

International Medical Cooperation for the Radiation Exposed Population (*Hibakusha*) in Semipalatinsk, Kazakhstan: A Challenge from Hiroshima, the City of the World's First Atomic Bombing

Noriyuki KAWANO

Research Associate, Research Institute for Radiation Biology and Medicine,
Hiroshima University, 1-2-3 Kasumi, Minami-ku,
Hiroshima 734-8553, Japan
E-mail: nkawano@hiroshima-u.ac.jp

Yasuyuki TAOOKA

Research Associate, Research Institute for Radiation Biology and Medicine,
Hiroshima University

Nobuo TAKEICHI

Director, Takeichi Hiroshima Thyroid Medical Clinic

Chieko KOBATAKE

Head Official, Hiroshima Semipalatinsk Project

Yoshihiro NOSO

Chief Director of Department of Surgery, Saiseikai Hiroshima Hospital

Masaharu HOSHI

Professor, Research Institute for Radiation Biology and Medicine,
Hiroshima University

International Medical Cooperation for *Hibakusha* in Semipalatinsk, Kazakhstan

Abstract

The main objective of this report is to describe the activities of a non-governmental organization (NGO), the Hiroshima Semipalatinsk Project (hereafter the Hiro-Semi Project or the Project), that supports medical aid to those who were exposed to radiation from the nuclear bomb tests in Kazakhstan. The Project has carried out medical cooperation activities five times and dispatched medical missions of doctors, nurses, and medical technicians four times. In this report, we attempt to show the purpose of the

foundation of the Hiro-Semi Project. In addition, we show the final goal of the Project. We also report on the medical activities of the Hiro-Semi Project and touch upon the medical items provided by the Hiro-Semi Project and the medical examinations from the medical missions sent by the Project. As is generally known, medical cooperation is an important part of international cooperation. For example, the activities of *Medecins Sans Frontieres Japon* and *The Association of Medical Doctors of Asia* are well known. It is possible for those who are not medical doctors to conduct medical cooperation. In fact, the Hiro-Semi Project plans and conducts medical aid and dispatches medical missions. The most important matter is to establish a strong cooperative relationship with specialists or experts in that field. The Hiro-Semi Project endeavors to establish such a relationship. As people concerned with international cooperation, we should pay more attention to the activities of medical cooperation done by grass roots movements, keeping in mind that there are many approaches to international cooperation. This report will outline one approach and one possibility of international cooperation.

1. Introduction

The Hiroshima Semipalatinsk Project is an NGO founded on September 7, 1998 with 120 full members including an honorary president and several advisors⁽¹⁾. The expenditure of the Hiro-Semi Project is covered mainly by membership fees, donations, and grants. The main financial sources are an allocation by Postal Savings for International Voluntary Aid, a grant from the Tayama Houonkai Foundation and contributions from the readers of a quarterly magazine, *Tuhan Seikatsu*. The budget for this year (April 1, 2002 - March 31, 2003) is approximately 8,200,000 yen. The Hiro-Semi Project has three main components: medical support toward *Hibakusha* in Semipalatinsk, acceptance of two students from Kazakhstan, and a study tour to Semipalatinsk⁽²⁾. In this report we will focus exclusively upon the medical treatment activities for Semipalatinsk. We will discuss the other two components as well as the activities of Kazakhstan side in response to the Hiro-Semi Project at another opportunity.

Why did the Hiro-Semi Project approach Semipalatinsk and offer aid to the residents in Semipalatinsk, Kazakhstan? In this section, we will discuss how the Hiro-Semi Project met and came to be familiar with Semipalatinsk, also outlining the reason why the Project was founded. In the next section we will outline the past and present medical cooperation activities of the Hiro-Semi Project. The Project has been to Semipalatinsk to provide medicine five times and sent medical missions four times. This paper concludes with a summary of the past medical cooperation conducted by the Hiro-Semi Project, the future prospects and the final goal of the Hiro-Semi Project.

