No. 31  July 2012

JAPAN HOSPITALS
The Journal of Japan Hospital Association

Special Feature

Resumption of Medical Services after Great East Japan Earthquake
Tsuneo SAKAI

Japanese Strategy for Healthcare Reform
Yoichi MASUZOE
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Japan Hospital Association is committed to contributing to society by enhancing hospital services in Japan. This journal introduces the activities of the Association and healthcare in Japan to the world.

Enquiries regarding the Association and its services should be addressed to:
Japan Hospital Association
9-15 Sanbancho, Chiyoda-ku, Tokyo 102-0075, Japan
Tel: 03-3265-0077 Fax: 03-3230-2898
Email: info@hospital.or.jp

Editorial Board
Journal and Newsletter Editorial Committee of the Japan Hospital Association
Dr. Yoshito HARA

Editorial Cooperation
faro inc.
6-15-1-5F Kasai bld., Hon-komagome, Bunkyo-ku, Tokyo 113-0021, Japan
Tel: 03-6380-4888 Fax: 03-6380-5121
http://www.faroinc.com

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On March 16th, budget and business drafts were approved at the scheduled conference for the board of trustees, board of representatives, and general meeting. This was followed by a successful ceremony to celebrate the 60th anniversary of Japan Hospital Association, which had been postponed due to the Great East Japan Earthquake.

In this first year after the commemorative 60th, the JHA is moving into a new building to begin activities as a newly reformed General Incorporated Association. While I have a tremendous responsibility in supporting the cooperative advancement of my administration and staff members, I intend to see this through with a strong feeling of hope. As you know, our business plans include a number of priorities, but that is not to say that any one is superior to another. However, judging from the social security and tax reform package and simultaneous revisions in the payment system for medical care and nursing care in fiscal 2012, we need to proceed with vigilance in “visualization” projects. Unfortunately, information that is presently available to the public is mostly macro data, and micro data from the field tends to be lacking. The recent reform was devised to ask hospitals other than those that have the Diagnosis Procedure Combination (DPC) payment system when collecting and reporting data, but the effectiveness and validity are still unclear. In addition, the means of reflecting situations in hospitals that find it difficult to provide data is a big issue, which I am hoping to resolve with the JHA. A desirable structure of healthcare provision for 2025 would have to prioritize the positioning of acute care beds. In response to this, I plan to make suggestions based on collected data from Emergency Medical Services Committee member hospitals practicing emergency medical care. With member hospitals submitting valuable information, I hope that we are able to illustrate that medical care is slowly but surely improving.

When discussing the value of medical services, I would like to emphasize again the importance of quality of medical care and quality of hospital management. Specifically, I believe that the QI (Quality Indicator) Project led by the QI Committee is an important initiative for the future of medical care in Japanese hospitals. We have always requested the government to properly evaluate the quality of frontline medical care. This not only means the evaluation of its structure and process, but most definitely the outcome as well. It also means that a great number of hospitals need to take part in the QI Project. I consider this essential if we are going to instill the awareness that a patient is paying for performance and paying for value when paying remuneration for medical care.

We cannot discuss medical safety without studying the system that investigates the cause of a death or an accident related to medical care. As a project for fiscal year 2012, Japan Medical Safety Research Organization has announced that discussions will be held on the involvement of third party organizations that conduct investigations into the causes of deaths related to medical care. Japan Hospital Association intends to cooperate fully.

May our continued support to stimulate branch activities help to regenerate regional medicine and lead to an increase in member hospitals.

I hope that this fiscal year is indeed the best year to mark the beginning of the new Japan Hospital Association.
I will talk about the resumption of medical services following the Great East Japan Earthquake in this opening session of the International Modern Hospital Show 2011.

Four months have already passed since the major earthquake struck on March 11. This was a massive disaster without precedent in our history, but it also delivered a sharp blow to the medical community. I visited Iwate Prefecture and Fukushima Prefecture, sites of the disaster, which were experiencing terrible conditions beyond anything I could have imagined. It is easy for all of us to describe conditions as “terrible” from the relative safety of Tokyo, but the situation was truly devastating for the people in areas struck most directly by the earthquake and tsunami. In addition, the three prefectures that took the brunt of the disaster also had sparse medical services, so there were many difficult problems from the start.

Today I would like to discuss the impact of this major disaster [Slide 1]. Then I will move on to talk about how the Japan Hospital Association (JHA) dealt with the impact, and finally I will propose the development of a medical support system.

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**Tsuneo Sakai**  
President, Japan Hospital Association

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**Today’s topics**
- Impact of major earthquake
- JHA’s initiatives
- Proposal for development of a medical support system

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**Impact of Great East Japan Earthquake**

- Damage due to earthquake
- Damage due to tsunami
- Damage due to nuclear power reactor accident
- Damage due to harmful rumors
- Damage due to man-made calamities

Human suffering
- Number of mortalities: 15,550
- Number of missing: 5,344

* Data provided by the Metropolitan Police Department as of July 11.
Impact of Great East Japan Earthquake

As you know, a magnitude 9.0 earthquake struck off the coast of Miyagi Prefecture on March 11, but the actual damage caused by the earthquake can be roughly divided into five categories. The three original types of damage were the damage caused by the earthquake itself, the damage caused by the tsunami and the damage caused by the nuclear power plant accident, which primarily affected Fukushima Prefecture. However, harmful rumors also caused damage, particularly in Fukushima Prefecture. In addition, we have recently found that damage was also caused by man-made calamities. This is not meant to attribute blame, but when I see the government flounder about, I can’t help but worry about where Japan is headed. Nevertheless, those of us in the medical profession cannot simply pin all of the responsibility on the top ranks of the government, but must solemnly address the issues handed to us. I think this will require that we give 120%.

The human toll of the earthquake—not the damage caused by man-made calamities—amounts to 15,550 deaths and 5,344 missing as of July 11, four months after the earthquake. A decrease in the number of missing would mean an increase in the number of dead. These are horrifying figures. As if this wasn’t bad enough, severe aftershocks after the earthquake made people anxious that another major earthquake was occurring. I feel truly helpless when I think about how people in the disaster areas in particular must have always felt a shapeless fear.

Damage to Medical Facilities

The table in Slide 3 shows the damage suffered at medical facilities as announced by the Ministry of Health, Labour, and Welfare. There are a total of 94 hospitals in Iwate Prefecture, 147 in Miyagi Prefecture and 139 in Fukushima Prefecture. Of these, four in Iwate Prefecture, five in Miyagi Prefecture and two in Fukushima Prefecture were completely destroyed. The table also shows the number of hospitals that were partially damaged, demonstrating that indeed many hospitals were damaged.

The number of hospitals unable to take in patients was 11 in Iwate Prefecture, 38 in Miyagi Prefecture and 35 in Fukushima Prefecture immediately after the earthquake. By April 20, reconstruction efforts had decreased the

<table>
<thead>
<tr>
<th></th>
<th>Number of hospitals</th>
<th>Complete destruction</th>
<th>Partial destruction</th>
<th>Limitations on number of patients</th>
<th>Inability to take in patients</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Immediately after earthquake</td>
<td>As of April 20</td>
</tr>
<tr>
<td>Iwate</td>
<td>94</td>
<td>4</td>
<td>58</td>
<td>48</td>
<td>7</td>
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<td>Miyagi</td>
<td>147</td>
<td>5</td>
<td>123</td>
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<td>139</td>
<td>2</td>
<td>108</td>
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<td>22</td>
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<td>380</td>
<td>11</td>
<td>289</td>
<td>107</td>
<td>42</td>
</tr>
</tbody>
</table>

*From materials provided by the Ministry of Health, Labour and Welfare

Dr. Tsuneo Sakai, President of Japan Hospital Association
number of hospitals unable to take in patients, and then decreased further by May 17. That said, as you can see the number of hospitals unable to receive patients is still in the double digits in Fukushima Prefecture. This is, of course, due more to the damage incurred in the nuclear power reactor than to the damage caused by the tsunami and earthquake. The table also shows the number of hospitals that placed limits on the number of inpatients.

Indeed JHA set up a special committee to address the disaster immediately after the earthquake and began to gather information. However, we encountered problems since we were unable to contact people on the telephone, and then the transportation lifeline was interrupted and we were unable to go to the affected areas. As a result, we were unable to determine the extent of the damage suffered by hospitals.

### Damage in Fukushima Prefecture

**Slide 4** The Fukushima Prefecture Hospital Association, chaired by Dr. Kazuhira Maehara, conducted a questionnaire and collected extremely detailed data. I would like to discuss some of their findings here.

The questionnaire was conducted for just under two weeks from April 18 to April 29, with 76 hospitals responding. This amounts to 60% of all of the members of the Fukushima Prefecture Hospital Association, which is an extremely high response rate. In addition to the questionnaire, five hospitals were interviewed.

Fukushima Prefecture is divided into the three regions of Aizu, Naka-dori and Hama-dori. Aizu was not damaged much, but Naka-dori was damaged by the earthquake and Hama-dori by the earthquake and the tsunami as well as the nuclear power plant accident.

For example, the figure in the lower part of Slide 4 indicates the sites where the seismic intensity was six-upper and the sites where the seismic intensity was from six-upper to seven with a dotted line. This shows that even within Fukushima Prefecture, the damage in the three regions of Naka-dori, Hama-dori and Aizu differed.

Twelve hospitals were evacuated due to the earthquake and tsunami and 16 were evacuated due to the nuclear power reactor accident, which are quite extreme numbers.

Indeed, lifeline services were interrupted and the supply of goods cut off at various hospitals. The table in Slide 5 shows the number of days it took to recover from the state the hospitals found themselves in immediately after the earthquake. We surveyed water, electricity, gas, liquid oxygen, crude petroleum, medical supplies, materials for medical examinations, materials for food service and gasoline for staff use. The table shows that...
Aizu was affected by a shortage of crude petroleum, medical supplies and the goods listed lower in the table, but overall this area recovered quickly compared to Naka-dori and Hama-dori. However, Hama-dori’s recovery was slow. In Iwaki, it took 13 days for water services to be restored, which shows just how difficult the situation was. In addition, the region suffered damage from the nuclear power accident, so conditions are still tough.

The Fukushima Prefecture Hospital Association was extremely interested in staff members’ voluntary evacuation and status of withdrawal from workplace. The table in Slide 6 shows the total number of staff members at hospitals in each region and the number of those who evacuated and withdraw. The numerator (the number before the /) refers to the period immediately after the disaster, while the denominator (the number after the /) refers to the status eight weeks after the disaster. This shows that many left just after the disaster. Of these, many doctors and nurses were unable to get to the hospital just after the earthquake because of shaking and the inability
Recently, I visited Dr. Maehara’s hospital (Shirakawakosei General Hospital) when I went to J Village* in Fukushima Prefecture. We had an opportunity to talk, and he told me that recently the number of staff quitting has gradually increased. There has been a particularly large withdrawal of young employees, including doctors. These doctors were probably not from Fukushima Prefecture and come from Tokyo and other places via their relationships with related hospitals. If these doctors have young children, their families may have returned to their homes without him/her. Of course it is difficult to continue living on his/her own, so the doctor would also return home to be with his/her family. The hospital that they leave behind takes quite a hit from this. However, we do not know how long this will continue. No one knows when the damage caused by the nuclear power reactor accident will be brought under control. Then–Prime Minister Naoto Kan has said that it could take several decades. After some decades, even doctors in their 30’s will reach the age of retirement (around 60). So they naturally wonder if they should stay in Fukushima, or move to other cities. This is the reality.

* (Editor’s note) J Village is a private facility established and administered primarily by the Japan Football Association as a sports training center. After the Fukushima nuclear accident, its administration was transferred to the national government and it became a frontline base in responding to the nuclear reactor accident.

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**Difficult to obtain information**

We also learned that not only was information not compiled, but it was extremely difficult to obtain accurate information.

Slide 7 shows clips from the Asahi Shinbun (a national newspaper). The number of victims was reported every day in this way. The newspaper published the day after the earthquake reported that the number of deaths amounted to 133. The following day, it had increased five times to 686, and by the third day it had reached 1,697 people. As I noted earlier, the number of death was listed as 15,550 on July 11, four months after the earthquake. The number of deaths will likely continue to increase as it becomes more accurate.

However, these people died in a much shorter time span than four months. This just means that it took four months to ascertain the actual number of mortalities. It took outsiders considerable time before they could learn about the real conditions on site.

We Japanese tend to immediately assume that information in print and information we hear on television and radio is accurate, but it is not really that accurate. Finding ways to quickly obtain accurate information is extremely important. I will talk about this more later.

**Efforts by JHA**

I would like to talk now about the JHA’s initiatives, and particularly its efforts to provide support.

On March 11, I was at the JHA myself, so we quickly set up a special committee (the Special Committee on Disaster Countermeasures). We discussed support during the acute stage, support for the medium term and support for the long term, as shown in Slide 8. We decided that...
our support would take the form of “people, goods, money and information,” but also that efforts to work with government, or organizational initiatives, would be important—in other words, the JHA would not work on its own, but would lobby the government and provide support in collaboration with other hospital groups. Including this, we had five kinds of support.

**Support during acute stage**

(Slide 9) JHA’s organizational efforts during the acute stage included the establishment of the Special Committee on Disaster Countermeasures, as I just mentioned. We cooperated with the government by participating in the Conference on Health Support for Victims, which was set up within the Cabinet Office. This conference was not actually formed until two months after the earthquake, but prior to this JHA was involved as a member of the liaison group set up after the disaster.

JHA provided human, material and financial support. Various hospital groups and medical groups stated that they had sent out Disaster Medical Assistance Teams (DMATs), but the news did not report anything about JHA sending out DMAT. This was because JHA is a group of various types of hospitals that include a wide range of categories: public hospitals and private hospitals, big hospitals and small and medium-sized hospitals, and acute care hospitals and chronic-phase hospitals. All of these different kinds of hospitals belong to JHA. Of these, for example the public hospitals have the National Hospital Organization, as well as the national centers such as the National Cancer Center and the National Cerebral and Cardiovascular Center. Semi-public hospitals include the Kouseiren, the Japanese Red Cross Medical Center, and the social welfare organization Saiseikai Imperial Gift Foundation, Inc., as well as local hospitals and social insurance hospitals.

The Japanese Red Cross Medical Center provided its own support during the critical stage, as did the Kouseiren and Saiseikai. In this way, individual hospitals dispatched teams within the groups to which they belonged, but all together member hospitals sent 340 DMATs.

Japan Medical Association sent out Japan Medical Association Teams (JMA Ts), in which many of the JHA’s member hospitals participated. The member hospitals not only sent many doctors, but also nurses and staff working in other categories.

In another attempt to provide human, material and financial support, we endeavored to match patients in the disaster areas with hospitals that could take them in located in non-disaster areas. However, this was very difficult. For example, Fukushima prefecture was affected by the nuclear power reactor accident, and although it was generally thought that entire towns no longer fit for habitation should be evacuated somewhere, the local residents themselves did not go along with this. This made our efforts a struggle.

JHA also collected donations. Material support included drugs and medical equipment, and we also sent medicine and Geiger counters.

JHA particularly focused on information support by compiling, analyzing and disseminating information. I will go into this in greater detail below, but we used geographic information to make this information visible so that viewers could ascertain the kind of disaster that had occurred, where and its severity.

We provided support in these ways during the acute stage.

Unlike the Hanshin-Awaji Earthquake, the Tohoku earthquake did not cause much damage due to collapse buildings, but instead the damage caused by the tsunami was immense. As a result, there was little acute medical treatment of external injuries, which is the basis for DMAT activities, and DMAT activities were wrapped up early on. Some people are still providing support, but these are not DMAT activities but rather more like JMAT activities.
Medium- and long-term support
(Slide 10) Two to three months after the earthquake, we started providing medium- to long-term support. The areas struck by the earthquake had suffered from a shortage of medical staff even before the earthquake, so medical staff needed to be dispatched for the medium to long term. JHA thought that dispatching junior residents, senior residents and medical specialists would be a good way of addressing this issue, and the Ministry of Education and the Ministry of Health, Labour and Welfare is currently taking steps in this direction. Some of our member hospitals are psychiatric hospitals, and they are sending mental healthcare experts to provide support.

JHA also donated money, and waived membership fees for member hospitals that were affected by the disaster.

Administrative and organizational support at this time consisted of establishing a system to provide local medical care. This has been a very difficult problem, since the disaster occurred when local medical care in these regions was already in a state of collapse. We felt that, precisely because of these conditions, if we couldn’t set up medical care delivery systems in the disaster regions, we wouldn’t be able to establish medical care delivery systems in regions that were not damaged.

We were then called on to develop a system to supply lifeline services, medical products and medical materials and equipment.

The current overhaul of DMAT is also important. DMAT was created after the Hanshin-Awaji earthquake, but I believe that it needs to be reassessed in view of questions as to whether it functioned adequately in this earthquake. In other words, the disaster support system must be rebuilt.

Another extremely important form of support is the development of a medical support system. I wondered if we could develop a system that could transition from a system operating under every-day circumstances to a system able to handle emergencies when necessary.

JHA found that the lack of any JHA branches in the three prefectures in Tohoku that were damaged was particularly difficult. We had originally planned on sharing various information through our branches, but the lack of branches meant that this was insufficient. We really need to set up branches in these areas. Another option is to support the activities of hospital associations in the various cities and prefectures—such as the Fukushima Prefecture Hospital Association I mentioned earlier—even if there are no local branches.

We also want to provide long-term follow-up.

Operation of JHA’s disaster support system
Slide 11 shows the JHA’s disaster support system. JHA works closely with central and local governments, or city and prefectural branches, city and prefectural hospital associations, related organizations, industry and academia. This diagram shows how these institutions and organizations support the disaster regions and support regions, as well as their hospitals.

JHA has a Special Committee for Earthquake Measures, and launched a Support Office as well. A disaster-response GIS (geographic information system) was used, incorporating market analyzers (Giken Shoji International), a hospital data base (Eneco Systems), tsunami and earthquake distribution data (Kokusai Kogyo Group) and medical resources data (New Medicine in Japan). This was consolidated with data from individual JHA-member hospitals for analysis and dissemination. [The names in the parentheses refer to the name of the company providing this.]
Specifically, we aligned GIS with the medical resources database and estimated the damage using the map information system.

Information can be shared on how much damage had hospitals in the disaster areas suffered and what kind of aid did they need, as well what kind of support the unaffected areas could provide.

Initially, as I noted earlier, we had anticipated that each unaffected areas (support areas) would provide information on the patients that they could take in, so we looked into the number of unused hospital beds in each region. We examined a wide range of information, learning, for example, that when a new hospital was set up in a different location, the original hospital was not being used and had not yet been demolished. We learned that a substantial number of hospital buildings and hospital beds were available, but ultimately we were unable to use this information in this situation.

Slide 12 shows the hospital information database for disasters; as I have already noted, the hospital resource database, hospital environment database, and statistical GIS databases were integrated with map information for dissemination.

- **Summary of information system operations using GIS**

(Slide 13) To review, JHA has its own unique database with information on its member hospitals—data on the functions of the hospitals, how many hospital beds they have, how many staff members, and their designation as a clinical training hospital or a local medical support hospital.

We also used a market analyzer, and compiled information on the tsunami and seismic intensity, as well as information on hospital resources (medical treatments, diagnostic equipment, etc.).
Information on the disaster status, requests for aid and the response to this demand, and the status of patient intakes was compiled for analysis.

We also estimated the scale of the disaster since information was not readily available. GIS was extremely helpful for this.

Positional information on locations was systemized, and information on the region’s medical business region, transportation infrastructure, the scale of the disaster was also compiled and analyzed.

JHA provided geographical information such as the information that road infrastructure was poor in a certain area, and what route could be used instead for used patient transport and evacuation. This information could also be used for the resumption of medical services and reconstruction.

We received significant contribution in operating this system from Giken Shoji International, Kokusai Kogyo Group, Eneco Systems, and New Medicine in Japan.

Earthquake-related information compiled and released by JHA

Slide 14 shows an image of JHA’s web site. I know that you can see this for yourself, but links to earthquake-related sites are listed together with information. However, we do not know the extent to which this has been used. We had intended to consolidate this with information from other hospital groups, but this turned out to be quite difficult. Everyone dislikes handing over their own unique information. I think that this will be an issue to address in the future.

GIS adapted to assess damage

- JHA’s own database
- Information on member hospitals
- Market analyzer *
- Information on tsunami and seismic intensity *
- Information on hospital resources (medical treatment, diagnostic equipment, etc.) *
- Data compilation and analysis
  - Extent of damage, requests for support and response to demand, acceptance of patients, etc.
  - Estimates for extent of damage
  - Systemization accompanied by positional information on location
  - Local medical business region and transportation infrastructure, scale of damage
- Dissemination of geographical information
  - Use for patient transport and evacuation
  - Use for resumption of medical services and reconstruction

* Giken Shoji International, Kokusai Kogyo Group, Eneco Systems, and New Medicine in Japan provided significant cooperation and information.

Slide 15 displays hospital information using Google Earth, which can be viewed by following the links from JHA’s website, which you just saw. For example, if you click on the mark over Sendai Red Cross Hospital in the Google Earth satellite picture, a new window opens up on the screen to show information on the number of hospital beds and how many of these are hospital beds for the general population. As soon as we receive information on the status of damage, we update it here.

Slide 16 is a map showing responses to requests for help in the unaffected areas. For example, information on how many dialysis patients a hospital can handle on an outpatient basis and an inpatient basis is shown on the map. This was not used much in this situation, but if awareness of this network increases and we have reliable numerical data, it could be used in the event of an earthquake or other disaster.
Dissemination of Earthquake-related Information: JHA website

Dissemination of hospital information using Google Earth
Information on support and response to demand: Map of aggregate distribution

Survey on State of Disaster at Member Hospitals

(1) Aerial photographs taken before and after disaster are compared to ascertain the extent of the disaster

(2) On-site photographs show the extent of the damage in the surroundings and inside the hospitals

Before disaster

After disaster
Survey on State of Disaster at Member Hospitals

Tsunami damage in Kamaishi district

Seismic Intensity in Kamaishi district
Slide 17 shows how images collected using Google Earth were used in a survey of damage suffered by member hospitals. Although this is not a good example, here we have a photograph of Ishinomaki City Hospital before the earthquake, which shows the town neatly laid out. However, the picture taken immediately after the earthquake shows that it had been reduced to rubble and suffered terrible destruction. Judging from this photographic information, we could well imagine that this hospital has lost all functionality. We were able to obtain actual photographic information of sites about two to three days after the earthquake, so when we looked at these side by side, we quickly realized that, unfortunately, Ishinomaki City Hospital was likely not functioning. So the problem was how we would use this information once we had it; I think this is the problem we must address going forward.

