Introduction of China Rehabilitation Research Center

China Rehabilitation Research Center (hereinafter referred to as CRRC) was established in October 28th, 1988. It is the first Comprehensive Rehabilitation Center at national level in China which was composed of Beijing BOAI Hospital, Institute of Rehabilitation Engineering, Institute of Rehabilitation Medicine, Institute of Rehabilitation Information, Faculty of Rehabilitation, and Social Service Guidance Center. CRRC covers about 278 acres, with construction area 150,000 m². There are 1300 Ward beds and more than 1600 staff members.

Beijing Boai Hospital is an upper first-class comprehensive Rehabilitation Hospital. As a national model of rehabilitation facility, it provides rehabilitation service for disability, chronic disease, senile disease and general medical service.

Institute of Rehabilitation Engineering is in the leading position in China in the development and production of training equipment for the disabled, disability aids research and development as well as prostheses, orthosis assembly. Assembled prostheses for Chinese Paralympic disabled athletes and severe amputee.

Institute of Rehabilitation Medicine is composed of three branches (neuroscience research and discovery center, medical macromolecular lab and clinical central lab). For many years, the institute has been engaged in basic and clinical research. Several hundreds of national and provincial scientific research projects had been finished successfully here.

Institute of Rehabilitation Information publishes “China Rehabilitation Theory and Practice” which is one of state-level core journal. It also is absorbed in national rehabilitation data base, net web and so on. It has been playing a great role in helping national rehabilitation information collection and rehabilitation information service.

Faculty of Rehabilitation as a national training base for rehabilitation professionals, is composed of School diploma program and further education program. Tens of thousands of talents all over the country got successful training here.

Social Service Guidance Center is a national technological resources center, and the center plays an important role in three aspects: guiding rehabilitation work, guiding community based rehabilitation and leading development of specialty.

Introduction of the Interdisciplinary Rehabilitation Team in China Rehabilitation Research Center

Since the CRRC was founded, the interdisciplinary rehabilitation team model has been set up step by step and played a decisive and important role in treatment process and rehabilitation process to patients with hemiplegia, cerebral palsy, spinal cord injury, amputation, orthopedic disease and so on.
1. **Members of the interdisciplinary rehabilitation team**

The interdisciplinary rehabilitation team of CRRC consists of a number of persons from different disciplines, which is dictated by the service needs of the patients. CRRC recently has built several professional interdisciplinary rehabilitation teams, such as spinal cord injury rehabilitation team, cerebral apoplexy rehabilitation team, cerebral palsy rehabilitation team, amputation rehabilitation team, osteoarthropathy rehabilitation team and so on. For the patients serviced for are different, so each team is a bit different from another. But the core team for most inpatients in a rehabilitation setting includes patients and their families, physiatrists, nurses, physical therapists, occupational therapists, speech therapists, psychologists, social workers and so on. Each member of the team brings their discipline specific expertise.

In this team, Physiatrists are the doctors of physical medicine and rehabilitation who are responsible for physical medicine and rehabilitation management of patient’s care. Meanwhile, they also need to lead the team and order assessment and ongoing treatment.

The primary role of Physical Therapists in team is to maximize patients function by working with the patients focusing on mobility to improve gross motor skills, and to provide modalities for pain management. The primary role of Occupational Therapists in team is to evaluate impact of illness or injury on vocation, and assist patient gain maximal function in areas of ADLs. They also need to work with therapists to develop, adapt, or improve skills required for return to work or school. Physical Therapists and Occupational Therapists often need to work together to develop strength, balance, and teaching skills needed for ADLs, and collaborate to assist patient to become functional with all components of skills.

Rehabilitation nurses’ mainly work is to coordinate and provide day-to-day patient care, educate patients and their families regarding medical and health issues as well as skills provided safe health care. Besides, they need to support and coach patients to practice newly learned skills, cue them as needed, provides feedback to therapists which includes but not limits to patient ability to follow through with skill and behavioral, or physical changes if there are cognitive, during the day that are impacting patient’s ability to consistently perform on unit.

Speech therapists are mainly in charge of evaluating and treating communication, swallowing disorders, and hearing deficits. They often communicates with team regarding patient communication needs, how to cue patient when learning an activity, impact of cognitive deficits on ability to learn and retain information, and regarding feeding and swallowing disorders and works with physicians, nurses, and dieticians about appropriate food and liquid consistencies, compensatory strategies to maintain safe swallow.

