

国
（中央防災会議）

防災基本計画
（震災対策編）

南関東地域直下の地震対策に関する大綱（H4. 8）＊

○事前対策を中心とした震災対策の基本方針
○施設の耐震化等による都市の防災構造化、防災体制の充実強化等の対策を規定

南関東地域震災応急対策活動要領（S63. 12）＊

○緊急災害対策本部を中心に応急対策を実施する場合の手順
○情報収集、広報、緊急輸送、救助、物資調達等の活動分野ごとに規定

個別の応急対策活動ごとのアクションプラン

○応急対策の実践的対応パターンを構築
・医療搬送（H10. 8）
・広域輸送（H11年度予定）
・帰宅困難者対策等
○ヘリコプター等の有効活用、運用体制の確立

＊平成10年６月に大綱・活動要領を改訂。
阪神・淡路大震災の教訓等を踏まえ、関係機関の実践的連携を一層推進。

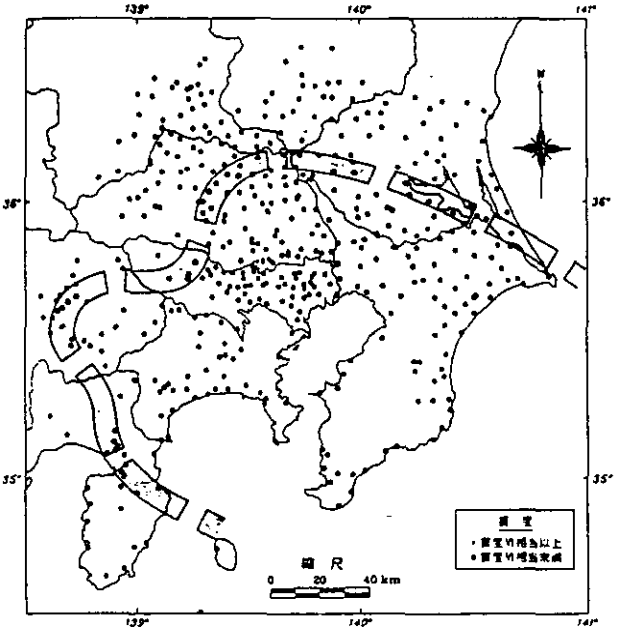
地方公共団体

地域防災計画

指定公共機関

防災業務計画

⊙「南関東地域直下の地震対策に関する大綱」の対象区域



医療搬送アクションプランについて

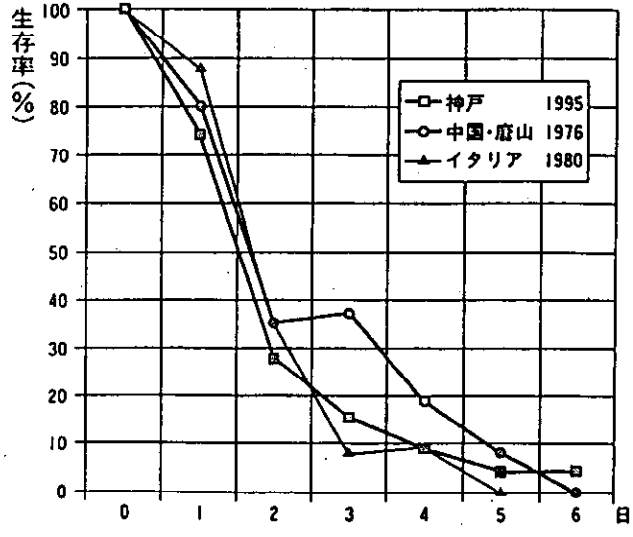
アクションプランの第１弾として、「南関東地域の大規模震災時における広域医療搬送活動アクションプラン第１次申合せ」を平成１０年８月に策定。

大規模震災時において、地震発生後２４時間以内に重篤患者をヘリコプター等で広域搬送するため、
①被災地周辺で傷病者を受け入れる災害拠点病院や搬送に従事する医師
②搬送拠点となるヘリポートなどの施設
③ヘリコプターなどの搬送手段
等の確保、調整及び運用を行うための行動計画を国の関係省庁で策定。