Slide 18 shows tsunami projections for the Rikuzentakata district, where I had visited after the earthquake. Using polygon data derived from tsunami modelling, the height of the tsunami was analyzed at intervals of 1 meter and shown in terms of concentration. We obtained this information from Kokusai Kogyo. This provides a general understanding of how far the tsunami extended and its intensity at these points. This showed us that the tsunami extended quite far inland along the coast.

Slide 19 shows the extent of the tsunami damage in the Kamaishi district. The extent of the flooding from the tsunami in the Kamaishi district is obvious in one glance. Overlapping this with the seismic intensity distribution shown in Slide 20, we see that regions struck by a seismic intensity of six-upper earthquake and then overtaken by the tsunami were devastated. Areas in the mountain that suffered a seismic intensity of six earthquake were not influenced this much, as this kind of mapping reveals.

The photographs in Slide 21 are also Google Earth maps, and are extremely surprising. The National Hospital Organization is located in the areas that are circled. The photograph on the left is an aerial photograph taken on April 27, 2005. You can see the hospital and the neat streets around it. The two photographs to the right were taken on March 12, 2011, the day after the earthquake. As you will see if you look closely at the middle of the photographs, the hospital has become a mountain of rubble. The photographs on the right show the conditions after the tsunami. We obtained these photographs later than this, but we learned of conditions here in about four to five todays. When I saw the photographs, I was surprised and truly at a loss for words.

The table in Slide 22 was prepared based on this information when I went to Iwate Prefecture. We had previously predicted that six hospitals had been almost entirely destroyed, judging from the seismic intensity distribution and depth of flooding. When I went and saw conditions for myself, it turned out that only three hospitals had suffered no major damage. Hospitals in regions where the earthquake registered seismic intensity of six-upper but the tsunami was less than two meters still functioned. Based on this experience, we were able to use this information to predict that damage was substantial when the tsunami exceeded two meters. Of the hospitals shown on Slide 22, we predicted that three were no longer functioning, which turned out to be the case.

The Ministry of Health, Labor and Welfare’s data that we showed first (refer to Slide 3) indicates that four hospitals in Iwate prefecture were completely destroyed. There was one other hospital not shown in the table in Slide 22. This hospital had been built 50 years earlier. This meant that this was an old building without seismic isolation and seismic resistance, and it was destroyed by the earthquake with a seismic intensity just under six. The construction industry has information on hospitals, such as their age, and combining all this information produces quite accurate data.

As such, the information we obtained using GIS was quite accurate.

Establishing a system to provide medical services in damaged areas — Iwate Prefecture’s case (Slide 23) Given these conditions, we were faced with the problem of how to establish a system to provide medical services in the damaged areas. We chose Iwate Prefecture as our example because the prefectoral hospital in Iwate Prefecture really strives hard. Currently there are 21 hospitals. Originally there were about 27 hospitals, but the current 21 prefectoral hospitals remained after a series of reorganizations. Iwate Medical University Hospital also works very hard. These hospitals are scattered around Iwate Prefecture, as shown on the left of Slide 23.

Of the prefectoral hospitals along the coast, the Iwate Prefectural Yamada Hospital, Prefectural Ootsuchi
### Estimates of damage using GIS: Example using Iwate Prefecture

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Number of hospitals</th>
<th>(General)</th>
<th>(Recovery)</th>
<th>(Infection)</th>
<th>Distribution of seismic intensity</th>
<th>Depth of inundation</th>
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<tr>
<td>Miyako Daichi Hospital</td>
<td>148</td>
<td>0</td>
<td>148</td>
<td>0</td>
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<td>0 to 1 m</td>
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<td><em>No damage, medical services continued</em></td>
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<tr>
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<tr>
<td>Kuji Keiai Hospital</td>
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<td>Iwate Prefectural Yamada Hospital</td>
<td>60</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>5-lower</td>
<td>4 to 5 m</td>
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<tr>
<td>Iwate Prefectural Otsuchi Hospital</td>
<td>121</td>
<td>119</td>
<td>0</td>
<td>2</td>
<td>5-upper</td>
<td>9 to 10 m</td>
</tr>
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</table>
Hospital and Prefectural Takada Hospital, shown in the map in the center of Slide 23, were destroyed. In light of these, we talked with Dr. Takashi Sasaki, director of the Iwate Prefectural Central Hospital, and Dr. Akira Ogawa, President of Iwate Medical University about setting up a system for the provision of medical services.

Similar to Fukushima Prefecture, which we discussed earlier, this system would be divided by type (inland, central and coastal regions). The inland region would have general hospitals and the central region would have hospitals equivalent to a general hospital; in the coastal region, the three hospitals along the coast that were completely destroyed would be restored as medical clinics rather than hospitals. The four coastal hospitals that had avoided major damage would be branch hospitals. JHA felt that it could help the hospitals in the damaged areas by providing whatever was necessary when this system for providing medical services was established.

Slide 24 provides a diagram of the human support system based on this concept. This diagram only shows the human resources. The prefecture, the Ministry of Health, Labour and Welfare, the Ministry of Education, the university hospital and JHA are all involved. In the case of Iwate Prefecture, the inland region has two general hospitals, namely the Iwate Medical University Hospital and the Iwate Prefectural Central Hospital, while the central region also had hospitals. The four hospitals remaining on the coastal region were the Kuji, Miyako, Kamaishi and Oofunato prefectural hospitals, which we supported by sending doctors. The doctors dispatched were junior residents, senior residents and specialists.

We provided help in various forms, including DMAT and JMAT, but the biggest problem that we need to review was the weaknesses in the coordination function. We did not have a command center, and someone needed to be responsible for the coordinating. This could have been done by the prefecture, regional bureaus of health and welfare, and universities, but this would require a network.

Currently, we have begun dispatching junior residents and senior residents. However, we have encountered various difficult problems, one of which was that these residents were volunteers. In this case, the hospital that sent them would normally pay their salaries, while the local hospital to which they had been dispatched would cover their accommodations and transportation. Volunteer activities would be okay for the short term, but would become more complicated in the medium to long term. There are various problems, which we will have to work out going forward.
Good luck and bad luck in the midst of disaster, but “be prepared and have no regrets”

The location of hospitals led to extremely significant differences. Hospitals in Ishinomaki City are one example of this. Ishinomaki City Hospital is in a very scenic location, but it is along the coast. Ishinomaki Red Cross Hospital is located in slightly inland. As you can see by comparing the photographs after the earthquake (Slide 25), Ishinomaki Red Cross Hospital was still intact, down to its parking lots. In contrast, Ishinomaki City Hospital’s buildings look good at first glance, but the surrounding area is a mountain of rubble. A difference of a few kilometers resulted in major differences in the damage incurred as a result of the tsunami.

(Slide 26) Ishinomaki Red Cross Hospital did really good work in this disaster and has received a great deal of attention. Ishinomaki City originally had a population of about 160,000, with about 60,000 homes, but about half of these were destroyed by the tsunami. Ishinomaki City has two general hospitals, with 402 beds in the Ishinomaki Red Cross Hospital and 206 beds in the Ishinomaki City Hospital. However, Ishinomaki City Hospital was completely destroyed by the tsunami and lost all function.

Luckily, Ishinomaki Red Cross Hospital had been rebuilt in the inland region in 2006. In addition, the Disaster Network Association was formed in January 2010 in Miyagi Prefecture, and this is where those in charge of disaster medical care gathered for discussion. With very good timing, a doctor from Ishinomaki Red Cross Hospital was entrusted with the task of coordinating disaster medical care for the prefecture in February 2011 (one month before the earthquake). This meant that they were mentally prepared, and had also set up systems. As a result, Ishinomaki Red Cross Hospital was able to function as a base hospital in the face of the disaster from March 11.

As such, the timing was good in several respects, but this example also illustrates the saying, “be prepared and have no regrets.”

Last month, a hospital conference was held in Hong Kong, and the board of directors of the International Hospital Federation met. I attended, and was asked to talk about the earthquake. Taiwanese newspaper reporters were there to report on the talk, and the next day a newspaper article was published. It was in Chinese so I could not understand any part of it, but I saw the characters for “disaster” so I figured that the reporter had written about it.

Hong Kong does not seem to have either earthquakes or tsunami, so I didn’t think that they would be interested in a talk about earthquakes and tsunami. However, Chinese people face a wide range of unexpected disasters, so they were interested in Japan’s experience because of the lesson “be prepared and have no regrets.”
My hospital is in Hamamatsu, where for the last 50 years, we have been told that an earthquake could occur tomorrow, but it has never happened—of course, we don’t want it to. If we become lazy about earthquake measures on a daily basis, preparations become weak. For this reason, the March 2011 earthquake was an extremely important experience. In particular, although I’m not sure if it is something to be happy about or sad about, the idling of the Hamaoka nuclear reactor showed us that disasters could occur anywhere in Japan, and that preparations are thus extremely important.

Proposal for Future Development of Medical Support System

We would like to propose the development of a medical support system for the future. This system would be able to respond during ordinary times and emergencies.

This would be difficult for a prefecture to accomplish on its own. It is also difficult for the country to do, so a regional system would be another option. Ultimately, I think we would need a system that targets a medium scale area in order to build this kind of medical support system. In this sense, Japan has seven regional bureaus of health and welfare, and this scale and scope would make this a good fit. The central government (Ministry of Health, Labor and Welfare) and regional bureaus of health and welfare would need to work together closely. In addition, the regional bureaus of health and welfare would need to coordinate with cities and prefectures, and government administrators would need to work with medical-related organizations. Industry and academia would also be involved in these affiliations.
This would also require the development of an information network. Affiliations could be formed through this network. Information would also be compiled, analyzed and disseminated. Various networks already exist, but this disaster showed that the kind of information that was needed could not be obtained and that meaningful affiliations had not been formed. Given this, JHA would need to play a role in bridging these networks between hospitals. As I noted above, JHA members include public hospitals, private hospitals, large hospitals, small and medium-size hospitals, as well as hospitals run by the Agricultural Cooperative Society Association, the Social Welfare Organization, and the Japanese Red Cross Society, as well as municipality hospitals, social insurance hospitals, and pension hospitals, so JHA would have a difficult job.

The diagram on the right in Slide 27 depicts the medical support network. The national central government would be part of this, as well as cities and prefectures and medical organizations, with the regional bureaus of health and welfare serving as the local administrators. JHA would have to fulfill its own functions here. Industry and academia would also cooperate.

We believe it is extremely important that JHA join this network. However, the JHA would not take on an exclusive role within this network, but would go beyond the JHA framework and, for example, ask for the Japanese Red Cross’s help with DMAT and coordinate in other ways.

I am repeating myself here, but JHA must strengthen the branch organization, or take steps to strengthen its affiliation with city and prefectural hospital associations.

Even if JHA made the case for this kind of system on its own and proposed its development, it would be quite difficult, so we are now working hard to encourage the national government or public administration to help with this.

**Functions of medical support system**

(See Slide 28) We have to figure out what kind of functions the system will have, and one way in which we could provide support would be to support their junior residency training programs and specialist training programs during ordinary times in less populated areas, and particularly areas in which few doctors are sent and there is little junior residency training and training for specialists.

I heard that the young doctors sent to the disaster areas were very successful in providing team medical care in these crisis conditions—something that they may not have been able to do in ordinary times. This really impressed me. Similarly, if junior residents are sent to less populated areas, they are not only helping these areas but are also able to learn about team medical care. They will learn about local medical care as part of their junior residency, so their dispatch is really a chance to be trained in local medical care. This kind of training in local medical care is essential in specialist training as well, even if it only lasts one month. In this case, medical interns in places
other than these less-populated areas could go to general hospitals in less-populated areas for a short time, such as one or two months, to learn about local medical care or team medical care. I think this would be an extremely good development.

Another way we can help is to support the development of a system to provide medical care that is tailored to the region. It is often pointed out that doctors are unevenly distributed among regions and specialties, but the problem really boils down to how we can achieve a balance between supply and demand. I asked the Ministry of Health, Labour and Welfare for data on the balance between supply and demand, but they told me that they don’t have such data. It’s not that their data doesn’t exist, but that they don’t fully utilize the data they have. We will discuss this in the lecture at the JHA conference tomorrow.

We cannot throw about phrases such as “doctor shortage” and “uneven distributions in specialties” without understanding supply and demand. We need to use the medical support system and lay out the data—to ascertain the balance between supply and demand. This will enable us to help less-populated areas.

In emergencies, this system can function as a support system for emergency medical care.

As I have mentioned before, we would establish a command center. If Iwate, Miyako and Fukushima are no longer functioning, as was the case in this earthquake, a command center could be set up nearby in Yamagata or Ibaraki. At the level of regional bureaus of health and welfare, for example, if the Tohoku Regional Bureau of Health and Welfare stops functioning, a command center could be set up at the Kanto-Shinetsu Regional Bureau of Health and Welfare.

Then an information network could be built to compile, analyze and disseminate information. This would make it possible to provide human, material, financial and information support—in other words, a highly efficient support system could be built. JHA already has compiled a great deal of information. It would not take much time to develop such a system, so I hope to be able to present it to all of you.

We still have some time left, so I would be glad to answer any questions. Thank you for your attention.

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**Question & Answer Session**

**Questioner:** My name is Dr. Fukui from Nagasaki Memorial Hospital. Thank you very much for your valuable talk. I think that the issue of a support system is an extremely important subject for discussion. This disaster brought many issues to the forefront. There have been initiatives by founding bodies, initiatives such as this one by JHA, initiatives by local governments, and initiatives by medical associations through DMAT and JMAT. At one point it seemed that this had all been integrated, and I think that this problem of a support system is the most important issue at hand.

While this is a nation-wide initiative, these issues are similarly important at the local level. As Dr. Sakai said, we cannot create either a nation-wide or a local system as long until the many problems related to specialties and regional characteristics and other issues have been resolved. I think that this is a problem with Japan’s medical services. In that sense, Dr. Sakai’s talk about his vision for a support system to fit the realities after the Tohoku earthquake was extremely useful.

I’d like to hear what you have to say about this, but currently medical care is being consolidated in Japan. After this consolidation, how should medical care be redistributed, and should a regional or nation-wide support system be developed? I’d like to hear your thoughts about this.

**Sakai:** That’s a difficult question. The Ministry of Health, Labour and Welfare sketched out diagrams for
the various forms that a healthcare provider system could take as part of the current social security and tax reforms. However, these are the ideas of the Ministry, so this system would naturally be standardized across the country. As you said, regions have their own unique characteristics, and their needs are quite different. The rate of aging also differs considerably, so it would be quite difficult to have a standardized national system.

Originally, I would have thought this system would be formed at the prefectural level, but as you all know, even though the Minister of Health, Labour and Welfare has the manpower needed to function at a high level, despite decentralization of power, prefectural administrative departments do not have anyone involved in health administration. There are also cases in which the head of the prefectural departments of health would be changed every two years.

I know I will offend some people by saying this, but I really wonder what the regional bureaus of health and welfare are doing. Previously, I thought that they conducted inspections, but this does not seem to be the case. For example, they are very involved in the training of doctors from the time new postgraduate clinical training system started, and hold a great deal of power. As I mentioned earlier, they also inspect hospitals. Given this, I felt that the regional bureaus of health and welfare would be in the best position to know the conditions in the hospitals under their jurisdiction and the status of medical care.

Each prefecture is to devise a regional medical care plan every five years. However, they put all of their energies into devising these plans, and it seems that once the plans are finished, they think that they’ve already achieved 95% of the plan. I always feel that they are not using the PDCA cycle at all.

So although the regional bureaus of health and welfare haven’t been given all functions, I would like to see them do more. How is the medical service area under one’s own jurisdiction perceived? Or I would like to see each region issue a regional medical care plan, and review the definition of the secondary medical service area in each region.

I mentioned the approach of a regional system, and I think that in terms of scale and scope, the regional bureaus of health and welfare are well suited to form the core of this system.

We have quite a bit of data for this. For example, we have the four major diseases in Japan of cancer, stroke, acute myocardial infarction and diabetes in the five sectors of emergency medical services, disaster medicine, medical care in remote rural areas, perinatal care and child health care, or five diseases and five sectors when including mental disorders. Regional data on these diseases—for example, the status of these five diseases in the five sectors in the area under the jurisdiction of the Tokai Hokuriku Regional Bureau of Health and Welfare—is already available. We can consolidate this with JHA’s data. For example, in my field of neurosurgery, if we could take the data on how many patients need brain surgery, how many specialists work in this field and what hospitals they are in and then paste this onto a map, we would understand the supply and demand situation for medical care at one glance.

Matching medical care based on this data would ultimately consolidate hospitals, I think. However, this brings up the issue of whether it is really okay to have no hospitals or medical centers locally. This suggests that we need to set up closely connected, interacting networks. In this sense, the scale of a regional system would be effective. Entrusting this system to the city and prefectural level would be quite difficult, I think.

JHA must present these ideas to the national government and administration, but JHA itself has not yet discussed this extensively, so I hope to take these ideas back with me to start a discussion. However, I can say that, as the system stands today, Japan’s system for providing medical care is in a difficult situation.

Given that four months have passed since the earthquake and we still don’t have a command center, we can guess that conditions will be extremely difficult from now on. In this case, at the very least, we must share our ideas from the front lines of medical care.
MATSUNAMI: Please allow me to introduce Mr. Masuzoe, who has kindly taken time from his busy schedule to attend this congress.

Mr. Masuzoe was born in Yahata, Kitakyushu in 1948. He graduated from the Faculty of Law and Politics, University of Tokyo with a major in political science in 1971. Following graduation, he was Research Fellow at L’Institut d’Histoire des relations Internationales Contemporaines, University of Paris and L’Institut d’Hautes Etudes Internationales, University of Geneva. Hajime Furuta, Governor of Gifu Prefecture, who honored us with his presence at the opening ceremony of this congress, also studied in France, where the two were acquainted.

In 2001, after teaching courses in Political Science & History at the University of Tokyo, he ran for the House of Councilors and was elected, as I’m sure you know, by a landslide with 1.58 million votes. In 2007, he was reelected to another term, during which he was asked to serve as Minister of Health, Labour and Welfare. In 2010, he left the Liberal Democratic Party to form the New Renaissance Party.

There are many reasons that account for the respect and popularity that Mr. Masuzoe enjoys. He has an expansive understanding of the issues that concern the general public. He learned firsthand about the issues of healthcare when he cared for his own mother. Indeed, some of you may have already read the book he wrote about his experience, “Haha Ni Mutsuki Wo Ateru Toki” [When I change my mother’s diaper]. His experience has allowed him to gain a very clear understanding of the environment all of us here are working in, and we are grateful for his continued efforts in representing our concerns at the national level.

Mr. Masuzoe has also shown an active interest in the health of Gifu prefecture. He proposed a wonderful program in 1993 known as “Gifu Forest Rangers,” which was based on the foundation of an NPO, to promote the wellbeing of the forests in the prefecture. He planted trees, trimmed branches, and learned how to use a chain-saw and other tools used to protect the prefecture’s forests. As Mayor Furuta noted in his address, Mr. Masuzoe’s efforts on behalf of Gifu’s environment were instrumental in the prefecture’s hosting of the 30th Conference of the National Association for the Promotion of Productive Seas (NAPPS) – Gifu, which was honored by a visit from the Emperor himself.

Now, without further ado, please welcome Mr. Masuzoe, whose presentation will no doubt be of great interest and significance to all of us here. Mr. Masuzoe, if you would, please.

MASUZOE: Good-morning, everyone. First of all, I would like to express the great respect I feel for the outstanding effort you are putting into maintaining and improving the healthcare system in Japan. It is because of the selfless effort exerted by the physicians, nurses, technicians and administrators that staff the nation’s hospitals that the Japanese healthcare system can boast such a high standard of care.

Today, I will be talking about healthcare reform as a national strategy and the various issues this entails. I will talk about what I saw during the two or so years and three administrations under which I served as Minister of Health, Labour and Welfare. Many of these observations and thoughts were published in “Masuzoe’s Memos” and “Ministry of Health, Labour and Welfare War Chronicles.” I felt it would be helpful, indeed necessary to record my thoughts in reference to the actual documents.
upon which very important issues were decided. I invite those of you who are interested to take a look at these when you have the time.

Being a politician, I am well aware that my opinions may cause discomfort in some of you and even outright disagreement in others. Please hear me out, though, and understand that I am grateful for the opportunity to take part in the continuing effort to make our healthcare system the best that it can be.

Four Points
I would like to talk about four major points today. The first point is the necessity of placing a priority on the individuals on-site who are actually providing healthcare to the public.

The second point is the need to make Japanese healthcare products and services attractive on an international level. As with our successful automobile exports, we need to make healthcare products and services that people throughout the world are eager to buy and use. This means that we need to consider ways for Japanese healthcare services to survive and thrive in the global market against very severe competition. Healthcare has not been fully considered from the vantage point of global marketing. For this reason I am going to touch upon healthcare in terms of the global market.

The third point is the need to connect discussions about financial resources for healthcare with discussions on raising the consumption tax. The Japanese government needs to discuss the financial resources required to support healthcare and create a national strategy.

The fourth point is the need to raise awareness nationwide about the importance of healthcare reform. Healthcare reform cannot be achieved by the Minister of Health, Labour and Welfare, the staff at the MHLW, or by your efforts alone. Raising the awareness of the entire nation in order to increase the participation of the public in reform is the key to success.

1. The necessity of placing a priority on the individuals on-site who are actually providing healthcare to the public

During my tenure as Minister of Health, Labour and Welfare, I put great effort into placing a priority on the people on-site who were providing healthcare to the public. N1H1 flu control is one example.

N1H1 flu control
We had predicted an outbreak of a highly-virulent strain of avian influenza and had thoroughly prepared for it. What actually hit, as you are all well aware, was a moderately-virulent strain of swine influenza. When N1H1 flu first broke out in the Kansai District, in Osaka and Kobe, it was hard for me to get a clear picture of what was happening from Kasumigaseki, Tokyo. Simply put, we had been preparing for bird rather than swine influenza, which meant that the manual needed to be rewritten.