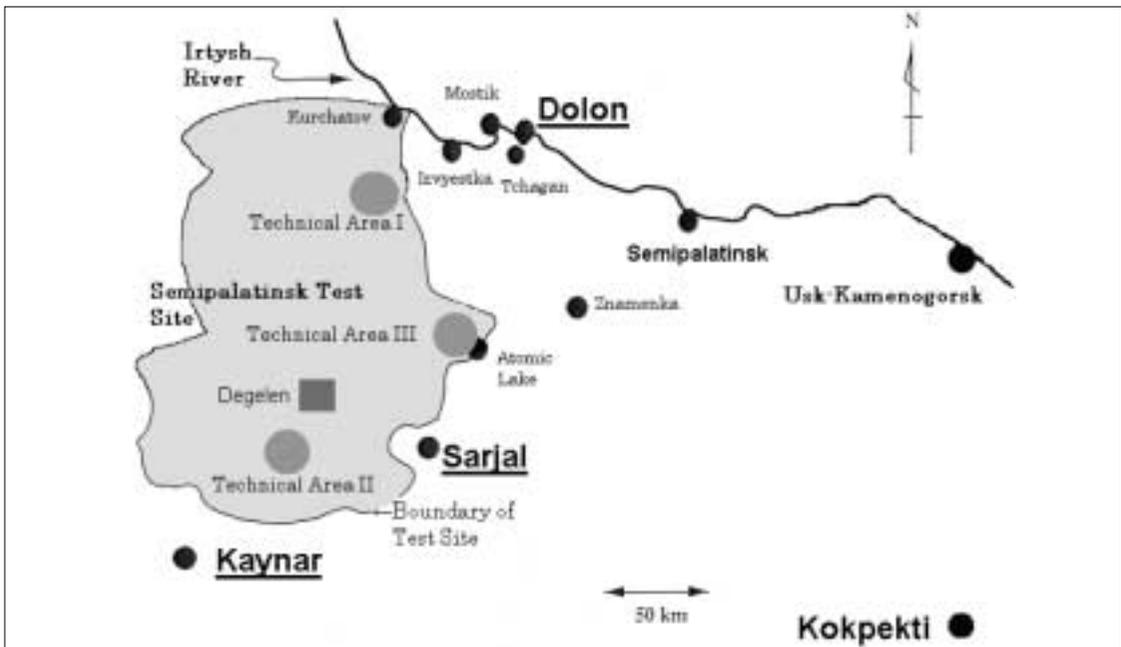
Before we move onto the next section, a brief outline of the Republic of Kazakhstan and the Semipalatinsk (Nuclear) Test Site will be in order.

The Republic of Kazakhstan is a new country that became independent of the former Soviet Union in 1991. It is located in Central Asia, deep in the Eurasian continent as is shown in **Map 1**. According to the official website of the Kazakhstan Government (<http://www.president.kz/> <as of 2002/09/03>), it covers an area of 2,724,900 square kilometers. It is the second largest among the Soviet successor states and is approximately seven times the size of Japan. It borders Russia to the north and is surrounded by many countries (see **Map 1**). It has a population of approximately 15,000,000, consisting of mainly Kazakhs (53% of all residents) and Russians (30%).

The Semipalatinsk (Nuclear) Test Site (STS) (see **Map.2**) is located in the present East-Kazakhstan oblast in Kazakhstan and covers an area of 18,500 km². The test site was named after the city of



Map 1. Republic of Kazakhstan and the Surrounding Nations



Map 2. Semipalatinsk (Nuclear) Test Site and the Surrounding Villages

Semipalatinsk, which is located approximately 150 km east of the test site. The STS was a major site for testing nuclear weapons used by the former USSR, and the USSR's first test was conducted there on August 29, 1949. During the following 40 years, 456 nuclear explosions were carried out, including 111 atmospheric explosions between 1949 and 1963 (Grosche 2002: 53)⁽³⁾. As a result, it is estimated that there are approximately 500 thousand residents who were exposed to radiation from nuclear bomb tests at STS. And some researchers have pointed out very high radiation doses in Semipalatinsk area and the neighboring villages such as Sarjal, Kaynar and Dolon⁽⁴⁾. Those villages are shown on **Map 2**.