阪神・淡路大震災の教訓

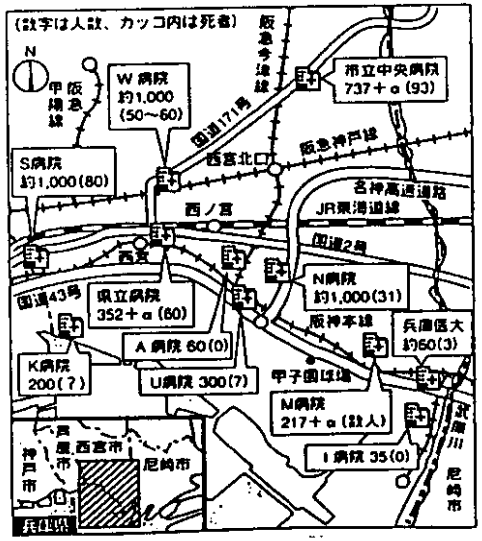
(1) 震災時における「クラッシュ症候群」等の重篤患者については、発災後２４時間以内に高度医療機関で治療することが必要。

○地震被害における生き埋め者の生存率の時間変化



○現地情報だけでなく、ＥＥＳ（地震被害早期評価システム）による推計結果をもとに、関係機関が迅速に体制を立ち上げる必要。

(2) 被災地内の医療機関は設備の被害や職員の未参集等により機能低下。また、特定の病院への患者の集中が見られた。



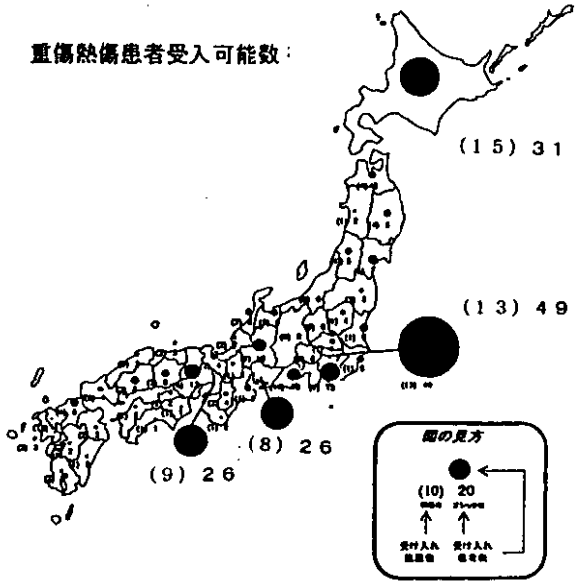
○重篤患者の救命のためには被災地外への搬送が重要。
○医療体制の充実が重要
・災害拠点病院、情報システムの整備
・外科的処置能力に応じて体制構築