The first reports on N1H1 showed that many people in Mexico had already died. With the goal of preventing the spread of the virus to Japan, we initiated front-line containment measures at Narita International Airport. These measures were later criticized as not having been helpful at all. Of course, it is easy to criticize when you have the benefit of 20/20 hindsight. In these situations emotions can and often do run hot, especially in the media, then cool just as rapidly. Recently, the public reacted when the media reported that Kim Hyon Hui, the pardoned North Korean agent responsible for the bombing of Korean Air flight 858, visited Japan and talked about Megumi Yokota, the Japanese girl abducted by the North Korean government and forced to teach Japanese to North Korean agents. Quickly, though, other hot topics pushed the news off the front page.

When we faced a potential outbreak of N1H1 influenza, the media and public responses were similar. Of course, no matter how tightly we secure the nation’s borders against the spread of a virus, it is almost impossible to guarantee complete success. Some may say that if we had thought the situation through more rationally, our healthcare resources would have been more effectively allocated; but we also needed to consider the social consequences of the government failing to act in a situation in which public fear is aroused. Had we done nothing, of course, the entire nation would have panicked.

I can also understand doctors in Osaka and Kobe complaining that if we had had the physicians to put at the borders, we should have sent them to the area where the outbreak had actually occurred. However, as a political leader, I needed to consider the psychology of the situation as well as the people providing healthcare on the ground. Considering the overall situation, we decided that front-line measures at the border were the initial priority, which we then modified with the gradual easing of quarantines.
Closing classes at schools and authority in ordinance-designated cities

Looking back now, we know that Japan had the lowest number of N1H1 influenza deaths in terms of population ratio. Although we hear critical voices in Japan, this fact is greatly admired overseas. The most important reason for this achievement is clear: the cancelling of classes at schools. Students have close contact with one another. If the school’s music class has only one flute, students share it. If one student brings a soft drink to an after-school club, you can rest assured that others are going to share it. Canceling classes is the most effective way to prevent such close contact among students. However, this was not as easy as it sounds.

I am talking about healthcare system reform, and what I said at the beginning was that healthcare reform has to be a national strategy. This is because Japanese politics and decisions made by ruling administrations affect the healthcare system. One of the problems is related to the existence in Japan of ordinance-designated cities, which are cities that autonomously handle many of the functions normally handled by the prefecture government. Osaka has two ordinance-designated cities, Osaka and Sakai. Fukuoka, where I am from also has two, Kitakyushu and Fukuoka. Kanagawa has three, Yokohama, Kawasaki, and Sagamihara. These ordinance-designated cities have significant authority within their jurisdictions.

If, say, the Governor of Osaka Prefecture issues an order for classes to be canceled (strictly speaking, of course, the board of education would be making this decision), the order would apply to all cities except Osaka and Sakai. Therefore, the Mayors of Osaka and Sakai are under no legal obligation to follow suit. What actually happened was that the Governor of Osaka Prefecture did cancel classes, but Osaka City allowed students to go to school.

This case highlights the need to reconsider the status of ordinance-designated cities in the nation’s 47 prefectures. My suggestion would be to completely change prefectural organization. Consider, for example, the merit of dividing the nation into 10 states. The six prefectures in Hokkaido and the Tohoku Region might be integrated into one region, let’s call it Tohoku State. Osaka and surrounding prefectures could become Kansai State. Gifu could be integrated into Chubu State, and so on. Each state would have its own government under a federal system that would allow it to make decisions appropriate for its population and geographical situation. Mr. Furuta, let’s say, might be the President of Chubu State, which would have its own Ministry of Health, Labour and Welfare. Because we can assume that the situation in Chubu State would differ from, say, the situations in Hokkaido and Okinawa, President Furuta and his administration would be free to respond locally and expect local governments to follow suit. There should be different standards that allow different regions to protect their own people, so that standards for Hokkaido and Okinawa are naturally different. This would create a much more effective basis for action.

Right now, the Governor of Osaka Prefecture and the Mayor of Osaka City do not get along with each other, and Mr. Hashimoto, the Governor, has revealed plans to establish an Osaka Metropolitan Government, which would be like Tokyo, to end ordinance-designated city system. I assume that this plan was strongly influenced by his experience during the N1H1 influenza outbreak.

During the outbreak, I was inundated with phone calls from mayors and governors throughout the country asking for measures to be taken. In response we decided to close classes at schools to prevent close contact among students. According to the provisions of the Communicable Diseases and Medical Care Law, when the Minister of Health, Labour and Welfare determines that a disease is communicable, it is to be officially recognized as such and treated accordingly.

Well, while the outbreak continued to spread, I was faced with the reality that pushing for the closure of classes would elicit complaints from the Ministry of Education, Culture, Sports, Science and Technology about my impinging their authority. We solved this problem by inserting a sentence to the N1H1 control manual: “All authority is delegated to the Minister of Health, Labour, and Welfare.” Another important change was the revision of “highly-virulent” to “moderately-virulent.” This allowed us to press forward with the appropriate measures.

Respecting ideas from the professionals and reducing the burden on administration

In terms of placing priority on the people on-site providing healthcare to the public, actual areas where N1H1 was spreading lacked resources, including an adequate number of physicians. With an urgent need to separate patients
with fever from others, facilities scrambled to find the space and the funding to install prefabricated structures or, if doing so were completely out of the question, finding ways to separate patients within a single facility. It goes without saying that hospitals had an extremely hard time of it.

In fact, the best measure, as it turns out, was for infected patients to stay home and take antiviral drugs. However, it was hard to reach such conclusion in the midst of the spread. Everyone was saying, “If you’ve got a fever, head to the doctor.” But, this advice was helpful only for the highly-virulent cases.

Kobe Municipal Hospital started looking like a field hospital, so I eased the restrictions on separating patients, and let the on-site staff handle the situation in the way they felt would be most appropriate. This significantly reduced the burden on doctors and nurses, who needed to maintain their own health. This is one of the examples of placing priority on the people on-site providing healthcare to the public.

“Vision to Ensure Safe and Secure Healthcare”

I announced a vision to hammer out major policies in 2008. Increasing the number of physicians was part of the vision. I reversed an 11-year trend of reducing the number of doctors by calling for an increase. Although there was a shift in the ruling party from the Liberal Democratic Party to the Democratic Party of Japan, the new administration has followed the direction for healthcare systems that I set forth. Therefore, no problems have been caused by a change of policy through the change of administrations. The new administration is following the various policies I set forth, including a 1.5-fold increase in the number of physicians, increasing the number of nurses, and other visions on nursing care. It also seems that the vision I proposed for the reform of the late-stage medical care system for the elderly is being followed by the new administration.

I also pushed for a review of the clinical training that students go through both during medical school and following graduation because the current system is a major cause of the nation’s shortage of physicians. A large part of the problem is that the Ministry of Education, Culture, Sports, Science and Technology has authority over what happens during medical school and the Ministry of Health, Labour and Welfare calls the shots after our young doctors graduate. To address this issue I insisted that both ministries cooperate and coordinate to create a more effective system of training.

Independence among the regions is more favorable than prescribing national standards for healthcare reform

The national government should allow local governments to handle healthcare reform independently rather than imposing standards on them. Of course, some may criticize this as a sure recipe for quality gaps among the regions. What if the level of healthcare in Gifu drops, or if Tohoku is the only area that improves. It is the same as education. What if the level of education in Hokkaido is good and the level of education in Kyushu is bad. Armed with this argument, many insist on standardizing the level in the form of minimum national standards. But I believe that competition among the regions will serve to increase the overall level of healthcare.

Need for an online system for health insurance claims

We also need to realize the establishment of an online insurance claim system. I assume that some people here are also against this. However, I believed this was necessary and I pushed the idea strongly when I was Minister of Health, Labour and Welfare. I would like to ask the current administration to not increase the consumption tax without restructuring the system.

I fully understand the reasons of those who are against it. Dentists, physicians that own clinics complain that creating an online database for health insurance claims would interrupt their business. Even when I told them that the Japan Dental Association and Japan Medical Association were free to create whatever system they felt appropriate and offered them a period of time to deal with, they did not accept it.

Both the Liberal Democratic Party and Democratic Party of Japan are against the creation of an online system, so nothing has changed. Healthcare professionals are screaming about the shortage of physicians only. Is this really OK? If we do not change anything, we will keep wasting hundreds of millions of yen on paper. Now you use mobile phones and computers. What if you turned these off and started writing everything out by hand and...
sending it by express mail? Of course no one would even imagine doing such a thing. Then, why are people against the creation of the online system for health insurance claims?

If we aim to create a data based medicine system (DBM), we cannot ignore the creation of an online system. This system will allow us to obtain a relatively large amount of data that has not to date been obtained. It makes it possible to create a nationwide database. The lack of such a system has delayed the advancement of Japanese healthcare.

What we need is the reform. It is impossible to discuss financial issues without system reform. I know some may continue to disagree with this, but an online data system should be promoted.

● Coordination of specialists should be promoted

We should actively promote the coordination of specialists, and idea that is also included in the Vision for Securing Safe and Expected Medical Care. Nurses with specialized knowledge sometimes can function as substitutes for physicians. At Toranomon Hospital, members of the staff working in the Pharmaceutical Department strive to support physicians. They modified the system to add medical clerks into remuneration for medical services. At the Ohtawara Red Cross Hospital, physicians make an audio recording of their patient charts, and medical clerks transcribe the recorded information into the clinical records.

In order to reduce the length of hospitalization, large hospitals should sort out the patients who can be treated through home healthcare and transfer them to their private doctors following initial care. In such cases, the patient database I mentioned earlier is essential. Patient data is currently transferred in one-way fashion, from hospital to clinic, or in reverse; however, it should be bi-directional.

Database sharing through IT is necessary: it allows physicians and nurses to function at their optimum level of effectiveness. If there is a specific procedure that a certain surgeon is especially capable of performing, that surgeon should be able to handle the procedure rather than wasting time typing up paperwork on a computer. Creation of documents should be left to medical clerks.

“Vision for Securing Safe and Expected Medical Care” clearly indicates the direction in which the Japanese healthcare system should proceed for the future, including the necessity of promoting the coordination of specialists.

● Incorporating the opinions of healthcare providers into administration

While the most important factor in improving healthcare is the opinions of the on-site specialists, these are not well reflected in policy decisions. To address this problem, I put considerable energy into thoroughly changing the personnel affairs system. The head of the Health Policy Bureau had been chosen from among medical engineering officials involved in medical services, and I changed this. Since a physician in the Allied Occupation forces was in charge of the reform of the Ministry of health, Labour and Welfare when General MacArthur was stationed in Japan after the war, the Ministry of Health, Labour and welfare has traditionally assigned licensed physicians as personnel in charge of healthcare. The head of the Public Health Center was a licensed physician, as was the head of Health Policy Bureau.

Many who go on to become healthcare engineering officials graduate from faculties of medicine and move into public service, where they spend 20 or 30 years before retiring without ever actually ever practicing medicine. However, healthcare has developed dramatically during those 20 or 30 years. I have my doubts that medical engineering officials, even if they are doctors of medicine, really understand on-site healthcare professionals. In spite of this, hospitals are required to follow orders issued by the Head of Health Policy Bureau. The Head has tremendous power. Although I cannot mention names here, it is quite frightening to give authority to individuals without ability. I appointed an individual who was not from the faculty of medicine as Head of Health Policy Bureau for the first time. Without doing so, each division would become sacred for specific officials, such as medicine, pharmacy, and dentistry. An official specialized in medicine said that if you are not a physician, you wouldn’t be qualified to handle this. So, I asked if it were really necessary to have someone involved in clinical care making decisions.

Coincidently, I taught medical students at the University of Tokyo for a long time. Indeed, it’s highly likely that doctors from University of Tokyo who are now in their 40’s were in my social science classes. I took advantage of this, and contacted my students from University of Tokyo.
Faculty of Medicine very often to get their opinions on important questions. They, bless their hearts, would get back to me immediately from wherever they were in the world. I would write to say that the head of the Health Policy Bureau had said this or that the person in charge of vaccination control had said that, or that someone had been talking to me about N1H1 influenza. I asked one former student, a specialist in infectious diseases who had just come back from the U.S. what he thought about something the head of the Health Policy Bureau had said. He sent me a study that had been published and said that what the head of the Health Policy Bureau had said was not true at all and that he did not know what he is talking about. I read the report he had sent me that night; and when I went to the office the following morning, I showed them the report to expose the dishonesty.

Since the Internet makes it possible for us to contact anyone, anytime and allows us to get evidence quickly, the Minister of Health, Labour and Welfare needs to take advantage of this to expose the dishonesty of people. I was lucky to find such dishonesty using my network. I believe that you are also required to make the opinions of on-site healthcare professionals known to the government. I think it is very meaningful for you to clarify the reality in your presentations at conferences.

2. Japanese Healthcare in International Competition

The second point is how medical care can survive in international society.

According to the Ministry of Health, Labour and Welfare, a priority needs to be placed on the safety of medical care and the prevention of medical accidents. Hospitals also need to have sufficient profits to operate. However, there are no specific strategies to enhance the competitive strength of medical devices and pharmaceutical products in the global markets.

Increasing pharmaceutical and medical device exports

In spite of maintaining world-class medical care, Japan did not export healthcare products. I wondered why the healthcare industry has not considered the potential of its excellent pharmaceuticals and medical devices. The Ministry of Health, Labour and Welfare did not have any ideas in this area.

Therefor, I planned and realized public and private conferences on the creation of new drugs with ministers from the Ministry of Health, Labour and Welfare, the Ministry of Economy, Trade and Industry, the Ministry of Education, Culture, Sports, Science and Technology, and the Ministry of State for Science and Technology Policy. There, we had frank discussions with people from foreign-affiliated pharmaceutical companies in Japan. It is unfortunate, however, that the new administration has not held such meetings yet.

Although the cost of pharmaceutical development is high, the profit margin is also high; and with the many world-class pharmaceuticals the nation produces, I’m sure that Japan could realize as much profit from pharmaceuticals as it does from the export of automobiles. We should consider this very carefully.

Medical tourism

Another point is medical tourism. I know there are many against promoting medical tourism. However, it is time to change our thinking and consider it.

We have world-class medical care, which contributes to the heath of the Japanese population. However, in medical care, there are no national boundaries. As is shown by Doctors Without Borders (Médecins Sans Frontières) started in France, where I once studied, it is truly great to bring medical care to places where it is needed. However, it is also necessary to consider individuals from abroad seeking treatment in Japan. Japan has a universal health insurance system; however, patients coming from abroad are not covered by this system. We need to consider a way to respond to patients from abroad seeking medical care in Japan. Japanese in need of treatment that doctors in the US have excelled in have gone there for care. What if a patient from China wants to come to Japan for medical treatment? Is there any reason to refuse? I can’t think of one. I think it’s time to consider hospital management capable of responding to the needs of international patients. I understand that Chief Cabinet Secretary Sengoku from the Democratic Party of Japan is of the same opinion.

From the time I taught at University of Tokyo, I have said that there are two places in Japan that we should not show guests from abroad: universities and hospitals. The main reason for this is my shame at their shabbiness. What, then, should we show our guests? The obvious answer is Toyota plants and other manufacturers.
whose operations highlight the nation’s cutting-edge technologies. Guests from abroad are always surprised by these. Meanwhile, when we bring them to universities or hospitals overgrown with moss, they say, “What is this? Is this the kind of hospital/university you expect to find in an advanced country?” Of course, the situation has improved incredibly with your efforts.

Our hospitals need to be equipped with a few things to become international, such as interpreters. If the government promotes such things as a national strategy, the government may provide some funding for the purpose.

India actively promotes medical tourism. Healthcare providers in India can speak English and their medical care costs are low, which contribute to the country’s having many patients from abroad. However, I don’t think it is necessary to reduce prices.

I think Japan should have an international hospital in each prefecture, and a few in ordinance-designated cities. There are, of course, many problems to be solved, such as the lack of human resources, which will be dealt with in the future. I also ask all of you here to consider how to deal with patients from abroad, including the issues of payment, rooms, language, etc. Currently, the Ministry of Economy, Trade and Industry has been developing a translation device for medical terms. These issues should be worked on beyond the boundaries of ministries and agencies.

 Osaka Special District for Structural Reform
The reason I promote the Osaka Special District for Structural Reform is that it is difficult to move the national government. Focusing on Osaka may be easier. We set the goal of shortening the drug-approval lag from four and a half years to one and a half years, and significantly increased the number of PMDA (Pharmaceuticals and Medical Devices Agency) approved drugs. We improved the conditions; however, we are still far from finished. We are accelerating the development and approval of special drugs, such as those for cancer treatment. If Osaka becomes a special district, all these procedures, including clinical trials, will be accelerated there. After ensuring the safety, it is necessary to ease regulations in various meanings.

 Healthcare Coordination Center
I also think it is about time for Japan to consider establishing a coordination center for healthcare and pharmaceuticals for the entire Asian region, equipped to function as a hub. Otherwise, Japan will be behind other countries. This cannot be accomplished by the private sector alone, but requires cooperation between the private and public sectors, as is shown in the “Public-Private Dialog for Innovative Drugs.” The center can be placed anywhere, for example, in Tokyo or Gifu. Anyway we need to establish a center in Japan to control drug manufacturing and improve the level of healthcare in Asia.

The problem Japan is encountering now is that society has become more introverted, focus only on itself and not the outside. The democratic government, especially, tends to be this way. They do not consider the world outside Japan, but consider the reallocation of income domestically. I would rather ask how Japan might generate revenue. It is meaningless if the consumption tax increases without generating more income. Economic growth can be achieved by selling products and services. Healthcare services are the most promising products for sales overseas, and this includes pharmaceuticals. Therefore, it is necessary to establish a coordination center for such products and services in Japan. In order to do so, we need to work on various matters, such as the learning of foreign languages. But, with such efforts, we can survive international competition. Then, Japan will play a role in providing healthcare around the world. This is what I ask all of you here to consider now. In order to achieve this plan, we need to sacrifice various things; however, the time requires it.

 National Strategy for Financial Resources
The third issue is financial resources. Needless to say, this is a serious issue. During the House of Councilors election, Prime Minister Kan said that he would increase the consumption tax to 10%. Now it is being asked if Kan’s statement and results of the election were related.

13.5% consumption tax based on a simulation run by the National Council on Social Security
During the Fukuda Administration, the Liberal Democratic Party established a study group in the government known
as the National Council on Social Security. Its members were from the world of economics and labor. We insisted on the increase in the consumption tax only after considering the results of a detailed simulation. At a Service Security Section Meeting held on October 23, 2008, we discussed the results of simulation of healthcare and nursing costs. As a result, we reached the conclusion that the then current 5% consumption tax would need to be increased to 13.5% by 2025. Healthcare costs are currently 34 trillion yen and nursing care costs 7 trillion yen, which means healthcare and nursing care costs total 41 trillion yen. We estimated that this amount would grow to between 91 and 93 trillion yen by 2025. Currently, consumption tax is 5%, 4% of which is national tax and 1% of which is local tax. How, we wondered, could we get the public to understand the need for an increase in consumption tax to 13.5% in 15 years?

According to the results of a public-opinion poll, the majority of people agreed with the increase in the consumption tax. Considering this, one way of presenting the increase to those who were against it would be as a special-purpose tax for social security. However, a special-purpose tax for social security has both good and bad points. Local governments lack financial resources, which would necessitate the allocation of a part of the revenue gained by increasing consumption tax to local governments. At any rate, sooner or later, we need to discuss the increase in consumption tax and financial resources.

All of you here are actually providing healthcare and, therefore, realize how difficult it is to provide such fantastic services on such a limited budget. People from abroad seem surprised that a 5% consumption tax can buy so much.

Patients suffering from serious illnesses can run up monthly health bills of up to 1.5 million yen. However, thanks to our universal healthcare system, patients with an average income are only required to pay up to 80,000 yen per month. In other words, even if the cost of treatment is 1 or 2 million yen, the patient only needs to pay a maximum of 80,000 yen. This is very unusual compared with systems in other countries. However, the reality is that the government needs to cover everything above and beyond that 80,000 yen. As a result, the country goes into greater debt every year. Looking at FY 2010, the government’s budget was 92 trillion yen, while tax revenue totaled only 37 trillion yen (with approximately 10 trillion yen more from non-tax revenue), which means that more than 44 trillion yen of that is debt. Putting it in terms of a household budget, it’s like spending 920,000 yen every month on an income of only 370,000, and covering the rest by loans. It’s very crazy.

Some may say there is no problem. Japan, they say, has 1,500 trillion yen in financial assets, and the majority of people who hold government bonds are Japanese. So what are you worried about? However, as the nation’s debt increases to 8 or 9 trillion yen, and exceeds assets, the government will go bankrupt. If the government suffers financial collapse, the healthcare system will also collapse. Therefore, people need to calmly consider and accept the concept that you cannot produce a benefit without creating a burden. Setting aside my personal views on the increase in consumption tax, what I have talked about cannot be discussed at all while all the parties are squabbling amongst themselves. Politicians need to get together to consider these issues and solutions to them seriously. Otherwise, our healthcare system will fail. All the hospital directors here also need to communicate the reality that hospital management is very tough nowadays and that you can only do so much with what you’ve got.

Incentives gradually improving the lack of human resources

Right after I became minister, I announced a policy of providing a wide variety of incentives to those doctors specializing in obstetrics and gynecology in response to the death of a number of pregnant women who required emergency medical care, but were sent from hospital to hospital because of a lack of physicians qualified to handle them. The result was that more and more young students went into obstetrics and gynecology. This makes me very happy. It shows that young people will pursue their dreams and desires if we can give them the hope that they will have decent conditions under which to practice their specialty. They are not necessarily looking for an easy life, but a decent life. It is the same in emergency care, surgery, anesthesia, and pediatrics.

Unlike ophthalmologists, otolaryngologist, and dermatologists, doctors who specialize in emergency care, surgery, anesthesia, and pediatrics can find themselves on call 24-hours a day, 7 days a week. But these young people do not choose their specialization because of such things.
The make their choice based on their dream or desire, such as the desire to become an obstetrician like Dr. X, Y or Z, who they look up to. In order to create a balance in the number of physicians in each specialty, we need to consider incentives rather than punishments. For example, we should provide incentives to those who choose to practice medicine in remote areas where physicians are scarce or in specialties that lack sufficient numbers. The incentives can be, for example, priority funding for study in the U.S. or the higher scholarships. Through the “Vision for Securing Safe and Expected Medical Care,” We showed such direction. In fact, the number of physicians in specialties that are understaffed has been increased. I simply feel that young Japanese are great.