2. Approaching Semipalatinsk - the purpose of the foundation of the Hiro-Semi Project

The impetus for the founding of the Hiro-Semi Project dates back to the occasion of the 12th Asian Games Hiroshima in 1994. The former mayor Takashi Hiraoka, who is an Honorary President of the Hiro-Semi Project, proposed and promoted the “One Community Hall, One Country / Region Support Project” campaign. The main aim of the project was to promote mutual understanding among Asian countries and regions by the community centers in Hiroshima city, each supporting one country or region that joined the Asian Games. In this project, Suzugamine Community Center supported the Republic of Kazakhstan. The main members at that time became the core members of the Hiro-Semi Project when it was founded in 1998. On September 7, 1998, the Hiro-Semi Project started their activities with Suemitsu Shimozaki as Project Director, Chieko Kobatake as Head Official, and 12 other Directors.

Although it was by sheer chance that Suzugamine Community Center met and supported Kazakhs, there is an important reason why the members of the Community Center founded the Hiro-Semi Project: the Republic of Kazakhstan has the former Soviet Union's well-known nuclear test site, STS. Hiroshima and Kazakhstan share a similar history as victims of atomic bombs. The Hiro-Semi Project expresses its goal in their leaflet:

“the people of Semipalatinsk, like the people of Hiroshima, are victims of nuclear weapons. Defying the lessons to be learned from what happened in Hiroshima and Nagasaki, the nuclear powers conducted a series of nuclear tests, producing many victims and damaging the environment. We can not ignore these facts. To bring the long-concealed suffering of the victims to light is to denounce the cruelty and the inhumane nature of nuclear weapons. Such action is also the first step towards the total elimination of those weapons. Unfortunately, it is impossible for the people of Hiroshima to reach out to every one of the suffering victims all over the world. Therefore, we have decided to focus on the victims in Semipalatinsk and to launch a grass-roots campaign to assist and support them. Through this campaign, we are making our utmost effort to work toward the realization of a 21st century free of nuclear weapons, and the people of both Hiroshima and Semipalatinsk are reconfirming the preciousness of peace”.

After the 12th Asian Games, the prospective core members of the Suzugamine Community Center retained their interest in Semipalatinsk and continued to study what happened there. As a result, 12 members visited Semipalatinsk between July 24 and August 2, 1997, to gain first-hand knowledge of *Hibakusha* in Kazakhstan.

3. Medical cooperation for *Hibakusha* in Kazakhstan

In this section, we will give an outline of the medical cooperation carried out by the Hiro-Semi

Project. The Hiro-Semi Project started medical cooperation from 1998, the very year that it was established. The Hiro-Semi Project conducts two different types of medical cooperation. One is to provide medical items such as medicine and medical instruments and the other is to dispatch medical missions with medical doctors.

3.1. Material help such as medicine

The Hiro-Semi Project members / missions have been to Semipalatinsk to provide material help five times since the establishment of the Project. The first visit was between August 24 and September 2, 1999, the Project providing a vehicle for medical examination (see **Picture 1**). So far, the project has provided a considerable amount of medicine and medical instruments to the Ministry of Health, a research institute in Semipalatinsk and many hospitals in the city of Semipalatinsk and the neighboring villages (see also **Pictures 2** and **3**). The total amount of medical cooperation is more than 20 million yen. The details of material help provided are given in **Table 1**. The contents of the drugs are against common diseases. For example, they are for hypertension, ischemic heart disease, cerebral vascular diseases, infectious disease, and iron deficiency anemia.

The Hiro-Semi Project holds discussions with specialists in Kazakhstan regarding the required medicines and medical instruments, attempting to respond to the needs of the local people. The result is items listed in **Table 1**. The amount given is considerable; for example, in the most recent visit of July 16 - July 23, 2002, the Hiro-Semi Project provided material help of approximately 3,400,000 yen. More concretely, the Project gave medicine worth \$ 1,000 each to three villages of Sarjal, Kaynar and Kokpekti, and also provided medicine worth \$ 7,000 to the Kazakh Scientific Research Institute of Radiology and Ecology (although this figure includes \$ 2,000 for Kara-Aul village). The medicine provided by Hiro-Semi is sufficient to cover all the villages' needs for a year.