Psychologists are mainly in charge of evaluating cognition and behavior status, assisting in the adjustment to illness or disability. They are able to provide support to patient and family as they come to grips with issues related to illness or disability. Besides, they also need to work with team regarding cognitive and behavioral needs of patients, developing appropriate plans of care related to cognitive and behavioral management.

Social Workers are also important parts. They mainly focus on psychosocial support, like preparing patients and families for discharge, identifying supportive services, resources needed after discharge, and linking patients and their families to community physicians, services, home health care, long-term care facilities, and medical equipment providers.

Of course, other team members also play important roles in our interdisciplinary rehabilitation team.

2. **The discussion of the interdisciplinary rehabilitation team Models**

In the whole model, the team members work together in goal setting, treatment, decision making, and ongoing problem solving to ensure continuity of care and
a more holistic approach.

In the past 26 years, the interdisciplinary rehabilitation team model in CRRC has provided a great many combined knowledge and skills, clinical expertise. This is a team which has sensitivity, compassion, and the understanding to individuals with illness and disabilities. Each member of the team brings a unique perspective and expertise to the collective planning of the group. Meanwhile, patients and their families are an integral part of the team, so the team shares similar goals for the patients.

In CRRC, the value of the interdisciplinary rehabilitation team can be attributed to one basic fact: decisions made synergistically produce higher quality solutions than those made independently. To become an effective member of the interdisciplinary rehabilitation team, it is important to understand that not only the origins of the concept, but the variety of team models, members, and their roles and how to achieve the interdisciplinary rehabilitation team competence and success.

All members of our interdisciplinary rehabilitation team in CRRC understand their roles and responsibilities clearly. Although sometimes their roles are dictated partially by the discipline of each member, and their responsibilities for an effective interdisciplinary rehabilitation team fall on all team members. All members also value and demonstrate a collaborative approach with patients, their families, and other team members when setting goals, coordinating care, and providing education and discharge planning, which includes a number of components required to have an effectively functioning team: trust, mutual respect, communication, coordination of care, knowledge, shared responsibility, and a commitment to each other.

There are three individual philosophies of team work in CRRC that impact its role, comprehension, and communication: directive, integrative, and elective. Those who have a directive philosophy view their role as a team leader. Persons with an integrative approach are often physical therapists, occupational therapists, speech therapists, psychologists, social workers, and nurses who view their role as upholding collaboration and being a team player. Those with an elective philosophy favor brief communications and work more autonomously. Differing philosophies among team members can contribute to turf issues and negatively impact attempts to have a cohesive and collaborative team.

In interdisciplinary rehabilitation team of CRRC, communication and understanding are two key factors on thinking and functioning collaboratively, and discipline-specific language, or jargon, has been identified as a decisive factor when creating a well-functioning team. Nurses, like other disciplines, are educated within certain domains and have their own “language”; therefore, when we work with other members of the team, the unified interdisciplinary language can make the communication between members more effective and easier.

It has been found that in rehabilitation settings the interdisciplinary approach is indeed effective, and the interdisciplinary rehabilitation model in CRRC has made a great achievement, because it allows for a more holistic, collaborative, and patient-focused approach. From the time of admission to discharge the patient and team work together to establish, evaluate, and accomplish mutually agreed on goals.

The interdisciplinary rehabilitation model of our CRRC plays a very important role in the development of CRRC’s rehabilitation medicine. Because of the interdisciplinary rehabilitation model, we can treat and care for the patients from different parts of the country and the world more effectively, and comprehensively, communicate and discuss between our medical workers on therapy plan more sufficiently, and also develop very strong friendships with patients and their families.

3. Benefits and challenges of the interdisciplinary rehabilitation team models

Benefits of functioning in an effective interdisciplinary rehabilitation team include increased continuity of services, collaboration toward goal achievement, shared understanding and problem solving between professionals, valuing of team members, and greater patient, family, and staff satisfaction. Although interdisciplinary rehabilitation team offers numerous benefits to the patients and their families as well as the team members’ studies, there are still some challenges in our interdisciplinary rehabilitation model. Professional boundaries are often been questioned when making professional judgment.

We will continue and develop the interdisciplinary rehabilitation model, make the rehabilitation medicine better and better, and serve more effective and comprehensive rehabilitation services to patients.