● Necessity of considering healthcare reform as a national strategy

We also need to consider healthcare reform as a national strategy. This is the key to determining whether the national budget will hold. As I mentioned above, when the national budget was 92 trillion yen, healthcare and nursing care cost 41 trillion yen. We need to pay for pensions, too. The funding of pensions is also an important issue. When I was the Minister of Health, Labour and Welfare, I struggled with mistakes that had been made in pension records. I had to create a more secure pension system for future generations, too. In other words, I had to consider a comprehensive reform for healthcare, nursing care, pensions, and child rearing. From now, 70 to 80% of the national budget will be allocated to these areas. Therefore, it is necessary to discuss the increase in consumption tax sooner or later to avoid the downfall of the national budget. Compared with other countries, people in Japan receive great benefits based on minimum burden, which is putting a real strain on the system.

Of course, we also need to talk about how to achieve economic growth before we discuss a tax increase. We have to include healthcare and social security reform in our discussions on the increase in consumption tax. There are some who think it is important to first reduce government waste. However, the creation of the online system for health insurance claims will not cover an insufficiency equivalent to some trillion yen. It would cover a few billion yen at most.

I mentioned the increase in consumption tax to 13.5% in relation to reform when I talked about the National Council on Social Security. We also simulated a scenario based on the current status. As I mentioned repeatedly, reform is necessary.

The way in which to do this is a serious issue, for example, how to deal with unnecessary hospitalization, how to reduce the length of hospitalization, etc. Through my experience providing nursing care for my mother, I know it is not so easy. Providing individual rooms for patients is not always better. Many elderly do not like to be alone. They would rather be in a room with four or five people. The Ministry of Health, Labour and Welfare promotes the creation of more individual rooms at hospitals. Then, where should they go for a chat? Then, the Ministry insists on making a different room for patients to socialize. It is not so easy.

Some criticize patients for using hospitals as hotels. However, if we push them out, where should they go? Many of them have nobody who can take care of them at home. They have long-term insurance, but they do not always have care providers. Such feedback from the actual healthcare sites shows that it is not so easy to reduce unnecessary hospitalization, although it is an idealistic theory.

The Ministry of Health, Labour and Welfare sets the goal of shifting from healthcare to nursing care. Elderly individuals with dementia need nursing care, not healthcare. The ministry is promoting providing the elderly with dementia nursing care at home, without spending healthcare resources there. However, it is difficult. Although it has been improved, the elderly are not allowed to stay at long-term care facilities for more than three months, and reimbursement to hospitals providing long-term hospitalization is reduced.

● Considering healthcare reform from the viewpoint of both funding and medical care fees

Reformation of the care fee system is very difficult. Although I felt review of the medical care fee system was one of the major pillars of reform, I lost my post before I had the chance to work on it.

The new government administration dumped the representatives of medical associations from the Central Social Insurance Medical Council and replaced them with individuals connected to the Democratic Party. I have to say that this council is made up for political reasons.
I would like to ask all of you from the Japan Hospital Association to express your opinion about care fees.

As minister at that time, I studied the care fee system a lot, but I could not understand it at all. The list of points used for calculating medical fees is as thick as a phone book. When I was the minister, I asked workers at the ministry if they understand it or not. Individual workers understood only what they were in charge of. It is necessary to have a fee system that is easy for everyone to understand.

As I mentioned above, every time when the government administration changes, anyone on the Central Social Insurance Medical Council that has a close relationship with any of the members of the outgoing administration is dumped. There are some issues that should be discussed by specialists. Using the change of government administration as a great chance to talk about this, we need to emphasize the importance of having specialists gather and discuss healthcare issues without regard to political affiliation.

In the end, it is necessary to discuss issues of financial resources under strong leadership because it is so closely related to the reform of the medical care fee system.

Journalists should also bring up the issue of the medical care fee system. It is not too much to say that there are no journalists who fully understand the system. It is also not good for journalists to always be covering the same government agencies because this leads to overly cozy ties between them. Journalists should take the initiative in discussing the financial resources and reform of the medical care fee system.

Fee system reform is a key to the utilization of healthcare facilities. If you want to promote the integration of hospitals, then you can create a medical care fee system to do so. Or if you want to ensure hospitals make a profit, you can also make a medical care fee system that will do so. Therefore, members of the Central Social Insurance Medical Council should be selected in an extremely fair manner because they have a significant influence on decisions about the fee system. It is necessary to have members from a wide range of fields. From this perspective, the current system of member selection has serious problems.

We need to discuss reform combining the issues of financial resources and the medical care fee system.

In addition, it is also not the time for conflict between private and staff physicians, or clinics and hospitals. What we need to consider is the establishment of a win-win relationship.

When I was the minister, I placed all my effort into the improvement of the severe working conditions faced by physicians, nurses and other care workers, which are the reason patients needing emergency care have been refused. As a minister of labor, staff I felt that physicians were being forced to work in violation of the Labor Standard Law; therefore, I felt the need to put the brakes on the situation. However, if I did so, hospitals would have an immediate lack of physicians, which would also be a problem for me as a minister of health. That situation caused a dilemma for me.

Private physicians have complained about the current government administration’s policies because they think such policies provide more protection for staff physicians. I hope you, as members of the Japan Hospital Association, will make better and more well-balanced decisions regarding this.

4. Healthcare Reform with the Participation of the Entire Nation

At last, the fourth point is the necessity for participation of the entire nation in reform.

Hope to Maintain the universal healthcare insurance system

I have experienced life in many countries, and as I mentioned before, I think the Japanese healthcare system, which covers everyone in the country, is the best. Although there are many issues to be solved, I hope to maintain our universal healthcare insurance and pension systems.

When I went to France during my 20’s, the first thing I had to do was to buy insurance. I was enrolling in graduate school at the University of Paris, and I paid about 20 franc. I remember that I was surprised to be asked to pay this before anything else. But the insurance was very similar to what we have in Japan, covering everyone for everything.

Almost 40 years have passed since then. The Japanese insurance system has also improved to become a very good system. Forty years ago, we were not required to pay anything out-of-pocket for visits to the hospital. However, this changed to 10%, then 20%, and finally to 30%. If care is completely free, there is a risk of providing unnecessary tests and treatment. We may all have the same experience
of not taking the medicine prescribed by our doctor until it was finished. If they give us a 60-day supply at one time because we are busy, we may stop taking them in a week or so, leaving the rest in a drawer. This new reform asks healthcare facilities to control medicines given to the old-old to avoid waste, and to disseminate generic drugs.

- Aren’t we creating waste in our use of the healthcare system?

What I am worried about the most is that we, as a nation, are not putting effort into protecting our healthcare system. Aren’t we creating waste in our use of the system? I could not say this while I was the minister, because the entire nation would be upset. However, now I am free to say what I feel about it. I feel that many elderly simply visit hospitals without need. Such elderly may visit hospitals because, for example, they don’t like to stay with their daughter-in-law at home. I’m sure some may agree with me. But hospitals are filled with such patients.

I visited an orthopedist because I hurt my back. Most of the patients there were elderly females and they seemed to be very healthy. One day, I did not see an elderly woman whom I had seen there quite often and asked where she was. I was told that she was sick and couldn’t come. Another elderly woman was undergoing electrical treatment, which I thought may have cost about 10,000 yen. If that 10,000 yen worth of treatment reduced the stress of the lady and helped to maintain her health, it may be meaningful as a healthcare cost. Anyway, all the people in the country need to recognize that receiving healthcare entails the burden of self-pay.

In addition, in order to reduce healthcare expenses, we need to focus on prevention rather than treatment. I think we should make a system that allocates appropriate fees for preventive medicine. We need not worry about reducing the number of patients because of the success of prevention. In this aging society, we definitely have patients all the time. Hospitals do not need to worry about it. Therefore, everyone needs to focus more on prevention than treatment.

- Employment of the elderly leads to the improvement of funding for the healthcare system

In addition to the above-mentioned topic of pension records, I believe 95% of the problems have been solved. We now need to establish a new pension system. I recommend that the current pension system be changed to provide the full amount to pensioners regardless whether they are employed after the age of retirement. I also recommend reducing the gap in pension payments between men and women, which the current system has. If the husband works and the wife stays at home, they do not have problems. However, if the husband stays home and the wife works, they have to deal with the inconvenience of a lower pension. We need to solve problems in a step-by-step manner to improve the current system to adjust to changes in lifestyles. It may take more than 30 years to complete fundamental reform.

I will go back to the topic of the pension system for individuals employed after the age of retirement. I think it is good for a physician at the age of 70 years to work if he can. When I met my classmates from high school days at 61 years of age, I found many of them were already retired. They looked healthier than I was, but they were not working. I asked them why. Then told me that if they work, they could not collect their pension; so, they decided against continuing to work. I also asked them whether they would work if they could collect the full amount of their pensions, and they answered that they would. In order to satisfy their desire to work, we need to have a 800 billion yen budget to revise the system. Where should we get that money from?

If more elderly individuals accept employment, they would also be paying income tax, which we estimate would total about 200 billion yen. Beyond this we need to have 600 billion yen more. However, currently, 34 trillion yen is spent for healthcare, 11 trillion yen of which is used for elderly patients. Why is one third of the healthcare budget being spent on the elderly? Part of the reason is that they are not involved in any social activities and stay home. They tend to develop dementia and other diseases, which result in the high cost of healthcare. If the elderly start working, out of 11 trillion yen being spent on healthcare, 1 trillion yen would be reduced, which would easily cover the 600 billion yen cost needed to revise the present pension system.

Including the change of the concept of the elderly, we need to completely reform the fundamental ideas and systems for the entire nation. There is a wide variety of working styles for the elderly. The individuals need not work every day. Anyone who wishes may work part time or
as a volunteer. It is much better for people to move around in some capacity, be it paid or volunteer employment, than it is for them to be in the hospital or in need of care at home. If they were involved in a wide range of social activities, the incidence of lifestyle-based diseases would be significantly reduced as well.

- Hospitals should focus on taking care of patients that can only be treated at hospitals, and society should help the elderly by providing a well-balanced working environment that allows them to live a normal life

Hospitals should focus on taking care of patients who require emergency care or who can only be treated at hospitals.

However, this never increases the difficulty of hospital management. Highly advanced medical treatment should be charged appropriately. It is hard for us to know the standards that determine medical care fees. Healthcare professionals with advanced techniques should be paid appropriately.

I would also like to say that everyone, and this includes politicians, physicians, and nurses as well, should live a normal life. After working throughout the night, they should not be required to work at an outpatient clinic the next day, forced to go without sleep for 36 hours to 48 hours and putting both them and their patients in danger. If they work such grueling schedules and make mistakes in surgery, it would be a serious problem. If 10 people are required for a surgical procedure, then 12 people should be employed to avoid a lack of staff. If you are prepared for a case in which some staff won’t be able to come due to a sickness, you can avoid risking patient safety. It is important for us to reform the system so that it can adequately respond to any emergency that may arise or else the people staffing our hospitals will be worked to exhaustion.

More than once while I was on board a bullet train, I have meet widows who tell me their husband, a doctor, was on duty when he dropped dead from overwork. I can only apologize to these poor people and tell them how sorry I am to hear that this happened. I tell them that I tried my best, but it was not enough.

In order to reform the system into one that allows on-site healthcare professionals to live a normal life while working hard as staff physicians, nurses, and other healthcare workers, it will cost a lot of money. And the money should be bore by the nation. It is just about time for everyone to realize and accept this reality. Without this realization, healthcare system reform can never be successful.

- The entire nation should be involved in the reform of the healthcare system

In the end, the entire nation should work together to achieve effective reform of the healthcare system. I will try my best as one of the nation’s leaders. I hope that you will communicate and disseminate the results of research carried out by the Japan Hospital Association to politicians and the nation. Diet members are coming from lots of different areas from around the nation, and we should ask them to move forward in response to our needs. We can even say that we will withdraw our support from them if they do not listen to what we are trying to tell them. I really hope you will move forward to express your opinions to politicians.

I have talked at random about a lot of things without giving an opportunity for anyone to express opposing opinions. I have simply stated what I am thinking about now. I hope you will use this opportunity to consider the issues that I mentioned today as a group. It seems that time has run out for today. Thank you very much for listening to what I have had to say.

MATSUNAMI: I feel that Mr. Masuzoe has expressed what we also feel and think about. At our hospitals too, directors and chief nurses sometimes do not accept emergency cases during the night shift. I really appreciate the fact that Mr. Masuzoe has mentioned the importance of placing a priority on the professionals who are actually delivering care because we could finally realize that we also have missed or not noticed such facts. Thank you for taking the time from your busy schedule to talk to us here today, Mr. Masuzoe.
Implementing International Patient Safety Goals

John Wocher, MHA, FACHE
Executive vice President, Kameda Medical Center
www.kameda.com

Background
Beginning in late 2010, I underwent training to become a Consultant for JCI (Joint Commission International) in Japan and now I work for the JCI as an Independent Contractor (Consultant) in addition to my role at the Kameda Medical Center. I have had the pleasure and experience of assisting hospitals in Japan, Korea, China and Indonesia prepare for accreditation and have been teaching and demonstrating Tracer Methodology in the JCI Practicum offerings. To date, three healthcare organizations have successfully undergone JCI accreditation. Kameda Medical Center was first, followed by NTT Higashi Kanto Medical Center and most recently, the Ayukai Long Term Care Center in Yokohama. Before the end of 2012, I anticipate that three more hospitals will undergo a successful JCI accreditation survey, and that the Kameda Medical Center will be reaccredited in October of this year. I view this trend as significant and as a commitment by hospitals in Japan to raise the bar on improving quality and patient safety within their organizations. Over the years, much has been accomplished in the realm of patient safety, but as we look back at our history of sentinel events, there is a clear trend that indicates room for improvement. This article will focus on six areas that historically have been problematic. These six standards from the Joint Commission International are among more than 300 standards and 1200 measurable elements that make up an accreditation survey.

Introduction
In this article, I want to address several important issues that apply to all healthcare organizations regardless of whether or not they undergo accreditation by the Joint Commission or Joint Commission International, or whether or not they are a hospital or ambulatory care organization. These six issues addressed in Joint Commission standards are truly global and can be applied to any and all healthcare delivery settings worldwide. They comprise a separate chapter in the Joint Commission standards manual entitled International Patient Safety Goals (IPSG), and are considered very important are things we all can relate to, regardless of what role we play in healthcare delivery.

The standards are as follows:
IPSG.1 Identify Patients Correctly
IPSG.2 Improve Effective Communication
IPSG.3 Improve the Safety of High Alert Medications
IPSG.4 Ensure Correct-Site, Correct-Procedure, Correct-Patient Surgery
IPSG.5 Reduce the Risk of Health Care-Associated Infections
IPSG.6 Reduce the Risk of Patient Harm Resulting from Falls

While these are familiar goals for all healthcare organizations, my experience has been that each organization approaches these differently and many approach them inconsistently. Regardless of whether JCI might be in the horizon for your organization, these standards make sense and should be followed in all hospitals. No one can argue against them. They are rational and reasonable and perhaps above all, feasible in terms of compliance.

Identifying Patients Correctly
Of course patients need to be identified correctly, but the complexity of healthcare delivery that creates great potential for mistakes. Using two patient identifiers that do not change over time is the ideal mechanism for minimizing risk. We all know that the number of rooms,
beds, and temporary identifiers increase the potential for errors. In Korea for example, there are many, many patients with the last name of Kim or Lee and they can often be confused in the hectic pace of providing timely services. In Japan, there are many elderly patients, some who are hard of hearing. Extra care needs to be taken to use these identifiers in order to be successful. At Kameda, we use the patient’s full name and date of birth. We consistently ask the patient to give us this information at every point of care. We don’t ask them if their name is Suzuki Kimiko-san or if they were born in a certain year, month and day, because they may be hard of hearing or confused and might erroneously agree. In the inpatient wards, use of patient identification such as hospital registration number and full name can be matched with the physician’s order or medication. If this can be match with the wristband, it is sufficient. Asking the inpatient their full name and date of birth many times per day is not necessary, but you must use two identifiers that are consistent and reliable, with each procedure. Before we get too comfortable however, we must remember that the patient’s name actually could have changed (by marriage, for example). Everyone in my hospital knows me. Yet when I receive care, they always ask me because a good policy should be consistently applied without exceptions. As with every goal, the effectiveness must be measurable. The question always is: “How effective are we in complying with the goal?” As a JCI Consultant, I always ask staff, randomly, how they identify patients at points of care. I look for answers that are consistent with the hospital policy. Then, as I visit these points of care, I observe the actual practice to determine if it is consistent with hospital policy. Whether or not you are preparing for JCI accreditation, management by walking around and observing is an excellent way to see how hospital policies are carried out with a goal of improving practice whenever possible.

Improving Effective Communication

We all want to improve communications. While written communications are probably the most reliable and precise, we must realize that there are many circumstances that do not allow us to communicate in writing. What I am referring to are primarily verbal orders, which include telephone orders or verbal communication of vital information. The procedure found to be the most reliable for verbal communications is for the receiver to write the information down at the time it is received, read back the information to the sender, and have the sender confirm that the information was correctly received. This is particularly important in reporting critical laboratory results because we could be an intermediary in re-communicating these to the end user of the information. Often the lab will call the nurse who in turn will tell the physician. If we simply repeat back the information, the knowledge is short lived. We should not rely on memory alone for something this important. The possibility of error is high in verbal communications, particularly when numbers are used. A write-down, read-back and confirm policy will greatly reduce errors in communication. When I visit hospitals worldwide, I often see log books in laboratories where documentation of verbal reports of critical lab results is recorded. These usually include the caller, the time of the call, to whom the caller spoke to, whether it was repeated verbatim and that confirmed as correct. I often ask how verbal orders are taken, such as in the emergency room. Nurses often go to the trashcan to show me a form where the verbal order was written down and discarded only after entering it in the medical record. This can be effectively measured by putting mechanisms in place and then observing to match practice with policy.

Improving the Safety of High Alert Medication Use

The safety of high alert medication should be a top priority because errors here often can have fatal results. High alert medications are those that historically are problem prone, have a high risk of harm if used improperly, and medications that sound or look alike. Every hospital should have a list of these medications. One of the most common medication errors that have tremendous negative consequences is the unintended/unintentional administration of concentrated electrolytes. Examples are potassium chloride (equal to or greater than 2 mEq/ml concentrated), potassium phosphate (equal to or greater than 3 mmol/ml), sodium chloride (greater than 0.9% concentrated), and magnesium sulfate (equal to or greater than 50% concentrated). These are the Big Four in terms of causing great harm or death if used in concentrations greater than those indicated. The best policy is to restrict
these to the pharmacy and remove them from patient care areas unless there is compelling clinical justification. All high alert medications, including the Big Four, need to be properly identified, properly labeled, and properly stored in proper locations. Insulin and heparin also come to mind, but there are many more. What does this mean in practice? It means that all staff must recognize that these medications pose special risks, that labeling should be unique and distinctive (perhaps color-coded, and/or labeled with clear bold warnings), not comingled with other medications, physically separated from other sound-alike or look-alike medications and have restricted access, often under lock and key. Dilution by someone other than a pharmacist poses a real potential for a higher degree of error, particularly if done so by a less trained staff member who may not use these medications frequently.

The World Health Organization (WHO) and the Institute for Safe Medication Practices are excellent resources to assist hospitals in preventing medication errors involving high-alert/high-risk medications. In the pharmacy, look-alike and sound-alike drugs or the same drug with different concentrations stored next to each other, high-alert/high-risk drugs comingled with other medications, and uncontrolled access from common storage areas is an accident waiting to happen. To err is human of course, but good people in bad systems fail more often than good people supported by good systems. How serious are medication errors? Let me quote this from To Err is Human, The Institute of Medicine’s landmark publication in 1999:

“Attention to medical errors escalated over five years ago with the release of a study from the Institute of Medicine (IOM), To Err is Human, which found that between 44,000 and 98,000 Americans die each year in U.S. hospitals due to preventable medical errors. Hospital errors rank between the fifth and eighth leading cause of death, killing more Americans than breast cancer, traffic accidents or AIDS. Serious medication errors occur in the cases of five to 10 percent of patients admitted to hospitals. These numbers may underestimate the problem because they do not include preventable deaths due to medical treatments outside of hospitals.”

And from the updated 2008 Kaiser Family Foundation Report:

“About 7,000 people per year are estimated to die from medication errors alone—about 16 percent more deaths than the number attributable to work-related injuries.”

To say that this is a serious issue is an understatement.

**Wrong Site, Wrong Procedure, Wrong Patient Surgery**

In spite of advances in medicine, we still hear and read of wrong site, wrong patient, wrong procedure surgeries, which are alarmingly common. They should never happen, but they do. Depending on the gravity of this type of error, this can put your hospital’s name on the front page of the newspaper, not to mention irreversible harm to the patient. I mentioned that I work for Joint Commission International. Joint Commission (U.S.) has a Universal Protocol for Preventing Wrong Site, Wrong Procedure and Wrong Person Surgery (Trademarked). We at Kameda use it. It consists of three essential components – marking the surgical site prior to surgery by the person performing the procedure, a preoperative verification process, and a time out just prior to the start of the procedure. I encourage all hospitals to learn more about this process and additionally to read The Checklist Manifesto by Dr. Atul Gawande. Reading this book will be an eye-opener for many in healthcare who may think that the use of a checklist is a simple and not so efficient method to prevent errors. As we know, surgery takes place in many locations outside of the hospital operating theater, where we often have less standardized control processes. It is in these external locations where there is great risk, which can be minimized by the use of this Universal Protocol and a good checklist. To those who may not have seen the Universal Protocol in use or a surgical time out, I very strongly recommend accessing this video on YouTube: http://www.youtube.com/watch?v=WlSdBzXE9EA&feature=related. This is a good investment of ten minutes of your time. There are others, but this one in particular impressed me. We can never be too busy for safety, or too busy to follow policy, and we should never take short cuts that can potentially harm those whose care is entrusted to us.

**Effective Hand Hygiene**

Everyone knows that hand washing is extremely effective in preventing the transmission of pathogens. Perhaps nowhere is it more important to prevent infections than
in healthcare organizations where the reason many patients are there is because of exposure to pathogens and where many are susceptible to infections because of their condition. No one will argue against good hand hygiene practice in hospitals, but how effective are we in implementing our practices remains unknown in many of our hospitals. If you ask the leading question: “Do you wash your hands prior to treating patients?” 100% of your answers will be affirmative. However, if you observe the practice, will you find the same results? I think not. A 2003 Centers for Disease Control and Prevention study reported that 52 percent of doctors did not clean their hands between patients. A 1997 study found a doctor’s lab coat picked up MRSA bacteria 65 percent of the time when leaning over an infected patient. In a 2006 study, 77 percent of blood pressure cuffs on rolling carts were contaminated with MRSA. According to the Centers for Disease Control, recent studies place hand hygiene adherence in hospitals at between 29 and 48 percent. This is alarming! A good hand hygiene policy is absolutely essential and there must be data to show the effectiveness of the policy. If you cannot answer the question on how effective your hand hygiene policy is and show evidence of its effectiveness, it is not effective. Putting out cleaning gel dispensers and wearing gloves is not the right answer. I strongly encourage accessing websites in the US for the WHO and Centers for Disease Control (CDC) for internationally accepted hand hygiene guidelines.