・災害拠点病院の指定状況（H10.４現在）
全国：５０２　東京都：６０
神奈川県：２８　千葉県：１７

・救命救急センターの分布と、重傷熱傷患者受け入れ可能数の分布

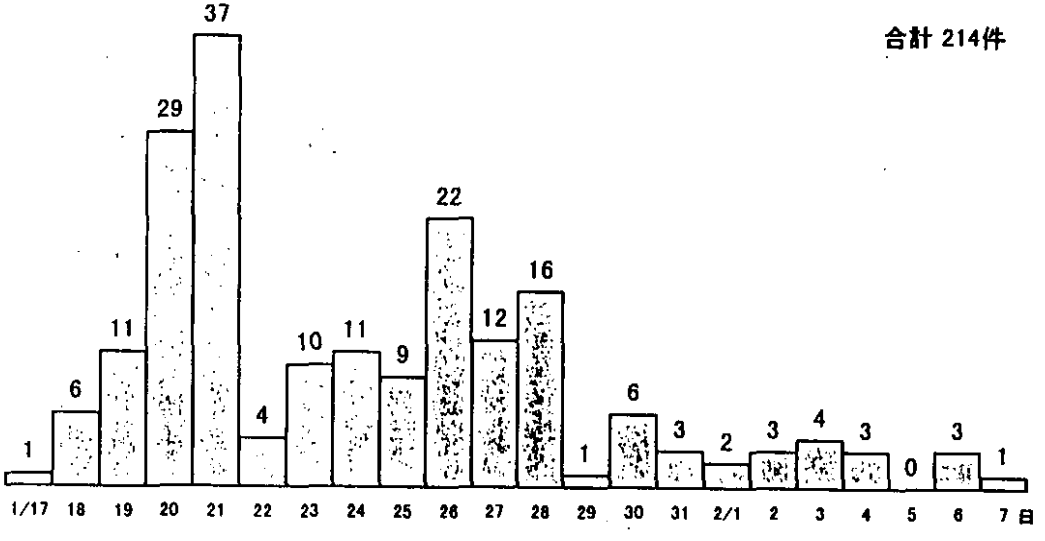
救命救急センターの分布

重傷熱傷患者受入可能数



(3) 阪神・淡路大震災においては、道路渋滞等により病院間搬送の手段として、ヘリコプターの重要性が認識された。実際には、発災後２、３日経過後になって活用されるなど、あまり有効に活用されたとはいえず、また、医療機関によってその活用度合いにバラツキがあった。