Acknowledgements

The authors would like to appreciate Professor Eiichi Saitoh and The Japanese Association of Rehabilitation Medicine for offering the chance to introduce CRRC and The interdisciplinary rehabilitation team model in CRRC.
Rehabilitation Team Perspective in Thailand*1

Chompunut PONGAKASIRA*2

Medical Situation

Thailand is in South East Asia. Total area is 513,120 km² and the population is around 66 million. Thailand is divided into five regions and around 7,408 sub-districts. Total number of physiatrists are 475, 65% are working in government hospitals including tertiary hospitals, general hospitals, provincial hospitals, military hospitals and local hospitals (Fig. 1) and 40% located in Bangkok (Fig. 2).

Total number of physical therapists are 8,000, occupational therapists are 1,000 and not cover all sub-districts. The number of speech therapists are 150 and mostly work in rehabilitation centers. Total number of certified prosthetists and orthotists are 70 and technician prosthetists and orthotists are 140. The total number of registered nurses are 81,245 and rehabilitation nurses are 101. Total number and ratio to population are showed in Table 1. Nutritionists, psychologists and social workers are only in tertiary and general hospital hospitals. There are only 14 hospitals that have rehabilitation wards.

Rehabilitation Outcome

The royal college of physiatrists of Thailand performed a study of 2,145 patients admitted in the rehabilitation wards of 14 hospitals (345 beds) in Thailand during January to December 2012. There were 1,170 patients (54.5%) whose goals were intensive rehabilitation program. The number of stroke, spinal cord injury (SCI) and traumatic brain injury (TBI) were 813 (37.9%), 879 (41.0%) and 120 (5.6%) patients; and the ratio of those who admitted for intensive rehabilitation

Fig. 1 Physiatrist divided in facility.

Fig. 2 Physiatrist divided in region.

Received August 29, 2014

*1 This article is based on the Asian symposium “Rehabilitation team perspective in Asia” at the 51st Annual Meeting of the Japanese Association of Rehabilitation Medicine in Nagoya on June 6, 2014

*2 Sirindhorn National Medical Rehabilitation Centre, 88/26 Tiwanon road, Taladkwon Muang Nonthaburi, Thailand 11000

E-mail: ningcpn@yahoo.com
program were 79.5%, 35.9% and 77.8%, respectively.

Barthel Index score improvement divided by length of stay (LOS) was used to identify the efficiency of rehabilitation service.

According to diagnosis, stroke patients were the most efficient among various diagnoses (0.23 ± 0.31). If considering goal of rehabilitation, patients who were admitted for intensive rehabilitation were the most efficient (0.23 ± 0.32). In case of consideration only intensive rehabilitation group, stroke, SCI, or TBI had similar efficient scores per day (0.24 ± 0.30, 0.21 ± 0.31, 0.22 ± 0.31 respectively).

Therefore, the goal of intensive rehabilitation is the important factor that affects the efficiency of rehabilitation service. The average length of stay for intensive rehabilitation goal was 28.4 days.

Most of patients (99.3%) satisfied with the treatment (score ≥4 from 5). The Quality of Life score, using EQ 5D Thai version, increased after rehabilitation in most of subjects (60.2%).

The top most complications were urinary tract infection (11.8%), muscle and joint pain (6.2%), neuropathic pain (3.5%), severe muscle spasm (1.8%), and pressure ulcer (1.2%).

### National Rehabilitation Centre

Sirindhorn National Medical Rehabilitation Centre (SNMRC) works for individual improvement and medical rehabilitation system including technical support for hospitals, policy advocacy for ministry. Name of the centre was given by Her Royal Highness Princess Maha Chakri Sirindhorn in year 1991. It was established with cooperation between Sajaithai foundation and the National Rehabilitation Centre for the Disabled, Japan.

SNMRC is a technical division of the Department of Medical Services, Ministry of Public Health. At the beginning, the centre mainly provided technical support. Now SNMRC has many roles in disability care and main roles are:

1. Providing medical rehabilitation to people with disabilities and patients according to the Rehabilitation for People with Disabilities Act.
2. Conducting research and development in medical rehabilitation as well as transferring knowledge and technology to health personnel.
3. Working with and supporting other sectors in relation to medical rehabilitation.
4. Providing technical support in medical rehabilitation field to health personnel and local health service providers.
5. Enhancing knowledge and skills in medical rehabilitation to health personnel and local health service providers.

Authorities of SNMRC are:

1. Coordinating policies and plans in medical rehabilitation for patients and people with disabilities.
2. Conducting research, studies, model development, project evaluation, and application of knowledge and technology in medical rehabilitation.
3. Promoting and supporting for knowledge transfer to health personnel.
4. Developing service systems in medical rehabilitation as well as networking with other health services in all levels.
5. Enhancing knowledge and skills in medical rehabilitation among health personnel.
6. Working in partnership with other organizations in both national and international levels.