Picture 1. A Vehicle for Medical Examination Provided by the Hiro-Semi Project



Picture 2. Material Help (medicine) worth \$ 1,000 for Sarjal Village in July, 2002



Picture 3. The Hiro-Semi Project Provided Medicines worth \$ 5000 to Kazakh Scientific Research Institute of Radiology and Ecology in July, 2002

Table 1. Medical Assistance Provided by the Hiro-Semi Project

| The first visit: August 24 - September 2, 1999 | | |
|---|-------------|---|
| Item | Sum | |
| Medical examination vehicle | \$ 23,000 | Procured in Kazakhstan |
| Vitamin pills, anemia treatment drugs | \$ 6,000 | Procured in Kazakhstan |
| Feces test supplies | ¥ 75,644 | |
| The second visit: October 5 - October 13, 1999 | | |
| Donation for purchase of emergency room medical supplies | \$ 4,000 | Procured in Kazakhstan |
| Vitamin pills, anemia treatment drugs | \$ 5,500 | Procured in Kazakhstan |
| Computer | \$ 1,500 | Procured in Kazakhstan |
| Freezer for medical test, centrifuge for urine tests, microscopes, surgical equipment | ¥ 1,153,950 | |
| Ultrasonic-wave diagnostic equipment | ¥ 3,000,000 | Contributed by Cataloghouse |
| The third visit: July 31- August 22, 2000 | | |
| Donation for purchase of medicine | \$ 4,000 | Procured in Kazakhstan |
| Microscopes, surgical instruments, blood pressure gauge, and other medical equipment | ¥ 2,174,000 | Allocated by Postal Savings for International Voluntary Aid |
| Ultrasonic-wave diagnostic equipment | ¥ 2,300,000 | Contributed by Cataloghouse |
| The forth visit: August 8 - August 16, 2001 | | |
| Ultrasonic-wave diagnostic equipment | ¥ 2,400,000 | Contributed by Cataloghouse |
| Medicines, refrigerator for storing medicine | \$ 4,000 | Procured in Kazakhstan |
| Thermometers, blood pressure gauges | | Contributed by OMRON |
| Magazines concerning the Hiroshima A-bomb | ¥ 150,000 | |
| The fifth visit: July 16 - July 23, 2002 | | |
| Medicine | \$ 10,000 | Procured in Kazakhstan |
| Repairs to the car contributed by the Hiro-Semi Project | \$ 2,000 | Paid for in Kazakhstan |
| Echo Probe, surgical instruments, other medical equipment | ¥1,980,000 | |

3.2. Medical missions dispatched by the Hiro-Semi Project

The Hiro-Semi Project not only gives material help but also sends medical missions, including medical doctors, medical technicians and nurses. The Project started to dispatch medical missions from its second visit (October 5 - October 13, 1999). The members of the mission mainly consisted of medical

doctors from the Research Institute for Radiation Biology and Medicine of Hiroshima University (RIRBM), Nobuo Takeichi, director of Takeichi Hiroshima Thyroid Medical Clinic, and other medical staff. Dr. Takeichi, an endocrinological surgeon and specialist in thyroidal diseases, has been the team leader of the medical mission. The RIRBM has assumed an important role as a coordinator of the medical missions conducted by the Hiro-Semi Project since the second visit. This is because the researchers led by Prof. Masaharu Hoshi of the RIRBM have experience doing research on the effects of radiation on residents near STS since 1995⁽⁶⁾. The RIRBM has a strong network with research institutes in Semipalatinsk⁽⁶⁾. In addition to this, it has carried out medical care for survivors of atomic bomb radiation and has accumulated considerable medical knowledge regarding *Hibakusha*.

There have been four medical missions since the Hiro-Semi Project dispatched the first medical mission in October 1999. All the missions were lead by Nobuo Takeichi and were made up of other physicians from RIRBM as well as nurses and medical technicians of the Takeichi Hiroshima Thyroid Medical Clinic. Masaharu Hoshi, professor of the RIRBM, and Chieko Kobateke, Head Official of the Hiro-Semi Project, have accompanied the missions as general coordinators. The missions have also accepted financial support such as traveling expenses from the Hiroshima International Council for Health Care of the Radiation-exposed (HICARE)⁽⁷⁾. The medical mission visited the city of Semipalatinsk and the neighboring villages such as Sarjal, Kaynar and Dolon where some researchers have pointed out very high radiation doses.