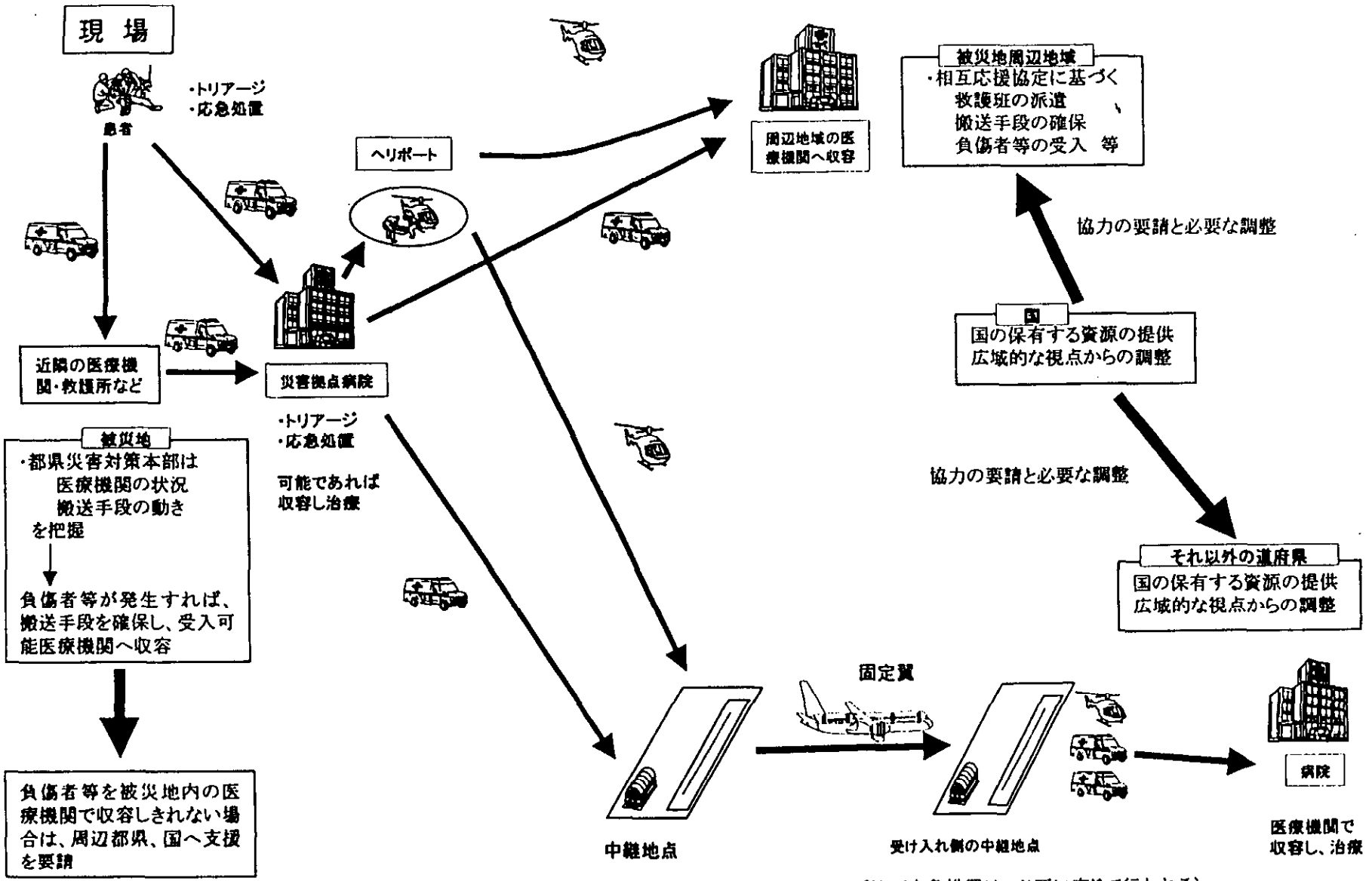
阪神・淡路大震災におけるヘリコプター搬送件数



○ヘリコプターや固定翼機の搬送手段を迅速に活用する体制構築が必要。
・ヘリ等の運用体制の確立
・ヘリポートのリストアップや条件整備
○南関東地域外（大阪、名古屋等）への広域搬送体制も構築。

・警察、自衛隊、海上保安庁及び消防の保有する搬送手段
　ヘリコプター：約４５０機
　固定翼機：約９０機
・都県の地域防災計画におけるヘリコプター臨時離着陸場の選定
　東京都２３区内：１６２カ所
　多摩地区：６９カ所
　神奈川県：１８０カ所
　千葉県：４５４カ所

医療搬送のイメージ図



（災害拠点病院以外の各地点においても、トリアージ及び応急措置は、必要に応じて行われる）

「広域医療搬送アクションプラン」に基づく関係機関のアクション想定例

(1) 地震発生直後（初動段階）における広域医療搬送体制の確立【地震発生後１～２時間】

地震発生後、現場と並行して迅速に体制を立ち上げ。

① 国土庁によるＥＥＳ推計結果等の提供

- 被害の規模・広がり
- 重篤患者の発生見込み数、地域的分布

② 緊急災害対策本部による基本的な体制の準備

- 重篤患者について、「搬出地域」と「受け入れ可能地域」を想定
- 必要ヘリ数、必要医師数を想定
- 関係省庁は、あらかじめリストアップした搬送手段、搬送拠点、医療機関、同乗医師等について、上記想定を踏まえ対応を要請し、迅速な確保に努める
- 被災地方公共団体等は、広域医療搬送体制を念頭に被災地内医療搬送活動を実施
- 非被災地方公共団体は、受け入れ・支援体制を迅速に立ち上げ

(2) 応急対策実施段階における効果的な広域医療搬送活動の調整・実施【地震発生後数時間から２４時間以内が重要】

緊急災害対策本部、関係省庁、被災自治体が情報を共有し、連携して広域医療搬送活動を実施。

① 被災地の災害拠点病院等の被災状況及び患者の集中状況の把握

被災地外の災害拠点病院等における受入数を緊急災害対策本部で調整

② 医師派遣数を緊急災害対策本部で調整（同乗医師・救護班）

③ 緊急災害対策本部は、搬送手段・搬送拠点を効率的に活用し、状況に応じた調整を行い、被災地の医療搬送活動を支援

④ 緊急災害対策本部は一連の流れを把握し、ボトルネックの解消に尽力