Since 22 January 2010, SNMRC has been designated as WHO collaborating center in medical rehabilitation and Prosthetic and Orthotic training. The responsibilities and activities include:

1. Developing personnel in medical rehabilitation field.
2. Developing research studies on prosthetics and orthotics and community base rehabilitation.
3. Supporting the development of community base rehabilitation programs.
4. Coordinating and networking on prosthetics and orthotics and community base rehabilitation.

SNMRC has collaboration not only healthcare centers but also education and technology institutes in both national and international centers. SNMRC has Memorandum of Understanding (MOU) with:

1. Niigata University of Health and Welfare, Japan for building capacity of SNMRC staff on the application of three-dimension analysis in rehabilitation.
3. College of Music, Mahidol University, and Kansas University, USA for music therapy.
4. Faculty of Nursing, Mahidol University for Education.

Development Plan

Due to the limited number of expertise, Thailand should develop community base rehabilitation to cover all aspects of rehabilitation in all area and has more networks both national and international. Most hospitals focus on acute care and decrease LOS and there are only 14 hospitals (245 beds) that have rehabilitation ward.

Ministry of Public Health has been developing rehabilitation ward in district region so that after patients especially stroke patients are discharged from acute care unit they can continue rehabilitation program. Until now there is only one model of rehabilitation ward in district area but show good outcome and have high satisfaction. In the future, rehabilitation ward might be in district area rather than in general hospitals.

Community base rehabilitation is an effective program for people with disability. SNMRC has been trying to facilitate this program to districts and sub-districts by launching CBR-guideline and facilitating workshops in many regions. The important issue is community should run this program by themselves that rehabilitation team in provincial level should be supporters.

Thailand should develop more networks both national and international and promote CBR to cover all aspects and area of the country. Ministry of Public health should facilitate more rehabilitation wards to improve rehabilitation outcome and quality of life.
A rehabilitation team is organized to achieve the patient’s maximum potential. Most patients referred to the rehabilitation department are disabled, and the team seeks the best way to return to the society. The rehabilitation team requires knowledge and skills of each member as a specialist, adequately determined rehabilitation goals and strategies, and cooperation of team members. Good teamwork should be pursued everywhere. However, there are problems that interfere with the development of teamwork. In this article, I am going to mention about the situation surrounding medical rehabilitation in Japan.

Situation Surrounding Medical Rehabilitation in Japan

1. Medical insurance system in Japan
Japan has a compulsory insurance system, i.e., social insurance and national health insurance. Most people have one of these health insurances. The unit price of medical expenses is decided by the government. The government not only determines the unit price but also decides the upper limit amount of exercise covered by insurance and authorizes facilities for medical rehabilitation. Insured persons pay a predetermined rate of the medical fee (approximately 10–30%). However, the national health insurance produces deficits every year. The deficit is virtually made up by the government. In addition, many social insurance groups supported by companies have quit due to their financial difficulties.

2. Change of population composition in Japan
Japan has approximately 120,000,000 people but the population has already reached its peak. After that, the population has been decreasing because of a low birth rate. In 2000, the population over 64 years was 17.4%. By 2020 and 2030, it is estimated to be 29.1% and 31.6%, respectively (Fig. 1). The increase in the number of aged people and decrease in the number of working age people will cause serious problems in the near future.

For this situation, the Japanese government made and executed a plan. The government made some changes to the hospital system. It classified hospitals into acute care, recovery phase rehabilitation, and long-term care and established the Kaifukuki rehabilitation ward system for intensive recovery phase rehabilitation in 2000. Kaifukuki rehabilitation wards have to satisfy a predetermined standard of facilities. In 2013, we had...
68,316 beds in 1,547 Kaifukuki rehabilitation wards, i.e., 57 beds per 100,000 people (Fig. 2).

At the same time, the government established another insurance system, named the long-term care insurance system. It was separated from medical care insurances. All people aged 40 or more have to pay a long-term care insurance premium.

We need many health care professionals for this system. The government promoted the establishment of training schools and planned an increase in the number of therapists.

3. Rehabilitation professionals in Japan

The government established the standard for the Kaifukuki rehabilitation ward including constitution member, necessary area of ward, and so on. But a physiatrist is not necessarily required for the standard for Kaifukuki rehabilitation ward. The patients who can admit to the Kaifukuki rehabilitation ward are assigned to the conditions about a diagnosis, the days from the onset. In addition, the upper limit of the length of stay is determined.