The medical missions provided technical instruction on medical examinations, especially medical checks of the thyroid gland. The thyroid gland is well known for being sensitive to radiation, and the relationship between the Atomic bomb survivors in Hiroshima and Nagasaki and the high prevalence rate of thyroid cancer or hypothyroidism is also well known. Although it is so far still unclear whether victims of nuclear tests in Semipalatinsk have the similar relationship or not, the missions have suggested that it might be possible. Thyroid cancer is a rare but fatal disease, and the only way to cure it is surgical removal of cancer tissues at a very early stage. To detect cancer patients at an early stage, ultrasound tests and ultrasound coupled-aspiration biopsies are very useful. Unfortunately, in Kazakhstan, however, these devices and health screening are not widely available because of economic constraints. For these reasons, the medical missions have focused upon the medical examination of the thyroid gland. 500 patients have been examined during the four medical missions.

As an illustration, we will outline the activities of the medical mission that examined the greatest number of patients, conducted in August 2001. 211 patients were given a physical examination, a blood examination (thyroid hormonal function tests), urine tests (iodine concentration) and an ultrasound test as the primary screening. **Pictures 4 and 5** show the scenes of the medical examination. Patients detected as having struma or thyroid nodules were given an aspiration biopsy at a secondary screening in order to show the pathological findings of struma, or to rule out the possibility of thyroid cancer.

The 211 patients examined were 57.3 years old on the average (57 males, 154 females) in Dolon, Sarjal, Kaynar, and Kokpekti villages. Pathological diagnosis was done by an aspiration biopsy on 62 patients and, surprisingly, 3 cancer patients (1.42 %) were found. According to the database of National Cancer Institute (<http://www.cancer.gov/> <as of 2002/09/26>), incidence rates for thyroid cancer in Japanese male is only 1.6 per 100 thousand. The results were reported to the doctors working in Semipalatinsk so that these patients could receive appropriate treatment. Through their activities, the medical mission was able to introduce a medical examination system for thyroid cancer screening to the people and doctors of Semipalatinsk. Although some patients felt nervous when a needle was inserted



Picture 4. Blood Examination in Kaynar Village



Picture 5. Dr. Takeichi engaging in Medical Checks of the Thyroid Gland in Sarjal Village and an Ultrasoundgraphy provided by the Hiro-Semi Project

into their neck to take samples for a pathological test, showing them a figure of a thyroid and needle on the ultrasound monitor may have lessened this fear.

Although there is no accurate statistical data of thyroid cancer prevalence in Semipalatinsk and Kazakhstan, the prevalence could be said to be higher than in places not exposed to radiation. The ultrasound devices were donated to the hospital in Kaynar village after the examinations were completed, enabling the people in Semipalatinsk to detect the early stages of thyroid cancer. The relationship between the radiation dose and thyroid function, the thyroid hormonal function and iodine uptake defect, and the difference between the results from Semipalatinsk and those of survivors in Hiroshima are still under consideration.

The Hiro-Semi Project has provided material help and dispatched medical missions. As a result, these two medical projects needed much funding. However, these two medical projects themselves are not the final goal of the Hiro-Semi Project. The final goal is to establish an appropriate medical system after cancer patients are diagnosed. For this purpose, first, the Hiro-Semi Project helps to improve the level of medical care in Kazakhstan by giving technical instruction on medical examinations and teaching medical techniques. The medical missions conduct medical examinations with doctors in the villages and with researchers or doctors in the research institutes of Semipalatinsk. The medical missions give technical instruction on medical examination including medical checks of the thyroid gland and image diagnosis and teach medical research techniques such as “how to take blood samples,” “conduct centrifugal separation of blood and culture samples” (<http://www.hiroshima-cdas.or.jp/HICARE/>).

4. Conclusion

We surveyed the medical cooperation carried out by the Hiroshima Semipalatinsk Project, an NGO group in Hiroshima. Although the Project has carried out other activities, the focus of this paper was on the Project's medical cooperation activities. The Hiro-Semi Project has provided material help such as medicine and dispatched medical missions to carry out medical examinations on the radiation-exposed population in Kazakhstan. The Hiro-Semi Project has provided financial aid amounting to more than 20 million yen and has sent four medical missions. More than 500 patients were examined, detecting some cancer patients.

It is estimated that approximately 500,000 people were exposed to radiation, making many anxious of their health. However, there are not enough medicines and medical instruments in the villages around STS and, even worse, most people do not have enough money to see a doctor. For these reasons, many come to the medical mission to consult a doctor, who helps to reduce their concerns.