### Reducing Patient Falls

Patient falls are of great concern to all of us and every effort must be made to prevent unnecessary harm to our patients when they fall. Every hospital should have a fall risk reduction program. We must identify those categories of patients who are at risk of falling and the circumstances that increase the risk of falling. All patients, including outpatients, should be assessed and periodically reassessed for fall risk and if deemed a fall risk, precautions must be placed to minimize this risk. We clearly have populations at risk that come to us for care. We must identify these populations and protect them from harm while in our care. They might be elderly persons, those with disabilities, patients following lower extremity orthopedic surgery, those given medication to aid sleep, those with a fall history, and so forth. It is up to us to identify these risks proactively in order for our fall reduction program to be successful.

### Conclusion

In this short article, I hope I stimulated readers’ thought on how these important issues can be addressed by hospitals in Japan and elsewhere. Hopefully I convinced them to learn more about how quality and patient safety can be improved by complying with internationally recognized standards. Japanese hospitals have been slow to undergo Joint Commission International accreditation compared to our Asian neighbors. Accreditation by JCI or other certification entities is never an end point, but a continuous journey with significant milestones. The Kameda Medical Center feels strongly that whether or not one seeks JCI or other accreditations, adherence to evidence based internationally recognized standards is a journey worth taking. Hospitals are inherently dangerous places and I read recently that medical errors (in the USA) are the sixth leading cause of death. Frankly, this embarrasses me! Meanwhile according to WHO data, there is a 1: 1,000,000 chance of being harmed by air travel and a 1: 300 chance of being harmed by an interaction with healthcare.

This year marks my 50th year working in healthcare, most of it in hospitals, including more than 20 years with the Kameda Medical Center. One thing I learned early on in my career is that quality and patient safety efforts are never ending and can be constantly and continuously improved.

Comments solicited to: johnwocher@kameda.jp
Imagine a future in which employees are enrolled in an Early Disease Prevention Program as they enter the prime years of their working lives. The program tracks their medical history through personal health records (PHR). When a routine health screening reveals abnormalities at the cellular level, micro-surgery is scheduled to remove regions of tissue that have the potential to develop into cancer. The medicine that the doctors prescribe comes in one-dose packets, and cell phone reminders are sent when a dose is missed.

Is such a system possible in near future? Unfortunately, such a future is hard to imagine given the current state of Japanese healthcare and this is even more true since the Great East Japan Earthquake. By 2040, the percentage of the population aged 65 or above is expected to grow to 36.5%. By 2050, the government estimates that the total population will shrink to under 100 million. Some are predicting that Japan’s share of global gross domestic product (GDP) will drop to 4%, putting it in sixth place. Successfully addressing these circumstances will require groundbreaking strategies.

1. Rehash of the so-called B3 scenario

One such attempt was the Social Security and Tax Reform final draft that was made public on June 30, 2011, by the Headquarters of the Government and Ruling Parties for Social Security Reform (Director: Naoto Kan, former prime minister). Although the government insisted that the draft outlined a complete healthcare delivery system for FY 2025, it was just a rehash of the Social Security National Assembly program presented three years ago. They simply tried to diversify functions and promote cooperation based on what has been referred to as the B3 scenario.

The plan attempts to enhance functions, promote efficiency and effect prioritization by concentrating medical resources on acute care, long-term care, and mental health care, and promoting home and nursing care. The government is planning to reduce the number of hospital beds, including clinic beds, from 1.66 million (as of FY 2011) to 1.59 million. Specifically, general medical-care beds are to be reclassified into advanced acute, general acute, and subacute beds. The draft also calls for the creation of regional-based general medical-care beds that will encompass all of the categories of care, including recovery phase and rehabilitation, which the Council of Four Hospital Organizations has been asking for since 2002.

By FY 2015, the government is planning to pour 870 billion yen (11 billion U.S. dollars) into promoting reforms, while hoping to save 430 billion yen (5.4 billion U.S. dollars) by shortening the average length of hospital stays. The government will systematically review medical and nursing care fees to develop a legal framework for the reforms and it plans to submit a draft by 2012; thus the sixth revision of the Medical Care Act can be expected in the not too distant future.

It is the content of the revisions that is of interest. For advanced acute phase inpatients, which are estimated to tie up about 20% of general inpatient beds, the government intends to commit resources to double the number of healthcare workers, increase the unit price (cost of hospitalization/day, etc.) to 1.9 times the current rate, and decrease the average length of hospitalization by about
For general acute phase inpatients, which are estimated to account for about 50% of general inpatient beds, the number of healthcare workers is to be increased to about 1.6 times current numbers, the unit price is to be increased about 1.5 times, and the average length of stay is to be reduced by about 33% (9 days). For subacute, recovery, and rehabilitation inpatients, which are estimated to fill about 30% of general inpatient beds, the number of healthcare workers, mainly co-medicals, is to be increased by about 30%, the unit price is to go up by about 15%, and the average length of stay is to be decreased by about 20% (60 days).

Further, the government intends to commit long-term care resources, currently focused on chronic phase care, to illnesses in disease classifications 2 and 3, increase the number of healthcare workers, mainly co-medicals, by about 10%, and up the unit price by about 5%. Through the promotion of home care and the enhancement of long-term care, the government plans to decrease the average length of stay by about 10% (135 days). Regarding psychiatric beds, which have not been a priority, the government plans to increase the number of healthcare workers, mainly co-medicals, by about 30%, and up the unit price by about 15%. At the same time, they hope to decrease the average length of stay by about 10% (270 days) and the need for hospital admissions by about 20% through the promotion of outreach (home visit care) programs. Government measures for social reintegration have not changed.

If the current trend were to continue, then general inpatient beds totaling 1.07 million as of FY 2011, would be expected to increase to 1.29 million by FY 2025 however, restructuring under these reforms would see this number drop to 1.03 million, with 0.18 million beds allocated to advanced acute care, 0.35 million for general acute care, 0.26 million to subacute care, recovery and rehabilitation, and 0.24 to regional-based general inpatient care.

Meanwhile, the FY 2011 figure of 0.23 million beds for long-term care would increase to 0.34 if the current trend continues; however, the number will drop to 0.28 million with the reform. This restructuring will also reduce the number of psychiatric beds from the FY 2011 figure of 0.35 million to 0.27 million, while we would expect to see it grow to 0.37 million if the current trend were to continue.

### 2. Feasibility of attaining estimated figures is the key

But these are all abstract numbers. The important question is whether or not the current government, which has become a lame duck administration, has the ability to carry out such structural reform.

Personally, I have made policy proposals included in a report presented by the Study Group on Healthcare Issues under the Ministry of Economy, Trade and Industry in 2001, as well as in a report entitled “Fly Away! The Healthcare Industry in Japan (2002)” for the Japan Economic Research Institute. In 2003, I also suggested the establishment of a designated structural reform district to shift resources from oversupplied dentists to physicians in Bunkyo-Ward, Tokyo; however, the suggestion was rejected.

The question is the feasibility of these reforms. For example, in Sweden, which the current Japanese government considers a model, family doctors are available to handle the initial visits. This system is possible because all physicians in Sweden belong to the public sector. In Japan where the majority of healthcare providers are in the private sector, and intervention in the management of outpatient facilities is problematic from a political perspective, we need to promote efficiency in the area of hospital admissions, which account for the majority of the general healthcare expenditures.

How much waste in healthcare expenditures for hospitalization can we cut? According to joint research carried out with Boston Consulting Group using DPC data, 0.299 million out of 1.609 million beds are currently unoccupied. In particular, 0.19 million general inpatient beds are unoccupied, which causes a tendency to extend the length of hospitalization. Taking into account the shortening of those hospital stays, it is possible to reduce approximately 0.22 to 0.25 million beds. Coincidently, this number matches the government estimate exactly. Taking into account the impending super-aging society, the slightly less than 0.04 million general inpatient beds will be insufficient in 2040, when those aged 65 or above will peak. However, the planned reductions in the length of hospitalization could result in a surplus of approximately 0.26 to 0.29 million beds.

Converting the excess number of beds into monetary terms, the amount already represents an approximately 1.4 to 1.6 trillion yen (18 to 20 billion U.S. dollars) waste of healthcare resources. One reason for such waste is
social hospitalization, where hospitalization is extended beyond the clinically required number of days due to a lack of facilities able to accept patients after hospital discharge. This social hospitalization costs taxpayers 0.2 trillion yen (2.5 billion U.S. dollars). Another reason is inefficient management that actually causes patients to wait for admission due to extended hospitalization of other patients, which management feels is necessary to avoid having unoccupied beds. This is estimated to cost 1.2 to 1.4 trillion yen (15 to 18 billion U.S. dollars).

3. Useless super-macro estimates

However, no matter how accurate the macro estimates are, the health care industry will not move. This we know from three years ago when similar estimates were provided by the Social Security National Assembly. The fundamental problem is that local governments and individual health care facilities do not know what to do. My comments to the government at that time were quoted in the Nihon Keizai Shimbun.

According to the Social Security National Assembly, these calculations were performed to clarify the required medical and nursing care services and to estimate the cost of executing and maintaining such services. It is recognized that these estimates were made to show the scale of financial resources that will be required in 2025 in view of the unavoidable increased burdens being placed on the medical and nursing care industry in our country. However, it is doubtful that the estimates calculated by multiplying unit prices by quantity would be sufficient for the establishment of a safe and secure medical and nursing care system, and such estimates do not provide any motivation for saving the already endangered system. It is sad to realize that what the government considers the best for the medical and nursing care system is simply to reduce the number of beds.

The Assembly estimate provided three scenarios: 1. Slow reforms, 2. Bold reforms, and 3. Advanced reforms. However, the three differ simply in the number of healthcare workers providing medical and nursing care without any significant differences in financial resources. I would rather have liked a perspective on how the social insurance system would handle medical costs which, unlike pensions that factor in changes in commodity prices and wages, start off high due to medical innovations at least for a short period of time.

As I mentioned at a hearing held by the National Assembly on July 31, 2008, I believe they should have sought an ideal model capable of achieving improvement in both quality and efficiency for the treatment of each disease using e-data collected by the national government, or aggregated micro data for use in macro estimations to arrive at the best model for each region using data collected by the local government. In any case, it was unfortunate that the leadership of Tatsuya Ito, Advisor to the Prime Minister, was cut short due to the sudden resignation of Prime Minister Fukuda. (Nihon Keizai Shimbun, October 24, 2008)

4. Local governments with no motivation or know-how

It is said that history repeats itself. Does this mean that new administrations also repeat what previous administrations have done?

Such a situation would definitely be a waste of time; so at the request of Tokushima Prefecture I created a hospital reorganization plan in accordance with the following four basic policies.

(1) Replace the current secondary medical regions with new medical service areas that can be covered by automobile with a minimum drive time of 30 minutes. However, if the healthcare system required in the relevant medical service area were to lack economic rationale, the size of the new medical area would be adjusted.

(2) Establish a healthcare system in each new medical service area that allows residents access to day-to-day healthcare services. One general hospital would be established as a regional healthcare support hospital in each of the relevant areas. However, advanced-treatment hospitals would be maintained as general hospitals for advanced medical research and education.

(3) Reduce excess beds by consolidation and reorganization of existing hospitals. Public medical facilities with less than 100 beds would be closed and facilities with more than 100 beds would reduce their number of beds, merge with other facilities or close. Private facilities would become clinics without inpatient beds.
Existing hospitals, not designated as general hospitals or subject to closure or consolidation, would aim to become clearly-defined specialty hospitals.

Ultimately, it was found that the financial burden could be reduced by approximately 45 billion yen per year through the reduction of approximately 1,800 general inpatient beds. Specifically, current medical regions would be restructured into eight medical care service areas, each defined as an area that could be covered in 30 minutes by automobile, the number of acute phase beds would be set at 4,754 and a general hospital would be designated for each area. A total of eight hospitals were designated as general hospitals, and Tokushima University Hospital would be maintained as an advanced treatment hospital.

I did my best to explain the plan to the people responsible for these matters at the prefectural office, including detailed information on the hospitals, as is shown in the illustration. Imagine my surprise when the response I received was, “Mr. Kawabuchi, I understand your enthusiasm, but just who do you have in mind to take on such a project?” To add insult to injury, I paid my own fare for the trip. Sadly, I suspect, the attitude I encountered may be the reality in local governments.

5. Can we learn from what Northern European countries have been doing?

The Swedish government implemented welfare system changes in 1992 known as “Elderly Reform,” which aimed to shift convalescent and rehabilitation care away from hospitals and to other facilities. Under this system, if the city cannot provide convalescent housing to a patient who is ready to be discharged after hospitalization at a county hospital, the city is required to pay a certain fee to the county. Such a system is possible in an environment with a database of patients that allows all medical institutions...
to provide continual health and nursing care services to the residents.

A similar system can be seen in Denmark. According to Yukari Yamada, a former visiting researcher at the University of Copenhagen Institute of Public Health, the city of Copenhagen is obliged to pay 1,771 Danish Krone (about 300 U.S. dollars) per day to the county hospital for elderly patients who have completed treatment but have to remain hospitalized at a public hospital while waiting for an opening at a nursing home or home care facility. The amount increases every three days. If a patient is kept at the hospital for eight days after the completion of treatment, the city must pay the hospital approximately 280,000 to 600,000 yen (3,540 to 7,590 U.S. dollars). Even social welfare countries with high consumption taxes (25%), such as Sweden and Denmark, have implemented such significant reforms. If the Japanese government seeks to increase the public’s tax burden, it should start with making healthcare and nursing care services more transparent. In fact, it was discovered that there can be up to a 400,000 yen (5,060 U.S. dollars) difference in health insurance claims for patients with pneumonia hospitalized beyond 90 days depending on if they stay on a general ward or long-term ward. On a general ward with one nurse for every 13 patients the cost was 838,000 yen (10,600 U.S. dollars), for that same patient on a general ward with one nurse for every 15 patients the cost was 654,000 yen (8,280 U.S. dollars), for that same patient on a long-term care ward with one nurse for every 20 patients the cost was 531,000 yen (6,720 U.S. dollars), and for that same patient on a long-term care ward with one nurse for every 25 patients the cost was 465,000 yen (5,890 U.S. dollars).

What we need next is a comparison of outcomes. However, at any rate, Japan is encountering an aging of society at a speed and scale that no society in human history has yet experienced, and healthcare reforms cannot be postponed any longer. The Social Security National Assembly under Mr. Fukuda’s administration estimated that health and nursing care services will require 85 to 94 trillion yen (1.1 to 1.2 trillion U.S. dollars) in 2025. However, the discussion on who will shoulder the financial burden was passed down to Mr. Aso’s administration, and the change of government took place before the answers were found. Learning from Northern European countries, we must ensure that the social security system does not become a political issue. In FY 2012, baby boomers will be 65 years of age, resulting in a significant reduction of the labor population in Japan. Although Korea and China are doing just fine now, they too will encounter the issues of a declining birthrate and an aging population sooner or later. In order for Japan to become a model country in Asia, not a negative example, Japan must define and implement a groundbreaking design for real health and nursing care services.
Main Medical Conditions of Elderly Japanese in Urban Areas Requiring Long-term Care: Improving the Focus of Preventive Care

Kiichiro Onishi, M.A.

Department of Health Promotion Science, Division of Health Sciences, Osaka University Graduate School of Medicine, Japan

Abstract

Aim: To improve preventive care administration, this paper epidemiologically categorized causative illnesses of frail Japanese elderly living in urban areas by age and sex.

Methods: Data from Japanese long-term care insurance (LTCI) documentation was used to categorize the patterns of disease incidence consisting of the main medical conditions and comorbid diseases among frail elders aged above 65 years (male: 193; female: 360) from the central area of Osaka prefecture. Logistic regression analysis was used to determine the diseases requiring intensive care: care level 3+. The fracture patients’ ADL and cognitive functions were examined using the Cognitive Performance Scale (CPS).

Results: In the patterns of disease incidence, 43% of the men had lifestyle-related diseases, while 53% of the women had musculoskeletal disorders. The main medical conditions associated with care level 3+ in men were dementia (odds ratio, 5.4), cerebrovascular disease (CVD; 3.9), renal failure (8.9), and fracture and fracture sequelae (4.7); and in women, femoral fracture (42.7), CVD (8), vertebral fracture (6.2), dementia (4.4), and neoplasms (4.1). Further, 46% of the female patients with femoral fractures had dementia.

Conclusions: Preventive measures should focus on lifestyle-related diseases, preventing dementia by early detection, treatment of hypertension and diabetes through medication, physical exercise and nutrition, and cancer screenings for both sexes, along with musculoskeletal disorders prevention for women. Since femoral fractures render patients (especially those over 80 years) bedridden with cognitive dysfunctions, fall prevention is essential.

Keywords: Cognitive Performance Scale (CPS), patterns of disease incidence, preventive care, main medical condition, long-term care insurance (LTCI)

Introduction

As the Japanese population ages, the proportion of people aged over 65 years and “the very old” (people aged ≥ 85 years) are expected to grow the fastest in the world, being 31.8% and 7.4% in 2030 and 39.6% and 10.2% in 2050, respectively. The number of people aged ≥ 65 years with difficulty in performing at least one of the “Activities of Daily Living (ADL)” without the help of another is estimated to nearly triple by 2030 as compared to the numbers in 2005.1 In such an aging society, preventing severe disabilities in the oldest of the old is a pressing issue.

Japanese long-term care insurance (LTCI) for elderly individuals was initiated in 2000. Here, care-level certification is first estimated via care needs, which are determined using mental/physical assessments and medical procedures. A tree-based algorithm is used to analyze the results using several dimensions of the applicant’s status along with estimates of the time needed for care.2 Finally, the results and family doctor’s notes are reviewed by a committee of medical doctors, co-medical workers, and social welfare representatives.3 However, the financial burden of programs such as these poses the need for more efficient care strategies in the Japanese super-aging society.

Previous studies have demonstrated that hypertension and diabetes mellitus are risk factors for stroke4 and are associated with an increased risk of dementia.5, 6 Analysis
of the relationship between age and causative diseases has revealed higher proportions of osteoporosis, fractures, and dementia as age progresses.\textsuperscript{7,8} Women suffer osteoporosis more frequently than men, with an increase in the incidence of vertebral fractures beyond the age of 65 and of femoral fractures beyond the age of 70.\textsuperscript{9} For example, the probability of osteoporotic fractures in 10 years for a 65-year-old Japanese woman with average body weight is, in the absence of risk factors, 7.5% and 14.5% in case of an existing fracture.\textsuperscript{10} Further, patients with vertebral compression fractures tend to suffer femoral fractures within 3–5 years of the vertebral fracture. Moreover, 50% of femoral fracture patients have physical or cognitive disabilities, and 25% become bedridden after a fracture.\textsuperscript{11} According to a survey conducted across 17 Canadian facilities between June 2005 and June 2006, 29% of nursing home residents (mean age: 84 years) suffered a fall, with 10% having suffered a fracture within the past 6 months. Additionally, 75% of patients with osteoporosis or femoral fractures score more than level 2 on the Cognitive Performance Scale (CPS).\textsuperscript{12,13} According to a UK survey, 40% of the elderly who had suffered a femur fracture were found to have dementia after an examination of their cognitive functions was conducted within five days after suffering the fracture.\textsuperscript{14} In Japan, 30% of elderly individuals living at home had history of a fall in the past 6 months; further, 40% of these were dementia patients.\textsuperscript{15} The prevalence of dementia in Japan in the age groups of 75–79, 80–84, and ≥85 years is 8.8%, 18.1%, and 33.9%, respectively.\textsuperscript{16} Based on the above data, 3 categories of diseases appear to be closely associated with each other: lifestyle-related diseases—such as CVD and diabetes mellitus, musculoskeletal disorders including fractures, and dementia.\textsuperscript{17,18,19,20,21} Since at least 35% of men over 60 years old are known to suffer more than 2 chronic diseases,\textsuperscript{22} each community’s health care authority needs to specify the main medical conditions and clarify the patterns of disease incidences in order to establish more effective preventive care strategies based on evidence-based medicine (EBM).\textsuperscript{23} The World Health Organization (WHO) defines “main condition” as “diagnosed at the end of the episode of health care, primarily responsible for the patient’s need for treatment or investigation”.\textsuperscript{24} However, except for a nationwide census and a few rural regional studies, few decisive studies have analyzed the main medical conditions of frail elderly individuals using LTCI in Japanese urban areas. This is because the LTCI database had not preserved disease information from the family doctors of the patients except for the four items used to calculate the CPS rating and the comprehensive evaluations of cognitive function and ADL; therefore, an epidemiological computer-based analysis could not be conducted. Thus, the relationship between diseases and the care level among frail elderly individuals remains unknown. Precise research on the health of urban frail elderly individuals is an urgent task since it appears to be difficult to maintain their health in urban communities.\textsuperscript{25,26} Therefore, this study has investigated the main medical conditions and comorbid diseases in frail elderly individuals using LTCI in Japanese urban areas in order to reform healthcare policies for elderly individuals.

\section*{Materials and methods}

This study was conducted in the central area of Osaka prefecture, which is the third largest metropolitan district in Japan. The study zone spanned 15 km\textsuperscript{2} and had a total population of 200,678 (95,866 men and 104,812 women) at the end of March 2006.\textsuperscript{27} Of these, 17,104 (17.8%) men and 23,290 (22.2%) women were above 65 years of age. The proportion of elderly individuals above 65 years old certified as frail by LTCI was estimated to be approximately 19%.\textsuperscript{28} The author chose 605 random samples from the LTCI certifications; all were issued between October 2005 and March 2006 and included visit descriptions and family doctors’ summaries and comments. The sample size comprised 9% of all LTCI applicants in the study zone in the fiscal year 2005. Personal identifiable information other than sex and age had previously been deleted from these documents. During the aggregation of statistics, variable treatment was performed in order to render the data doubly anonymous. The author observed the privacy regulations of the district. Of the 605 samples, 21 did not meet the inclusion criteria, and 31 described individuals were aged less than 65 years. For each of the remaining 553 samples, the author examined mainly the first 5 diagnoses from the family doctor’s summaries and comments. The \textit{P}-value of <0.05 was considered statistically significant. JMP 8.0.1 for Windows was used for statistical analysis.