Of course, not all medical rehabilitation is provided by Kaifukuki rehabilitation wards. There are other types of specialized rehabilitation hospitals; medical rehabilitation also takes place in acute hospitals and long-term care facilities.

The number of registered physical therapists is increasing at an accelerated pace. This is because new training schools for physical therapy are established almost every year; therefore, recent graduates of physical therapy school keep increasing. In 2012, the number of physical therapists reached 100,000, and in the next year, over 10,000 new therapists were added (Fig. 3).

On the other hand, the number of board-certified physiatrists is not increasing much because the supply of new medical doctors has not changed. The number of physiatrists is approximately 2,000 (Fig. 4). Moreover, physiatrists are not necessarily working at Kaifukuki rehabilitation wards. According to a survey of physiatrists’ workplace, only 14% of the board-certified physiatrists were working at recovery phase rehabilitation hospitals.

In 2012, we had 100,000 physical therapists, 60,000 occupational therapists, 20,000 speech therapists, and 4,000 prosthetists and orthotists (PO) in Japan. However, we had only 4,000 certified members of physical medicine, including 1,854 board-certified physiatrists. The number of physiatrists seems to be too small to support the new system.

Rehabilitation Teamwork in Japan

Every team should have a team leader who can hold his or her team together and extract the best out of team members. In other words, leadership should be shown.

A rehabilitation team is a team of specialists that can show good teamwork if members raise awareness and take action. A good rehabilitation team requires 1) knowledge and skills of members, 2) goals and strategies, and 3) cooperation of members. For improvement
Rehabilitation Teamwork in Japan

of teamwork, knowledge and skills of members are important. Each team member should improve skills as a specialist. For the most part, each professional learns by themselves or from a person in the same profession at the same workplace. Most professionals take part in academic societies that are focused on a certain occupational category, for example, rehabilitation medicine, physical therapy, occupational therapy, speech therapy, PO, and rehabilitation nursing. In addition, there are some multidisciplinary societies based on a certain theme, such as dysphagia rehabilitation or respiratory care and rehabilitation.

It is written in every Japanese rehabilitation medicine textbook that the role of a physiatrist is to work as a leader of the rehabilitation team. Therefore, a physiatrist should be a leader. However, the number of physiatrists is far from enough; therefore, there are many rehabilitation teams without a physiatrist as a member or physiatrists are too busy to be involved in the team approach. What happens in this situation? The team members just do their own work at their own section, which leads to low-level teamwork. In these cases, the rehabilitation team does not function well. In some cases, there is someone other than a physiatrist who shows leadership. The leader may be a medical doctor other than a physiatrist or an experienced nurse, a therapist, or a medical social worker.

Within the rehabilitation team, a great deal of information about cases should be shared and exchanged. It is often very time consuming. A good system leads to efficient communication. For example, an electronic medical chart system was adopted in many hospitals in Japan. It helps save time when accessing a chart. On the other hand, a note or a memo is sometimes effective. Moreover, face-to-face communication is extremely important. Spatial proximity enhances communication. The number of small training rooms installed in a ward or a main gym placed next to a rehabilitation ward has recently increased. Small ingenuities sometimes improve the quality of teamwork. The Japanese word “Kaizen” means to incorporate the wisdom of a worker in a quality control strategy. Wisdom of the system users may produce new idea about better system.

Japan’s Problem

The Japanese government is facing a serious financial problem. The government debt has reached 10 trillion yen, and the Japanese gross domestic product (GDP) is the third largest amount in the world following the United States and China. The government debt per GDP is over 200% (Fig. 5).

As I previously mentioned, the Japanese government established a long-term care insurance system in 2000. Insured persons have to be screened to receive benefits, and the number of certified insured persons who are allowed to receive long-term care benefits is increasing. In 2013, it approached 6 million people (Fig. 6). The insurance premium of the long-term care insurance is revised every 3 years. Anyone over 40 years must pay the insurance premium, and the premium is going up by 1.5 times from when it was started.

The rehabilitation medical practice field should
broaden to account for the aging population. Until when will the government pay the expense?

**Summary**

I reviewed the present condition of medical rehabilitation and surrounding circumstances in Japan. Japan is under pressure to cope with a low birth rate and aging society. Some modifications have been added to medical and welfare system in Japan, however, the lack of physiatrists is a problem in medical rehabilitation along with financial problems of the Japanese government.