Each of the 5 diagnoses was categorized in accordance with the International Classification of Diseases and Related Health Problems, 10\textsuperscript{th} revision (ICD-10) by
WHO, and classified into the main medical condition and comorbid diseases. Second, the patterns of disease incidence consisting of main medical condition and comorbid diseases, was classified into four categories as follows: those mainly involving lifestyle-related diseases such as hypertension, diabetes, CVD, etc.; those concerning musculoskeletal diseases, injury, fracture, and neuromuscular disorders leading to loss of motor function (hereafter referred to as musculoskeletal disorders); dementia; and diseases other than these 3 diseases. Osteoporosis was treated as a musculoskeletal disease. Third, these data were analyzed by logistic regression to determine the main medical condition associated with higher levels of care (care level 3–5; 3+), which is equivalent to the care standards of the German LTCI system. Akaike’s Information Criterion (AIC) is a criterion for selecting the optimum model from a set of models, where the model with the lowest AIC is selected as the best. In this study, the stepwise forward selection method was chosen as the optimal model based on the AIC. Lastly, the relationship between ADL, cognitive function, and the fracture site was examined using the CPS scores. Japanese LTCI has adopted the CPS as one of the measures of cognitive function. It is an observation-style measure for cognitive function, by diverting from the Minimum Data Set (MDS), which was implemented in various countries. Family doctors diagnosed the patient’s eating capability and core symptoms of dementia, which the CPS evaluated as being valid.

### Results

The average number of diseases per person was 3.2 in men and 3.6 in women ($t = 3.57; P = 0.004$). Figure 1 shows the main medical condition classified by sex and age group. Details are given in the appendix. The proportion of dementia patients—including Alzheimer’s dementia, cerebrovascular dementia, and unspecified dementia—was 16% of men and 14% of women. More men than women had neoplasms and CVD, while more women had musculoskeletal system and connective tissue diseases (hereafter referred to as injuries). With increasing age, a decrease was noted in the proportion of neoplasms in men and of arthrosis (most were cases of knee arthrosis) in women; in contrast, an increase was noted in other forms of heart diseases (most of them resulted in heart failure) in men, in injuries in women, and in dementia in both sexes.

Table 1 shows the patterns of the disease incidence; the construction of the main medical conditions and comorbid diseases. In lower levels of care (support required; care levels 1–2), the proportion of the main medical condition being
lifestyle-related diseases, musculoskeletal disorders, and dementia was 44%, 28%, and 12% in men, and 22%, 56%, and 12% in women, respectively. Fifty-six men (41%) and 195 women (69%) were diagnosed with Musculoskeletal Ambulation Disorder Symptom Complex (MADS), which indicates both mild frail status and a high risk of fall. In higher levels of care, these were 41%, 13%, and 29% in men, and 29%, 43%, and 21% in women, respectively. Subjects aged ≥85 years with all these three diseases comprised 11% of men and 24% of women. The CPS scores for dementia patients with moderate to severe impairment were as follows: 55% of the patients featured under lower levels of care—CPS Level 3+ —, while 85% of the patients featured under higher levels of care (P < 0.0001).

Table 2 shows the results of the logistic regression analysis. Fracture, CVD, and dementia were significantly associated with high-level care among both men and women. Renal failure in men and Parkinson’s disease, secondary Parkinsonism, and neoplasms in women were also significant.

There were 35 fractures and 58 sequelae of fractures in the patients. Of those, 42% were vertebral fractures and 42% were femoral fractures. Three women had sequelae of both these fractures. Table 3 demonstrates the ADL distribution of vertebral and femoral fractures. ADL was significantly more severe in the femoral fractures than in the vertebral fractures. Only 10% of female patients with sequelae of femoral fracture were ambulant, meanwhile 47% were in vertebral fractures.

Table 4 shows the CPS distribution of patients who had a vertebral or femoral fracture and sequelae of the fracture. Female patients with only 1 fracture and 1 sequelae of a vertebral were diagnosed with dementia (level 3+), while the patients with 6 fractures and 8 sequelae of femoral fractures were diagnosed with the same.

### Discussion

#### Lifestyle-related disease prevention

In the present study, the proportion of neoplasms, heart disease, CVD, dementia, musculoskeletal diseases, and injuries as the main medical condition was 13%, 7%, 19%, 16%, 14%, and 5% in men and 4%, 4%, 11%, 14%, 35%, and 14% in women, respectively. A greater number of men had neoplasms and CVD, while more women suffered musculoskeletal diseases and fractures, similar to the Shimane prefectural government’s survey results. A longitudinal study of elderly individuals has demonstrated odds ratios for death from CVD and cancer

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**Table 1. Patterns of disease incidence categorization based on main medical condition and comorbid diseases classified by sex and level of care required**

<table>
<thead>
<tr>
<th>Main medical condition</th>
<th>Comorbid diseases</th>
<th>≤Care level 2</th>
<th>Care level 3+</th>
<th>Total individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
</tr>
<tr>
<td>Lifestyle-related diseases</td>
<td>None other than lifestyle-related diseases</td>
<td>34</td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td>Men 84 (43%)</td>
<td>Musculoskeletal disorders</td>
<td>25</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Women 84 (23%)</td>
<td>Dementia</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Musculoskeletal disorders and dementia</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>None other than musculoskeletal disorders</td>
<td>8</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>Men 45 (23%)</td>
<td>Lifestyle-related diseases</td>
<td>27</td>
<td>95</td>
<td>4</td>
</tr>
<tr>
<td>Women 192 (53%)</td>
<td>Dementia</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lifestyle-related disorders and dementia</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Dementia</td>
<td>None other than dementia</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Men 32 (17%)</td>
<td>Lifestyle-related diseases</td>
<td>8</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Women 49 (14%)</td>
<td>Musculoskeletal disorders</td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lifestyle-related diseases and musculoskeletal disorders</td>
<td>5</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Other diseases</td>
<td></td>
<td>23</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td>Total individuals</td>
<td></td>
<td>138</td>
<td>284</td>
<td>55</td>
</tr>
</tbody>
</table>

### Table 2. Results of logistic regression analysis of main medical conditions associated with high-level care (care level: 3+)

<table>
<thead>
<tr>
<th>Parameter (main medical condition)</th>
<th>Estimates</th>
<th>P Value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>Cumulative r²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td>0.84</td>
<td>0.0002*</td>
<td>5.35</td>
<td>2.22–13.18</td>
<td>0.0348</td>
</tr>
<tr>
<td>Cerebrovascular diseases</td>
<td>0.68</td>
<td>0.002*</td>
<td>3.93</td>
<td>1.66–9.35</td>
<td>0.0629</td>
</tr>
<tr>
<td>Renal failure</td>
<td>1.09</td>
<td>0.008*</td>
<td>8.88</td>
<td>1.77–49.84</td>
<td>0.0857</td>
</tr>
<tr>
<td>Age</td>
<td>-0.05</td>
<td>0.043*</td>
<td>5.24</td>
<td>1.08–27.19</td>
<td>0.1089</td>
</tr>
<tr>
<td>Fracture, Fracture sequelae</td>
<td>0.78</td>
<td>0.043*</td>
<td>4.73</td>
<td>1.01–22.25</td>
<td>0.1258</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femoral fracture</td>
<td>1.88</td>
<td>&lt;0.0001*</td>
<td>42.66</td>
<td>10.11–294.40</td>
<td>0.0599</td>
</tr>
<tr>
<td>Cerebrovascular diseases</td>
<td>1.04</td>
<td>&lt;0.0001*</td>
<td>7.98</td>
<td>3.63–17.74</td>
<td>0.0966</td>
</tr>
<tr>
<td>Dementia</td>
<td>0.74</td>
<td>0.0001*</td>
<td>4.43</td>
<td>2.04–9.56</td>
<td>0.1246</td>
</tr>
<tr>
<td>Vertebral fracture</td>
<td>0.91</td>
<td>0.003*</td>
<td>6.23</td>
<td>1.74–20.74</td>
<td>0.1405</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>0.97</td>
<td>0.005*</td>
<td>6.97</td>
<td>1.66–26.72</td>
<td>0.1559</td>
</tr>
<tr>
<td>Secondary Parkinsonism</td>
<td>0.71</td>
<td>0.03*</td>
<td>4.12</td>
<td>1.05–13.69</td>
<td>0.1668</td>
</tr>
<tr>
<td>Neoplasms</td>
<td>-0.02</td>
<td>0.20</td>
<td>2.36</td>
<td>0.63–8.87</td>
<td>0.1712</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AIC: Akaike's Information Criterion; men, 110.8; women, 167.8; * P < 0.05; cumulative r²: men, 0.13; women, 0.17.

### Table 3. The ADL distribution of vertebral or femoral fractures in the study sample

<table>
<thead>
<tr>
<th>Sex</th>
<th>Vertebral fracture</th>
<th>Femoral fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Average age (Sequelae of fracture)</td>
<td>79.3 (79.3)</td>
<td>78.3 (79.5)</td>
</tr>
<tr>
<td>Age SD (Sequelae of fracture)</td>
<td>8.1 (9.0)</td>
<td>9.6 (6.8)</td>
</tr>
<tr>
<td>Number (Sequelae of fracture)</td>
<td>4 (3)</td>
<td>13 (19)</td>
</tr>
<tr>
<td>Independent</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Ambulant</td>
<td>1 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Housebound</td>
<td>1 (2)</td>
<td>5 (7)</td>
</tr>
<tr>
<td>Chair-bound</td>
<td>1 (1)</td>
<td>6 (3)</td>
</tr>
<tr>
<td>Bed-bound</td>
<td>1 (0)</td>
<td>2 (0)</td>
</tr>
</tbody>
</table>

ADL: Vertebral fracture vs. Femoral fracture; Chi-square likelihood ratio test = 12.76, P = 0.013.

Ambulant; although needs some care and has disabilities, ADL is generally independent and can go out alone. Housebound; although ADL indoors is generally independent, cannot go out alone. Chair-bound; although mainly on the bed, can hold sitting position with some help. Bed-bound; always on the bed and requires care entirely.
from after 10 years to be 5.6 and 3.4, respectively. Stroke is known to double the incidence of dementia within 10 years. In the present study, the prevalence of hypertension and diabetes among CVD patients were 63% and 33% in men, 72% and 19% in women, respectively. In contrast, these rates among non-CVD patients were 37% and 13% in men, 48% and 15% in women, respectively. Since female diabetes worsens the prognosis, women should be more careful in both diabetic and lipidemic care.

In this study, the proportion of neoplasms as the main medical condition in men in the age groups of 65–74 and 75–84 years was 18% and 14%, respectively. The fact that 20% of men and 14% of women in the 65–79 years age group analyzed by German LTCI comprised cancer patients indicates the importance of cancer prevention. From April 2006, terminal cancer patients aged ≥40 years were eligible for Japanese LTCI. Their number is expected to increase further in home-hospice care. Moreover, the share of CVD and cancer in the main medical condition showed a peak at 65–74 years for both sexes in the present study. In dementia, the most significant univariate predictor was the diagnosis of Lewy body disorder (HR 3.33). Distinctive symptoms of Dementia with Lewy bodies such as REM sleep behavior disorder, Parkinson symptoms, and visual hallucination are indications of a fall. In a Japanese Alzheimer’s disease study, a high grade of periventricular white matter lesions (odds ratio 8.7) and neuroleptic drug use (odds ratio 3.5) were significantly associated with the risk of a fall. In the treatment of Alzheimer’s dementia, ischemic prevention and a minimum necessary dosage of neuroleptic help to reduce falls. Since femoral fractures tremendously reduce ADL and cognitive functions, more active fall prevention measures are essential. Walking habitually, climbing stairs for vertical acclimatization, and brisk walking and balance training maintain muscle and bone strength, thereby contributing to fall prevention. Physical exercise is also effective for preventing dementia, at least for delaying the disease.

### Table 4. The CPS distribution of vertebral or femoral fractures in the study sample

<table>
<thead>
<tr>
<th>Sex</th>
<th>Vertebral fracture</th>
<th>Femoral fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Number (Sequelae of fracture)</td>
<td>4 (3)</td>
<td>13 (12)</td>
</tr>
<tr>
<td>Level 0: Intact</td>
<td>2 (3)</td>
<td>9 (12)</td>
</tr>
<tr>
<td>Level 1: Borderline Intact</td>
<td>2 (0)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Level 2: Mild Impairment</td>
<td>0 (0)</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Level 3: Moderate Impairment</td>
<td>0 (0)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Level 4: Moderate Severe Impairment</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Level 5: Severe Impairment</td>
<td>0 (0)</td>
<td>0 (1)</td>
</tr>
<tr>
<td>Level 6: Very Severe Impairment</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

CPS: Vertebral fracture vs. Femoral fracture; Chi-square likelihood ratio test = 14.98, P = 0.02. Average age: Vertebral fracture vs. Femoral fracture; F = 2.9, P = 0.1.
onset, although its controllable risks have not yet been established. The extent to which physical exercise reduces dementia also remains unclear since it also reduces the risks of other chronic complications. Since cognitive function has the highest relevance to dexterity in physical function, combining manipulative hand exercises with other physical exercise is desirable. The establishment of exercise requires easy access, both psychologically and financially, and contributes to continual social interaction. Although physical exercises are required continuously, the period of training conducted by local governments for preventing falls are as short as 3–6 months. The elderly individuals who attended exercise classes for 8 years were significantly better with respect to ADL functionality and fall prevention as compared to non-participants. Thus, fall prevention classes with nutrition guidance to participants for osteoporosis is considered effective for strengthening the bones. Calcium intake of at least 800 mg/day or more along with maintaining a good vitamin D nutritional status (serum 25 (OH) D3, 20 ng/mL or higher) is desirable for osteoporosis patients in the form of milk, soy products, green and yellow vegetables, fish, and shellfish. However, such personal efforts alone cannot maintain the QOL of the oldest of the old who tend to be isolated in large cities. Lunch delivery services, care workers placements, and care housing remains urgent issues that need to be addressed for effective care of elderly individuals in Japan.

Limitations and implications
Because of the small number of subjects aged over 85 years, the proportion of dementia as the main medical condition may be small in this study. With fewer men over 85 years, the dementia incidence becomes lower. If the sample included more subjects aged over 90 years, the prevalence of dementia would soar for those aged over 85 years. The second limitation is that this study could not investigate how to change the patterns of disease incidence in the same individuals over time, because it was a cross sectional analysis. The third limitation is that this study could not clarify the contribution of aging and fractures to cognitive impairment in fracture patients. However, comparing cognitive function of vertebral fractures and femoral fractures revealed that the latter had significantly low cognitive function. This was a step forward in that field. Further research including the relationship between age, fracture, and dementia, is needed in the oldest of the old for greater clarity.

Please address correspondence to
E-mail: kaonishi@pearl.ocn.ne.jp
APPENDIX

The main medical condition as classified by sex and age group

<table>
<thead>
<tr>
<th>International Classification of Disease</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of person</td>
<td>55</td>
<td>103</td>
</tr>
<tr>
<td>Age group (years)</td>
<td>65-74</td>
<td>75-84</td>
</tr>
<tr>
<td>Neoplasms*</td>
<td>18.2</td>
<td>13.6</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Mental and behavioral disorders</td>
<td>14.5</td>
<td>9.7</td>
</tr>
<tr>
<td>(recount) Vascular dementia</td>
<td>9.1</td>
<td>1.0</td>
</tr>
<tr>
<td>(recount) Unspecified dementia</td>
<td>3.6</td>
<td>7.8</td>
</tr>
<tr>
<td>Disorders of the nervous system</td>
<td>12.7</td>
<td>10.6</td>
</tr>
<tr>
<td>(recount) Parkinson’s disease</td>
<td>3.6</td>
<td>1.9</td>
</tr>
<tr>
<td>(recount) Alzheimer’s disease</td>
<td>1.8</td>
<td>6.8</td>
</tr>
<tr>
<td>Diseases of the eye and adnexa</td>
<td>0</td>
<td>3.9</td>
</tr>
<tr>
<td>Diseases of the circulatory system</td>
<td>25.5</td>
<td>24.2</td>
</tr>
<tr>
<td>(recount) Ischemic heart diseases</td>
<td>3.6</td>
<td>1.9</td>
</tr>
<tr>
<td>(recount) Other forms of heart disease</td>
<td>0</td>
<td>2.9</td>
</tr>
<tr>
<td>(recount) Cerebrovascular diseases*</td>
<td>21.8</td>
<td>17.4</td>
</tr>
<tr>
<td>Diseases of the respiratory system</td>
<td>5.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Diseases of the digestive system*</td>
<td>1.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Diseases of the musculoskeletal system and connective tissue*</td>
<td>10.9</td>
<td>17.5</td>
</tr>
<tr>
<td>(recount) Arthritis*</td>
<td>3.6</td>
<td>3.9</td>
</tr>
<tr>
<td>(recount) Dorsopathies</td>
<td>7.3</td>
<td>13.6</td>
</tr>
<tr>
<td>Renal failure</td>
<td>5.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Injury, poisoning and certain other consequences of external causes*</td>
<td>1.8</td>
<td>4.9</td>
</tr>
<tr>
<td>(recount) Fracture</td>
<td>0</td>
<td>3.9</td>
</tr>
<tr>
<td>(recount) Fracture of femur</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>(recount) Sequelae of fracture*</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>Other diseases</td>
<td>1.8</td>
<td>3.9</td>
</tr>
</tbody>
</table>

The values in this table show the frequency (%) relative to the sample size of each group. *difference by sex; P < 0.05

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28. Osaka Prefectural Government. Long-Term Care Insurance Status Report 2005 Table 5 long-term care by each municipality (help needed) Number of qualified (end of year). (In Japanese)
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I. Introduction

The World Federation for Mental Health has been focusing on the relationship between mental health and chronic physical illnesses. The presence of mental illness with long-term physical disease impairs self-care and adherence to treatment and regimens and causes increased mortality.

Anxiety is common among patients with progressive diseases. It can be a natural response to impending death, but may also result from underlying anxiety disorders, pain or other untreated or poorly managed symptoms.  

Several systematic reviews have investigated the effectiveness of psychological treatment for depression among cancer patients. However, the findings are conflicting.

American Political Journalist Norman Cousins reported the relationship between laughter and health for the first time, when he cured himself of a disease called ankylosing spondylitis, with laughter (Cousins 1976).

The physiological effects of laughter as a positive emotional expression have been analyzed with through the neuroendocrine immune axis, immune system, and changes in gene expression, supporting the hypothesis that the mind, spirit and body mutually influence each other.

By reducing the number of patients who are suffering from cancer and depression, we can save medical expenses. Laughter leads patients to free their mind, making them less likely to be depressed. Reducing the number of depressed patients with cancer may cause lower health care costs.

II. Method

The Smile-Sun Method was developed by Kazue Takayanagi as a method of eliciting natural laughter, not a superficial laughter. Natural laughter does not stimulate the amygdaloidal body. Rather, it produces a sense of security and mutual acceptance that contributes to lightening the feelings and improving depression. The effect can meet the mind-body-spirit hypothesis mentioned above and promote natural healing.

1. Smile-Sun Method (Fig. 1)

Laughter has five principles: safety, relaxation, effectiveness, vividness, and happiness. Laughter education is done using the Smile-Sun Method. There are four strategies:

a. Promoting self-efficacy. (i. I love myself, ii. I make you happy)
b. Dealing with stressful situations. (iii. Admitting negative feelings, iv. Changing view-points)
d. Appreciation. (g. Expressing appreciation)
2. Training Method

Four sessions of Smile-Sun Method training (1 session = 16 hours over two days) were carried out for a total of 64 hours over a period of 8 days to train LTs who are capable of implementing the method throughout the hospital. Workshops were held for 30–50 participants. The training curriculum consisted of 1) the theory of laughter, 2) the practice of drawing natural laughter, and 3) practical training.

Each of the subjects had several psychological scale evaluations, based on those including POMS, SF8 (QOL), the General Self-Efficacy Scale (GSES) and the Rosentale Self Efficacy Scale. Participants answered the scale sheets before and after the session.

III. Results

1. Accomplishment

a. Public: Aomori, Hyogo, Narita City

The laughter-training program was based on methods developed for the prevention of bullying, suicide, and abuse under the Smile-Sun Project commissioned by the Governor of Aomori in Aomori prefecture. More than 30,000 of the prefecture’s population took part in the workshop over a period of three years. In 2010 the number of suicides in Japan was reported 31,560 according to preliminary research by the National Police Academy and was decreased by 1,285 (3.9%) from the previous year. Especially in Aomori Prefecture where one in 60 people received training of the Smile-Sun Method, the number of suicides was 449 in 2010 and it was decreased by 94 from the previous year. This decrease rate of 17.3% was better than the same rate of Akita Prefecture (16%) and it was the 2nd best only after Mie Prefecture. The number and the rate of decrease was the best among the prefectures in the North-eastern Region. Since 28,000 people out of the total population of Aomori Prefecture 1,380,000 joined the Laughter MS (one hour lecture) in 4 years, it can be said that the Laughter WS introduced to all the people may have had positive influence over the decrease in suicides rate. As a result, ranking of suicide rate in Aomori prefecture went up from second in 2009 to seventh in 2011 in the worst in the country. We are expanding this method to the public in Hyogo Prefecture and Narita City in Chiba Prefecture.

b. Healthcare providers: Tsuchiura Kyodo General Hospital

Training was provided to staff members at Tsuchiura Kyodo General Hospital (1,000 beds), an acute care hospital. Training was provided to staff members at Tsuchiura Kyodo General Hospital (1,000 beds), an acute care hospital. The 41 trained staff members were assigned throughout the hospital to observe medical practices and patient care in order to monitor clinical and psychological changes in patients, and to see if they found improvement in their motivation toward treatment associated with such changes, as well as to feel and learn the meaning and effects of laughter.

The following results were obtained:

i. Level of Enthusiasm and Understanding: On a 5-point scale, the level of enthusiasm for the training improved from 4.2±0.4 (pre-training) to 4.8±0.1 (post-training) (p<0.05), and level of understanding of the content of the training improved from 3.9±0.4 (pre-training) to 4.8±0.1 (post-training) (p<0.05), indicating that participants had become enthusiastic about the training and were able to understand the content.

ii. POMS (Fig. 2): A comparison of pre-training and post-training POMS revealed a significant drop in Tension/Anxiety, Depression, and Anger/Hostility. Fatigue and Confusion decreased. Vitality increased significantly.

iii. Positive Engagement Improvement Scale: Results of the Positive Engagement Improvement Scale revealed positive psychological effects in the participants.

iv. We found immunological evaluations and changes in gene expression among patients experiencing the Smile-Sun Method, but there are no data yet.
c. Public: Academy of Laughter
In 2009, the Academy of Laughter was established for public. The results of General Self-Efficacy Scale showed significant improvement in self-efficacy (p=0.016, n=19). Results of the SF8 scale (a scale for Health related Quality of Life) in 34 subjects showed significant improvement in body aches (p=0.42), mental summary score (p=0.123), and physical summary score (p=0.012).

d. Ministry of Education, Culture, Sports, Science and Technology in Japan:
In 2008, the Japanese Ministry of Education, Culture, Sports, Science and Technology started to provide grants for postgraduate cancer education for health care professionals. Eighteen university groups including 80 medical schools in Japan collaborated and established new postgraduate medical courses for cancer specialists. We were approved to join these courses with state-of-the-art technology to offer healing environments. Laughter therapy is a part of the curriculum. Our course is the only medical school course in Japan that gives lectures on healing environments and laughter.

The effects of praising-workshops were assessed. After the praising-workshops, 141 medical students and 41 well-educated businessmen showed statistically significant increases in self-esteem and self-efficacy (p<0.05).

e. The Japanese Society of Healing Environment
520 laughter therapists, mainly healthcare providers, were educated in the Japanese Society of Healing Environment, which was established in 2005.

2. Case reports
There are several cases that show improvements in rheumatoid and cancer pain, tumor size reduction, improved blood sugar in Diabetic patients, and improved varicose vein and skin trouble. In 2 cases with stomach and pancreas cancer, the patient’s tumor vanished clinically.

A laughter therapist met with a 70-year-old post-stroke apathy patient after 60 days of admission with an FIM evaluation of 40/126 (Fig. 3). The patient’s ADL improved dramatically with laughter therapy. He was discharged 17 days later with an FIM evaluation of 125/126. It took only a month for the patient to go back to work.

High self-efficacy in participants led them to change of their way of living and improved their symptoms. Participants reported that they felt more vital and secure, had quick minds, were able to work efficiently, and were happy. They also noted a sense of inner liberation, making them feel comfortable in expressing their emotions. Additionally, participants were surprised to realize that they were actually laughing from their hearts, not superficially. They noted that they had been changed, had become more positive, felt more confident in talking in front of people, and felt more compassion toward others. Some participants reported that they had become free from physical problems such as insomnia, chronic shoulder stiffness, and lower back pain.
IV. Discussion and Conclusion

1. Scientific Findings

By reviewing the literature, there are some evidences that show the effect of laughter.

a. Effect on the neuroendocrine immune axis

The generation of stress involves the catecholamine nerve, the sympathetic nervous system, and the hypothalamic–pituitary–adrenal (HPA) axis. Laughter lowered stress-reactive blood cortisol levels. Laughter lowered stress-reactive blood cortisol levels. Laughter lowered stress-reactive blood cortisol levels. Laughter lowered stress-reactive blood cortisol levels.

1) Improved natural killer (NK) cell activity related to tumor immunity.
2) Improved blood cortisol levels (stress index) and the concentration of 3, 4-dihydroxyphenylacetic acid (DOPAC)
3) Significantly low concentration of epinephrine
4) Growth hormone concentration

b. The immune system

1) Laughter significantly increases the levels of immunoglobulins G, A, M, and complements component C3. It causes increases in the levels of the mononuclear cell surface marker.
2) Laughter has been reported to decrease allergen-specific IgE levels, IgG4 concentration, and increase IgA concentration. As IgA acts as an antibody blocking and serving to inhibit allergic reactions, it is possible that this is a certain mechanism by which laughter acts to decrease allergic reactions in our client and other reports.
3) It is known that nerve growth factor (NGF) concentration is increased by stress, IL-6 levels decreases in rheumatic patients, and the pain with arthritis reduces most likely via its effects on these immune system factors. Therefore, laughter can be inferred to indirectly suppress allergic reactions by lowering the NGF concentration, in addition to the other mechanisms noted above.

c. Gene expression

Hayashi et al. revealed alterations in gene expression in 27 out of 18,716 genes in type 2 diabetic patients. Of the 27 genes, 15 were immune-related and of these, 14 were associated with NK-cell activity. The expression of genes involved in cell cycle, apoptosis, and cell adhesion were observed to have increased.

2. Useful method for people in stressful situations

By spreading the Smile-Sun Method, we expect the elevation of patients’ self-efficacy to increase their own natural healing power and as a result, leading to save medical expenses.

The purpose of this method is to train people by improving the healing environment through human support, increasing the natural healing process, thus promoting the awareness of natural healing, increasing motivation and encouraging a positive attitude. This will also improve motivation among hospital staffs, and increase the comprehensive quality of treatment. The effect of the Smile-Sun Project in mental health care has been demonstrated.

This program has been implemented in health care facilities and to the public by way of a grassroots approach.

In order to improve the natural healing power of patients, it is essential for medical staff to have a positive attitude and methods to draw laughter from patients and produce a sense of security in patients. In order to do so, it is necessary to change the consciousness of the medical staffs. However, it is rare for an entire hospital to work on such change in unison.

It is expected that continuous training programs will increase the motivation and willingness to work in many situations among the Japanese society. Through this, we hope that natural healing power and satisfaction with treatment will increase, to enhance the quality of medical treatment and the treatment environment. This methodology was also applied in postgraduate course at medical schools, and social acceptance of this program improved.

Laughter is the important tool for cancer patients to fight the disease, although laughter has not traditionally been permitted in Japanese hospitals. Laughter and drawing laughter from depressed cancer patients by healthcare professionals is vital for survival.

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   1) Tokyo Health Care University, An Approach to In-House Staff Training for Implementation of the Smile-Sun Method to Promote Natural Healing in Patients -Seeking the Scientific Evidence-, The Journal of Japan Mibyou System Association 16 (1): 1–5 2010


Abstract

The M9.0 great earthquake that occurred on March 11, 2011 triggered a huge tsunami on the Pacific coast in the Tohoku region and caused enormous damage, resulting in 15,854 deaths and 3,276 missing persons (as of March 1, 2012, according to the Japanese National Police Agency). Presently, inhabitants in Fukushima Prefecture continue to live as refugees because of radiation contamination caused by explosions at the Fukushima nuclear power plants. Immediately after the earthquake, DMATs (Disaster Medical Assistance Teams) went to the affected areas to begin relief operations.

The Japan Medical Association then founded the JMAT (Japan Medical Association Team), an organization to take over DMAT activities. The purpose of JMAT is (1) to assist hospitals and clinics in affected areas with daily care and (2) to provide medical care in refuge and aid stations. The Osaka Medical Association was assigned to be in charge of medical support in Iwate Prefecture. For medical services, team activities are more effective than individual efforts. Therefore, JMAT is basically a team composed of one doctor, two nurses, and one clerical officer. The team of Yao Municipal Hospital consists of two doctors, two nurses, two pharmaceutical chemists, and two office clerks.

It is 13,000 km each way from Osaka to Iwate, and it is an estimated 15 hours by road. Our initial schedule was five days and four nights, leaving Osaka on the afternoon of May 26 and heading for Iwate on a chartered bus, engaging in medical care from the morning of May 27 to 30, leaving Iwate on the morning of May 30 and returning to Osaka that evening. However, since Hanamaki Airport in the inland area of Iwate Prefecture became usable starting in mid-May, we arrived in Hanamaki City by air and used a large taxi from the airport. In accordance with the recovery of local medical institutions, the Osaka Medical Association JAMT dispatch was to be terminated by the end of May. As a result, our team’s itinerary was reduced to three days and two nights, leaving on the morning of May 27 (by air), and returning to Osaka on the evening of May 29 (by air).

Keywords: the East Japan Great Earthquake, Japan Medical Association Team, Iwate Prefecture, pocket-sized personal prescription records (Okusuri Techou)

Part 1. Activity Record

May 27 (Friday)

At 8:10, JAL 2181 left Osaka airport on schedule. It was a small jet plane that could carry 80 passengers. At 9:35, we arrived at Hanamaki airport. Hanamaki City is located in the inland area of Iwate Prefecture. It was gray and overcast, and the temperature was 15°C. On the runway, we could see the Japan Self-Defense Force (JSDF) helicopters and broadcasting vans. We left the

"Report on Support Activity for the East Japan Great Earthquake (May 27–29, 2011)"
airport feeling rather nervous and got into a large taxi that was waiting for us. On our way to the coastal area, we saw handmade signboards saying things like “Don’t give up, Iwate!” by the roadside. We also saw large olive-colored JSDF vehicles here and there. When we approached Kamaishi City in the coastal area, there were a lot of cracks in the road and bumps became noticeable (Fig. 1).

We saw temporary housing under construction on the side of the road.

When we entered Kamaishi City via Route 54, we were told that the tsunami came very close to the natural gas tanks. From there to the coast, rubble was left untouched even two months after the disaster (Fig. 2). In the main streets of the city, traffic signals were dead because the power network had not been recovered; police officers stood at intersections and directed the traffic. Rubble was removed from the roads of the city, but power poles in the city center were bent from the bottom as if to demonstrate the power of the tsunami.

At 12:50, we arrived at the Terano Japanese Art and Archery Hall (Terano Gym) in Otsuchi Town, where an aid station was set up in the evacuation center by Dr. Ueta. After a briefing, we took over operations from the preceding team, and started afternoon medical care immediately (Fig. 3). We saw many cases of chronic diseases including diabetes and high blood pressure. In the Terano Gym, we examined 63 people, three of whom had influenza. At 5:00 p.m., all team members attended the local disaster countermeasures office meeting, and our first day’s activities were completed.

**May 28 (Saturday)**

Because all the towns in the coastal area of Iwate Prefecture were destroyed, we had to secure accommodation in the inland area. A support team of Hyogo prefectural government officials, press corps including NHK, and enterprise teams such as housing manufacturers that came here for support also stayed in the hotel where we were lodging. Traffic was heavy because many of the support teams traveled between the inland area and the coastal area in the mornings and evenings. It was ironic that traffic became heavier as reconstruction shifted into full swing.

We left the accommodation at 7:00 in the morning, and headed for Otsuchi Town via a less congested road to avoid traffic jams. This road was too narrow for passenger cars to pass each other, a steep slap that even local people avoid in winter. At 8:30, we started medical care at a temporary clinic of Otsuchi Prefectural Hospital, our second action site. Devices, including an ultrasonic echo device, an electrocardiograph, a portable X-ray apparatus,
and a film processor, were provided by various academic societies and companies. The temporary clinic of Otsuchi Prefectural Hospital had four examination rooms (Fig. 4). On weekdays doctors of the hospital provided medical care, and one supportive medical service was provided by JAMT. On weekends, local doctors took days off and just one JMAT doctor provided medical care.

In the Terano Gym we mainly took care of medical illnesses, but at the prefectural hospital, there were many cases of surgical and disinfectant treatment because of debris removal in the vicinity. In one case of post-saturation disinfectant treatment of the back of a patient’s right hand that had been cut with a window sash during clearance, we found that the second finger showed poor distensibility. With suspicion of tendon lesion, we prepared a referral to a hospital where surgery could be performed. A self-defense official whose left eye was hit directly by a bouncing pebble during debris removal visited our clinic. We found no observable external injury, but since he only had a dim view, retinal detachment or lens injury was suspected, and we requested transfer to a town ophthalmology specialist in Kamaishi, a neighboring city. A male patient, who visited our clinic after cutting a dorsum on his left foot with a corrugated wall while cleaning a large refrigerator at the fishery cooperative, was injured from above the boot he was wearing. We lavaged and disinfected the affected area and gave him four stitches.

We examined 36 patients at Terano Gym and 9 patients at the temporary clinic of Otsuchi Prefectural Hospital, 4 of whom had influenza. After a general meeting from 5:00 p.m. at the Kamaishi disaster countermeasures office, the general manager and team members of the Japan Red Cross Association, JMAT Okinawa and JMAT Osaka gathered and confirmed handover of medical care after withdrawal of each team (Fig. 5).

**May 29 (Sunday)**

We left the accommodation at 6:45 in the morning and started medical care at 7:50. As it was Sunday, only 13 patients came to visit us at Terano Gym. At the temporary clinic of Otsuchi Prefectural Hospital we had 6 patients. At 1:00 p.m., additional teams arrived on site. After handover, we took a large taxi to Hanamaki airport. Though we were nervous on the outbound trip, all team members seemed relaxed on the return trip as if a great weight had been taken off our shoulders.

At 6:30 p.m., JAL 2188 left Hanamaki airport on time. As an unseasonal typhoon was approaching Osaka, the small jet plane swung greatly as soon as it began to descend. When it descended to the point where we could see the streets, the cabin became quiet, as we were not sure if the plane could land safely. At 8:10, we landed at Osaka airport. We called a contact person in charge of the Osaka medical association at 8:25 to tell her that we were all safe, and that the mission had been concluded.
Part 2. Supplemental remarks

Disaster medical care teams

1) DMAT (Disaster Medical Assistance Team) http://www.dmat.jp/
DMAT was established in 2005 by the Health, Labour and Welfare Ministry based on lessons learned from the Kobe earthquake. Its secretariat is in the National Medical Disaster Center. DMAT is a mobile medical team that consists of doctors, nurses and operation service personnel (medical service personnel except doctors and nurses as well as office personnel), who have been professionally trained so that they can operate in the acute stage (approximately within 48 hours) at massive disaster scenes or accident scenes with a great number of injured and sick people. Validity is 5 years, and it is necessary to take a training session to renew membership. Many of its members belong to major critical care centers, the Japanese Red Cross Society, and academic medical centers.

The DMAT secretariat of the Health, Labour and Welfare Ministry established DMAT headquarters at 2:50 p.m., 4 minutes after the occurrence of the disaster, and requested all DMAT members to stand by at 3:10. 380 DMAT teams and 1,800 members went into action.

2) JMAT (Japan Medical Association Team)
Founding of the JMAT was determined during the meeting of the disaster countermeasures office in the Japan Medical Association held on March 15, 2011, and its first mission was for the East Japan Great Earthquake. Its agenda was (1) to support hospitals and clinics in the affected area for daily care (continuation of medical care before the disaster) and (2) to provide medical care in refuge and aid stations. No training session like that in DMAT is provided. In light of the prolonged process toward restoration, the dispatch period of each team would be from three days to one week, and teams would be dispatched in turn in a seamless manner. The target areas of support were four prefectures, namely Iwate, Miyagi, Fukushima, and Ibaraki (Table 1).

The medical associations that provide support collectively arranged travel, meals, accommodation, and local transportation for the teams. Moreover, all JMAT members took out accident insurance to cover accidents during the mission regardless of whether or not they are medical association members. The cost was covered by the medical associations.

It was decided that JMAT would withdraw or dissolve in light of changes in medical needs in the affected areas and restoration statuses of medical institutions. This is based on a lesson that free medical support prevented the restoration of local medical services in the 1995 Great Hanshin Earthquake.

3) AMDA (The Association of Medical Doctors of Asia) http://amda.or.jp/
AMDA is an organization that was established in 1984 and has branches in 30 countries as a UN-registered NGO. They have a lot of experience in emergency medical help from the 2009 Northern Sumatra earthquake, 2010 Haiti earthquake, 2011 New Zealand earthquake, Thailand flood, Eastern Turkey earthquake, etc.

Table 1. JMAT supported 4 affected prefectures with the following medical associations (blocks).

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwate Prefecture</td>
<td>Hokkaido B, Tohoku B (Aomori, Akita), Tokyo B, Kanto-Koshinetsu B, Kinki B (Osaka, Wakayama)</td>
</tr>
<tr>
<td>Miyagi Prefecture</td>
<td>Tohoku B (Yamagata), Tokyo B, Kanto-Koshinetsu B, Kinki B (Hyogo, Nara), Chugoku-Shikoku B</td>
</tr>
<tr>
<td>Fukushima Prefecture</td>
<td>Tokyo B, Chubu B, Kinki B (Kyoto, Shiga)</td>
</tr>
<tr>
<td>Ibaraki Prefecture</td>
<td>Kyushu B</td>
</tr>
</tbody>
</table>

Otsuchi Town, Iwate Prefecture

The entire Pacific coast area in the Tohoku region sustained massive damages from the tsunami. The well-known areas include Sendai City, Ishinomaki City, Ofunado City, and Rikuzen Takada City. Otsuchi Town is just next to Kamaishi City in Iwate Prefecture, and is a part of the Kamaishi medical district (Fig. 6). Among all of the affected areas, Otsuchi Town had the highest ratio of dead and missing among inhabitant population. For reconstruction activities including a grasp of the current situation of inhabitants and external affairs, the role of the regional administration is significant, but the local government office was affected in Otsuchi Town, and the mayor and many officials were victims of the disaster.

As for medical services, all five clinics and Otsuchi Prefectural Hospital – the only hospital in the town, with 60 beds – were affected and it became impossible to provide medical care. It was decided that the Osaka medical association JMAT would operate in Otsuchi Town, where
investigation by the advance party that left on March 22 revealed that no medical care was provided.2

- Damage of information and traffic networks
The actual situation of the East Japan Great Earthquake was significantly different from what we experienced in the Great Hanshin Earthquake in 1995 in that its major damage was caused by a tsunami. The damage caused extremely extensive destruction, and traffic/information networks with neighboring municipalities were lost. In light of the medical procedures at the time of the disaster, we need to investigate the damage of our own and neighboring facilities at the beginning, but in the first few days, we had trouble making calls by landline or cellphone. Because traffic infrastructure also was damaged, the number of patients surged in disaster based hospitals only three days after the disaster.3

- Command channel in disaster countermeasures
It is impossible for administrative bodies only to coordinate medical support activities. Therefore, directors of local medical associations joined the bodies as deputy general managers of the disaster countermeasures office. They played a coordinating role with the government and disaster-related organizations, and distributed various support teams and resources according to local medical needs.

In the initial stage after the disaster, many teams including DMAT and JMAT gathered at the affected areas, but the coordination between the teams was not enough. For example, there was trouble at Otsuchi High School (used as a temporary refuge for 1,500 people in peak days), where six teams gave medical visits separately and arrived at the same time.

When we were dispatched, teams were well organized. All of the members gathered at a liaison conference every evening, and information was shared among medical support teams. Constant attention was paid to see if high incidences of influenza were found in the same refuge area. In addition to JMAT, medial teams that gathered in liaison conferences included local medical associations, medical teams of the Self-Defense Forces, the Japanese Red Cross Society (each prefecture), the pharmacist society, psychology counselors, and physical therapist and occupational therapist societies.
Dispensing of drugs

It is not difficult to imagine that, in the initial stage, doctors would have had difficulty developing prescriptions because they could not obtain the medication status of the affected people. However, at the end of May when we engaged in medical support activities, there were many patients who brought pocket-sized personal prescription records (Okusuri Techou) with them, and we could easily confirm their medication status. When drugs were prescribed in aid stations the record was filled out by hand, but when drugs were prepared in drugstores, a sticker with computer printing was placed on the record, which we found quite easy to read. In Otsuchi Town, there were few cases where personal prescription records were utilized; therefore, many records started after the disaster. In the liaison conference of the disaster countermeasures office, we were reminded each time to promote the usage of personal prescription records.

Even if we find prescribed drugs from prescription records that patients bring with them, we have no choice but to change them to some other medicines if we do not have the same drugs in the temporary clinic. We thought it a good idea to decide on minimum common drugs that could be interchangeable at the time of a disaster. Moreover, because drugs ran short at the initial stage after the disaster, a policy was set to prescribe a few days’ worth of drugs. Patients with chronic diseases like high blood pressure or diabetes needed to visit the office frequently. It would be desirable to allow prescriptions for longer periods for patients having to walk for long hours to visit the office due to a lack of other means of transportation.

As for problems concerning children’s drugs, sterile water to dilute liquid medicine was not available so we used mineral water in plastic bottles instead (Fig. 8). Powdered medicine takes time to measure, but there was a team that brought divided powder that was prepared beforehand. They let us use the divided powder, which was very helpful.

Resumption of local medical facilities

From around the beginning of May, local practitioners resumed medical services in prefabricated huts and other places. Dispensing pharmacies also resumed their operations, and JMAT Osaka terminated its dispatch at the end of May. Otsuchi Prefectural Hospital, a former bastion of community medicine, resumed its operation in July in a prefabricated building for medical purposes.

Figure 8. We used mineral water in plastic bottles to dilute liquid medicine.
made in Norway, but its hospitalization facility was lost (Fig. 9).

Withdrawal periods of JAMT varied according to the degrees of resumption in medical institutions around the area, and in some areas it continued operations as JMAT II until March 2012. During this period, a gross total of 1,845 teams and 7,359 members operated as JMAT and JMAT II.4

Acknowledgement
We appreciate our colleagues and staff members who agreeably undertook hospital ward work so that we could offer medical assistance. We were also greatly encouraged by Dr. Ueta and the smiles of the residents of Otsuchi Town.

References

Figure 9. Otsuchi Prefectural Hospital resumed operation in July in a prefabricated building, but its hospitalization facility was lost.

Members’ Photo: Our members with Dr. Ueta (Ueta Clinic, Otsuchi Town)
Abstract

The researchers conducted an investigation on factors influencing stress coping ability, referred to as a Sense of Coherence (SOC). 278 students in the 2nd to 4th year of “A” University nursing program were subjected to this survey, and the response rate was 75.5%. The average SOC value was 39.5 ± 6.6 for males, and 37.4 ± 7.0 for females. The value for age group 20 to 24 years old was 37.1 ± 6.8. The average SOC value obtained through this survey was higher than the survey results of the Kanto region and lower than the national results.

When a comparison was made between “the group with higher average SOC” and “the group with lower average SOC” among the entire survey average SOC, especially significant differences were discovered in the following items. “Prospects for the future is bright”, “Difficult experiences have meaning”, “I have good relationship with friends”, “I feel stressed”, and “I was seriously ill” (P<0.001). “I am always interested in other people”, and “I have a friend to rely on in difficult circumstances” (P<0.01). “I can do most anything if I put my mind to it”, “We can encourage each other”, “I am satisfied with my current situation”, “I was satisfied with my role in my club”, and “I was able to enter my desired university” (P<0.05). The researchers categorized these items into 1) Positive meaning from a difficult experience, 2) Cognition to prevent stressor from becoming negative stress, 3) Experience of success, 4) Satisfaction and self-confidence, 5) Sociability, and 6) Presence of a reliable other. It was discovered that offering environment where people can work hard together by learning from others is an important issue to improve SOC.

Keywords: SOC, stress coping, nursing students, salutogenesis model

I. Introduction

Health sociologist Dr. Aaron Antonovsky conducted a comparative survey of menopausal health between female survivors of Nazi concentration camps and females who did not experience internment there.1

This study found approximately 30% of the females reached menopause without significant health problems regardless of experiencing trauma induced stress. These subjects could maintain mental and physical health after experiencing extreme stress. Some constructively used the experience to build healthy lives. Antonovsky developed the salutogenesis model to identify the common elements between these females (Fig. 1). Antonovsky discovered “stress coping ability; sense of coherence (SOC)” as a core ability of salutogenesis.1

SOC Research in our country has increased sharply since 2000.2 As for SOC studies targeting university students, there are many studies focusing on the SOC effect. However, experimental studies that clarify formation and development of SOC tend to be very few from a global perspective.2

Each human has a SOC, and responds to stress based on it. SOC is not a congenital factor, but is formed and altered in response to experience.1 This research will identify SOC contributing elements within a range of experience. Identified elements will allow SOC to be improved through education, and allow students to learn better stress coping methods.
Stress in life is unavoidable, and is a known causative element of illness. Nursing contends with life and death in conjunction with continually evolving bioethics and health care technologies. Due to these factors, nursing is a high-stress profession, and many experience burnout. SOC research of nursing students will help identify elements to build stability in nurse performance. Due to these reasons, research of SOC formation and development is significant and meaningful.

II. Methodology

1. Research objective

This research will identify SOC formation and development process. Researchers will analyze target students with high average SOC value among the entire survey average to identify causative elements and methods to improve SOC through education.

2. Survey target population

The target is 278 of 2nd to 4th year students in “A” University Nursing Program. Age of the target is 19 to 22 years old, and students who are 23 or older were removed from the target population.

3. Data collection method

The explanation of the research project was given to the target at the end of a class period. Submission of the survey indicated agreement to become a subject of this study. The study was conducted with the approval of the Gumma PAZ College Research Ethics Committee (PAZ 11-4).

4. Scope of study

A questionnaire survey was conducted along three points.

(1) Attributes

Gender, grade, age, student ID number, family members, club activities

(2) The Japanese version of 13-item five-point SOC scale method

The scale to measure SOC is based on Antonovsky’s interview data of 51 Israeli subjects. The 29-item and 13-item versions were created, and both verified for reliability and validity. The Japanese version was developed by Yamazaki in 1998. In this study, the researchers selected the 13-item five-point SOC scale to reduce the burden on respondents. This method is composed of three elements: 5 items on comprehensibility, 4 items on manageability, and 4 items on meaningfulness.

Figure 1. Salutogenic Model

- General Resistance Resource (GRR) Source
  - Child raising method
  - Social responsibility
  - Individual characteristics

- General Resistance Resource (GRR)
  1. Psychological GRRs
     - Belongings, wealth, knowledge, intelligence, identity, social relationships, social stability, religion, philosophy, art
  2. Genetic, Biological and Innate GRRs

- Used
  - Avoidance
  - Decide “not a stressor”
  - Resolve

- Developed SOC

- Developing SOC

- Provides
  - Quality Experience | Coherence, sense of accomplishment, balanced load.

- Strengthens
  - Successful resolution of tension

- Maintains Health

- Hidden internal and external stressors
  - Hidden internal and external stressors
    - a. Social Psychological
    - b. Physical Psychological

- Forms
  - Tension

- Creates
  - Healthy / Health problem continuum
Questions based on the reference (five-point scale)

Question items were categorized into the following: self-evaluation, positive thinking, intent to pursue interest, interest in the outside world, cooperation, trust relationships, stoic, sense of responsibility, sense of planning, perseverance, sense of satisfaction, self-recognition, family relationships, experience of success, health habits, and health problems. Question item 20) was sourced from “Sense of Coherence in the University Students and its Related Factors.” Question items 10), 11), 12), and 23) were sourced from “Sense of coherence (SOC) and its related factors among Japanese urban high school students- The relationship between retrospective evaluations of school lives in elementary school and junior and senior high schools, and the changing pattern of SOC during a 10 month period.” Question items 21), 24), and 25) were sourced from “The effects of friendship in junior and senior high school periods on sense of coherence among university students.” Additional questions were created referring to other references.

5. Data analysis methods
The Japanese version of the 13-item five-point SOC scale method determines SOC from the measured values. Data obtained from the reference based questions (five-point scale) were classified as a negative (-) for response 1 to 3 and a positive (+) for response 4 to 5. The data collected were analyzed statistically using the Microsoft Excel 2010 chi-square test to determine a significant difference. The question items with the significant difference were categorized.

6. Data collection period
July 2011

III. Result
The survey was responded by 210 people (44 males and 166 females), and the response rate was 75.5%.

1. Average SOC value based on attribute (Table 1)
The Japanese version of 13-item five-point SOC scale had 208 valid responses with an average SOC value of 37.5 ± 7.0.

The national average and a statistical stratified random sampling of subjects living in the Kanto region were extracted and compared to the average SOC value of the research result. Attributes are gender, and age. The data of 30 to 34 years old is included to show that average SOC values increase with age.

By gender, the average SOC values were 39.5 ± 6.6 for 44 males and 37.4 ± 7.0 for 162 females. By grade, the average SOC values were 38.8 ± 7.1 for 88 second year nursing students, 36.7 ± 0.5 for 67 third year nursing students and 36.3 ± 0.5 for 54 fourth year nursing students. By age group, the average SOC value of 150 students who were 20 to 24 years old was 37.1 ± 6.8.

Results were lower than the national average, but higher than subjects living in the Kanto region.

2. Relevance of the question items in the survey and SOC (Table 2)
The average SOC value of the valid 208 responses was calculated based on the Japanese version of the 13-item

| Table 1. The Japanese version of the 13-item five-point SOC scale: Average values and research results |
|-----------------|------------------|------------------|
| Attribute       | Kanto region residents | Japan National Average | “A” University |
|                 | Mean ±SD          | Mean ±SD          | Mean ±SD       |
| Male            | 37.6±6.4          | 44.5±8.6          | 39.5±6.6       |
| Female          | 37.0±7.3          | 43.7±9.0          | 37.4±7.0       |
| 20–24 years old | 35.9±7.1          | —                 | 37.1±6.8       |
| 30–34 years old | 38.5±7.3          | —                 | —               |
| 2nd year university student | —     | —                | 38.8±7.1       |
| 3rd year university student | —     | —                | 36.7±0.5       |
| 4th year university student | —     | —                | 36.3±0.5       |
### Table 2. Relationship of survey results with average SOC values

<table>
<thead>
<tr>
<th></th>
<th>SOC Average Value</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37.5&gt;</td>
<td>37.5≤</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Sex</td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Living with Grandfather</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Living with Grandmother</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Living with father</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Living with mother</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Living with older brother</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Living with younger brother</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Living with older sister</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Living with younger sister</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Schoolwork</td>
<td>Good at it</td>
<td>Not so much</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Sports</td>
<td>Good at it</td>
<td>Not so much</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Art</td>
<td>Good at it</td>
<td>Not so much</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I can do most anything if I put my mind to it.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I can be relaxed in the face of difficulty.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Prospects for the future is bright.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Difficult experiences have meaning.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I find meaning in the path as much as the result.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I am interested in the unknown.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I have entered a risky situation.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I do part time work, or volunteer often.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I am always interested in other people.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. I am perceptive of social situations.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. I have good relationship with friends.</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
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</tbody>
</table>

<p>| | | | |</p>
<table>
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<td>74</td>
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<td>No</td>
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</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td>I can show my feelings.</td>
<td>60</td>
<td>43</td>
<td>0.052†</td>
</tr>
<tr>
<td>We can encourage each other.</td>
<td>31</td>
<td>72</td>
<td>0.027*</td>
</tr>
<tr>
<td>I have a friend to rely on in difficult circumstances.</td>
<td>31</td>
<td>72</td>
<td>0.006**</td>
</tr>
<tr>
<td>Club activities are always a competition with myself.</td>
<td>41</td>
<td>62</td>
<td>0.758</td>
</tr>
<tr>
<td>Being critical of myself is important part of becoming better.</td>
<td>24</td>
<td>79</td>
<td>0.575</td>
</tr>
<tr>
<td>I am responsible in doing my best in any position I am given.</td>
<td>33</td>
<td>70</td>
<td>0.186</td>
</tr>
<tr>
<td>I think it is my responsibility when a mistake is discovered even</td>
<td>29</td>
<td>74</td>
<td>0.298</td>
</tr>
<tr>
<td>after handing off the job.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I start acting after I set a goal.</td>
<td>76</td>
<td>27</td>
<td>0.595</td>
</tr>
<tr>
<td>I strive to get good results.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am good at perseverance.</td>
<td>45</td>
<td>58</td>
<td>0.210</td>
</tr>
<tr>
<td>I am satisfied with my current situation.</td>
<td>83</td>
<td>20</td>
<td>0.010*</td>
</tr>
<tr>
<td>I am proud of myself, or was proud of myself.</td>
<td>70</td>
<td>33</td>
<td>0.925</td>
</tr>
<tr>
<td>I was satisfied with my role in my club.</td>
<td>63</td>
<td>39</td>
<td>0.029*</td>
</tr>
<tr>
<td>My family often spent time together, and I was never home alone.</td>
<td>34</td>
<td>69</td>
<td>0.807</td>
</tr>
<tr>
<td>My family was a good environment.</td>
<td>49</td>
<td>54</td>
<td>0.271</td>
</tr>
<tr>
<td>I was able to enter my desired university.</td>
<td>65</td>
<td>38</td>
<td>0.017*</td>
</tr>
<tr>
<td>Time spent sleeping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise habits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel stressed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was seriously ill.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allergies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Illness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chisquare test (†P<0.10,*P<0.05,**P<0.01,***P<0.001)
five-point SOC scale method. The results were categorized into above average (37.5≤result) and below average (37.5>result). Responses 1 to 3 were categorized as a negative (-) and 4 to 5 as a positive (+). Data were tested using a chi-square test.

3. Question items with significant difference

The following questions were found to have significantly different responses. P values show a significant difference of how many more students answered “Yes” compared to students who answered “No.”

Under the “positive thinking” classification, “I can do most anything if I put my mind to it” (P=0.027).

Under the “willingness to pursue” classification, “Prospects for the future is bright” (P=0.000), and “Difficult experiences have meaning” (P=0.000).

Under the “cooperation” classification, “I am always interested in other people” (P=0.003), and “I have good relationship with friends” (P=0.000).

Under the “trust” classification, “I can show my feelings” (P=0.052), “We can encourage each other” (P=0.027), and “I have a friend to rely on in difficult circumstances” (P=0.006).

Under the “satisfaction” classification, “I am satisfied with my current situation” (P=0.010), and “I was satisfied with my role in my club” (P=0.029).

Under the “experience of success” classification, “I was able to enter my desired university” (P=0.017).

Under the “health condition” classification, “I feel stressed” (P=0.000), and “I was seriously ill” (P=0.000).

4. Question items with no significant difference

The following question items from table 2 did not show any significant differences. The question items 2) to 9) in “family structure” classification, 10) to 12) in “self-evaluation”, 14) in “positive thinking”, 17) in “pursuing interests”, 18) to 20) in “interest in outside world”, 22) in “cooperation”, 27) to 28) in “stoic”, 29) to 30) in “responsibility”, 31) to 32) in “planning ability”, 33) in “perseverance”, 35) in “self-recognition”, 37) to 38) in “family relationships”, 40) to 42) in “health habits”, and 45) to 46) in “health”.

5. Classification of the question items with significant difference (Table 3)

Those questions with significant differences from Table 2 SOC (P<0.05, P<0.01, P<0.001) were categorized into 6 new categories. With the exception of self-aware stress, average SOC value was higher for the subjects responding “yes” to these questions.

Table 3. Categorization of question items with strong correlation to SOC

<table>
<thead>
<tr>
<th>Category</th>
<th>Question Item</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Positive meaning from a difficult experience</td>
<td>Difficult experiences have meaning</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>I was seriously ill.</td>
<td>0.000***</td>
</tr>
<tr>
<td>2. Cognition to prevent stressor from becoming negative stress</td>
<td>I feel stressed.</td>
<td>0.000***</td>
</tr>
<tr>
<td>3. Experience of success</td>
<td>I was able to enter my desired university</td>
<td>0.017*</td>
</tr>
<tr>
<td>4. Satisfaction and self-confidence</td>
<td>Prospects for the future is bright</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>I am satisfied with my current situation</td>
<td>0.010*</td>
</tr>
<tr>
<td></td>
<td>I can do most anything if I put my mind to it</td>
<td>0.027*</td>
</tr>
<tr>
<td></td>
<td>I was satisfied with my role in my club</td>
<td>0.029*</td>
</tr>
<tr>
<td>5. Sociability</td>
<td>I have good relationship with friends</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>I am always interested in other people</td>
<td>0.003*</td>
</tr>
<tr>
<td></td>
<td>We can encourage each other</td>
<td>0.027*</td>
</tr>
<tr>
<td>6. Presence of a reliable other</td>
<td>I have a friend to rely on in difficult circumstances</td>
<td>0.006**</td>
</tr>
</tbody>
</table>

Chisquare test (*P<0.05, **P<0.01, ***P<0.001)
Categories with the possibility of the educational intervention are 5) “Sociability” and 6) “Presence of a reliable other” in Table 3.

IV. Discussion

1. Average SOC value of target population

The average SOC value of the target population (male, female, age 20–24) was higher than the average of the Kanto region (attributes noted above). A potential cause may be the selected target population for this study being nursing students. In the second year of the curriculum, students begin clinical practice and become responsible for the life of patients. Death of a patient is also a possibility. Nursing students work long hours, starting early in the morning, receive instruction during the day, and record nursing records late into the night. Students persevere and overcome this stressful environment with the help of friends.

According to Antonovsky, SOC is developed through the experience of successful processing of tension, and managing stress. The Kanto region residents were randomized to reduce bias, but the surveyed nursing students were successful in overcoming clinical training. We identified a potentially larger body of experience in processing tension, and coping with stress in the surveyed student population in comparison to the Kanto region residents. The researchers identified the increased experience as a causative element of the higher average SOC value.

The national average SOC value is higher than both the Kanto region residents and the surveyed “A” university nursing students. There are two elements of potential causes. First is the potential increase of SOC with age, as SOC stabilizes around the age of 30, and shows further increase with additional positive experience. Second is a regional characteristic; the average SOC value of Kanto region residents is similar to the surveyed students of “A” university. “A” university is located in the Kanto region, potentially indicating the survey target being a subset of the Kanto region study. The Kanto region is urban and more academically competitive than the suburban and rural areas of Japan. The demands and pressure on students may not be intrinsic, but from family and local culture. Students are not guaranteed enrollment in schools they aspire to. The researchers hypothesized the combination of these conditions repress the comprehensible and meaningful elements of SOC, reducing SOC development.

The researchers also identified a downward trend in the average SOC value as students progress academically. An increase in stress as national certification exams and job hunting approach is a potential cause of the decrease in SOC. The researchers hypothesized the stress of exams and job searching reduced SOC as those issues had not been relieved or resolved.

2. Relevance of the question items and average SOC value

The researchers identified question items with significant difference from table 2 and generated meaningful sentences for analysis.

“I am satisfied with my current situation, because I was able to enter my desired university.” Tolerance of stress and positive outlook is increased from being satisfied, and difficult experiences are more easily handled. The nursing university and clinical experience is an environment that encourages interest in others, active dialogue with friends in times of difficulty, and facing challenges as a group. The researchers identify the environment of strong teamwork, empathy, and building friendships as elements in developing SOC.

The researcher considered question items in table 3, “categorization of question items with strong correlation to SOC.”

1) “Positive meaning from a difficult experience” and 2) “Cognition to prevent stressor from becoming negative stress” indicate relation to the sense of meaningfulness that make up SOC. A subject with higher ability to find positive meaning from an experience is less likely to perceive what is stressful to another as a negative stressor. “Serious Illness” may contribute to SOC development as a successful experience of coping with stress.

“Allergies” and “Chronic Illness” in table 2 are both the same as “I was seriously ill” in elements of impaired health, but differ in their chronic nature. Neither “Allergies” nor “Chronic Illness” are stressors that are successfully overcome, but are continual stressors, and do not contribute significantly to SOC.

3) “Experience of success” and 4) “Satisfaction and self-confidence” suggest a relationship between self-efficacy and SOC. Self-efficacy is a concept rooted in subjective emotion, and is considered separately from...
SOC, which is based upon the relationship between the environment, self, and others. The researchers found a relationship between self-efficacy and SOC, and a potential research topic.

5) “Sociability” and 6) “Presence of a reliable other” represents importance of legitimate others. In Antonovsky’s theory of SOC, people that can be relied on, people that will help in a time of need, people that trust and rely on the subject, and people that find the subject important are called “legitimate others”. The legitimate others as described give value to the subject. The researchers hypothesize the survey questions increased SOC by indicating relevance of legitimate others.

In Table 2, 37) “The family often spent time together, and I was never home alone”, and 38) “My family was a good environment” were question items created to test the supportive family as a SOC developing element, but did not indicate a significant difference. The researchers hypothesize the mixing of the legitimate other in the family environment may be the cause. The question items of “My family often spent time together, and I was never home alone” and “My family was a good environment” do not mean the subject had discussed stress and concerns within the family. The researchers hypothesized the low significance of family in SOC development indicates friends in similar circumstances may be felt as closer to the subject, leading to a stronger draw as an external resource as a legitimate other.

Legitimate others potentially develops by increasing the quality of interaction with others. Providing an environment that allows a subject to work hard with others will be thought as to strengthen the education system for SOC development.

As a result, question items with no significant difference, which were listed under “4. Question items with no significant difference” did not fit into the 6 categories in table 3. The categorization issue may have contributed to the lack of a significant difference.

**V. Conclusion**

278 2nd to 4th year students from “A” University nursing program were surveyed, with a survey response rate of 75.5%. Analysis of the survey questionnaires indicated the following.

The average SOC value was 39.5 ± 6.6 for males, and 37.4 ± 7.0 for females. The average SOC value for 150 subjects in age group of 20 to 24 years old was 37.1 ± 6.8. The average SOC value of subject group was higher than the Kanto region (male, female, age 20–24), and lower than the national results (male, female).

When a comparison was made between “the group with higher average SOC” and “the group with lower average SOC” among the entire survey average SOC, especially significant differences were discovered in the following items. “Prospects for the future is bright”, “Difficult experiences have meaning”, “I have good relationship with friends”, “I feel stressed”, “I was seriously ill” (P<0.001), “I am always interested in other people”, and “I have a friend to rely on in difficult circumstances” (P<0.01). “I can do most anything if I put my mind to it”, “We can encourage each other”, “I am satisfied with my current situation”, “I was satisfied with my role in my club”, and “I was able to enter my desired university” (P<0.05). The researchers categorized these items into 1) Positive meaning from a difficult experience, 2) Cognition to prevent stressor from becoming negative stress, 3) Experience of success, 4) Satisfaction and self-confidence, 5) Sociability, 6) Presence of a reliable other. Providing an environment to deeply interact with others was identified as a strong element of SOC development and improvement.

**Acknowledgments**

Thank you to the students in “A” University for taking part in our research.

**References**

3. Taisuke Togari, Reika Otemori, Yoshihiko Yamazaki, et al, Sense of coherence (SOC) and its related factors among Japanese urban high school students-The relationship between retrospective evaluations of school lives in elementary school and junior and senior high schools, and the changing pattern of SOC during


5. Taisuke Togari, Development of the useful SOC3 scale (University of Tokyo Health Sociology version of the SOC3 scale: SOC-UTHS) for the large population survey, Discussion Paper Series University of Tokyo Institute of Social Science Panel Survey, 4, 1–11, 2008.


「Japan Hospitals No. 32」（July 2013）の原稿募集！

1. 募集内容 本誌は日本の医療や病院の実情を海外に紹介、PRするもので、看護の実態とか医療制度の問題なども含み、関連する論文や研究報告など他誌に発表されていないものとする。（国内既発表のものの翻訳で外国未発表のものは可）

2. 読者対象 国際病院連盟（IHF）のA会員（各国を代表する病院協会または政府機関）及びアジア病院連盟（AHF）の会員（同）ほか関係先。国内では大学医学部附属図書館等。

3. 原稿様式 ① A4用紙に英文でワープロ使用、メディア媒体での提出を原則とする。プリントアウト原稿と日本語の要約も添付する。
② 図、表、写真（モノクロのみ）は鮮明な原画を添付する。
③ 執筆者の顔写真1葉も添付。

4. 採択等 ① 受理した原稿の採否は下記委員会で決定する。
② 初校のみ著者校正あり。
③ 謝礼は別刷50部をもって代える。
（別途、希望される場合は投稿時に申し込む。有料にて増刷する）

5. 原稿締切 2013年3月31日

(原稿提出・問合せ先) 〒102-0075 東京都千代田区三番町9-15 日本病院会 雑誌編集委員会
Tel 03-3265-0077 Fax 03-3230-2898 E-mail: tomioka@hospital.or.jp

Japan Hospital Association is soliciting manuscripts for the next issue of Japan Hospitals (No. 32, July 2013)

1. Contents of Invitation
This journal will introduce the accomplishments of Japanese healthcare and hospitals to the rest of the world, and do public relations for them. It will include the actual situation of nursing care, problems of the healthcare system, etc., and other subjects that are not published in other journals, such as related papers and research reports. (Articles which have been published in Japan, but have not been published in translation in other countries are also acceptable.)

2. Target Readers
People related to the subject, including A members of the International Hospital Federation (IHF) (hospital associations or government agents which represent various countries) and members of the Asian Hospital Federation (AHF) (the same). In Japan, libraries of university hospitals, etc.

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5. Deadline for manuscripts
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* Limited to physicians associated with Japan Hospital Association

To submit manuscripts and make inquiries:
Journal Editors Committee, Japan Hospital Association
9-15 Sanbancho, Chiyoda-ku, Tokyo 102-0075, Japan
Tel 03-3265-0077 Fax 03-3230-2898 E-mail: tomioka@hospital.or.jp