It can be said that Hiro-Semi Project is an ideal NGO. It has established a strong cooperative relationship with public organizations such as the RIRBM of Hiroshima University, HICARE. In addition, it has a strong relationship with medical institutes and administrative organs in Kazakhstan, especially in the Semipalatinsk region. Hiroshima city was the first city to be bombed with atomic weapons. Over 50 years since the atomic bombing, physicians and researchers in Hiroshima have continued medical treatment of atomic bomb survivors and research into the effects of radiation. The Hiro-Semi Project was founded in Hiroshima, the city of the world's first atomic bombing and, by establishing good relations with the relevant institutions, makes good use of the accumulation of research and medical treatment concerning *Hibakusha* in Hiroshima and Nagasaki.

The Hiro-Semi Project has often run into difficulties in their medical activities. The radiation exposed

population in Kazakhstan has sometimes regarded the medical activities of the Hiro-Semi Project as intended for the research purpose only. This is because the activities of the Hiro-Semi Project have been carried out by the researchers and medical doctors of Hiroshima University. The residents in Kazakhstan cast doubt upon whether the medical activities would benefit *Hibakusha* themselves or not. The Hiro-Semi Project should solve this kind of misunderstanding in order to carry out its medical activities smoothly. For this purpose, the Project and its participants have always explained that the basic medical research helps to explore an etiology of diseases of *Hibakusha*. In addition, they are trying to establish a relationship of mutual trust between the Hiro-Semi Project and the research institutes, the administrative organs, and the residents in Kazakhstan.

The Hiro-Semi Project has the final goal to establish a system of medical treatment. For example, the medical mission found 3 cancer patients and the results were reported to the doctors in Semipalatinsk. But the Hiro-Semi Project did not check the health condition of the 3 patients after that. The Hiro-Semi Project should monitor these patients and investigate whether these patients can receive appropriate treatment or not. As a precondition of the monitoring, to improve the level of medical care in Kazakhstan is thus necessary: therefore, the Hiro-Semi Project gives technical instruction on medical examinations and teaches medical techniques. Establishing a medical system for detecting cancer patients and improving the medical level in Kazakhstan are the next and final goals of the Hiro-Semi Project. To promote talent for self-help effort is indispensable to international cooperation.

Acknowledgements

We would like to thank Mr. Christopher Moore, Mr. Maxym Alexandrov, and an anonymous referee for improving our English. We would also like to thank Dr. Apsalikov Kazbek, Dr. Zhumadilov Zhaxybay, and the other collaborators for their kind cooperation.

Notes

- (1) The honorary president is Takashi Hiraoka, the former mayor of Hiroshima city, and the advisors are staff of the Research Institute for Radiation Biology and Medicine of Hiroshima University and the Radiation Effects Research Foundation.
- (2) See their website (<http://hiroshima.cool.ne.jp/kazakhstan/> <as of September 10, 2002>) for more information.
- (3) See *The Ministry of the Russian Federation for Atomic Energy and The Ministry of Defense of the Russian Federation* for more details on nuclear tests conducted by the former Soviet Union.
- (4) For example, see Gordeev. K. I (61-67).
- (5) See the RIRBM (368-372).
- (6) As of September 10, 2002, Hiroshima University has made agreements with the following institutes: Regional Oncological Dispensary of Semipalatinsk City, Pathology Bureau of Semipalatinsk City, Semipalatinsk Medical Academy, Semipalatinsk Emergency Hospital and the Kazakh Scientific Research Institute of Radiology and Ecology.
- (7) See the HICARE's website for their activities. The address is: <http://www.hiroshima-cdas.or.jp/HICARE/indexe.html> (as of September 10, 2002.)

References

- Gordeev. K.I., et al. (2002), "Fallout from nuclear tests: dosimetry in Kazakhstan," *Radiation and Environmental Biophysics* 41, 61-67
- Grosche, B (2002), "Semipalatinsk test site: Introduction," *Radiation and Environmental Biophysics* 41, 53-55
- Research Institute for Radiation Biology and Medicine (2001), *Proceedings of the Research Institute for Radiation Biology and Medicine, Hiroshima University 2001*, RIRBM of Hiroshima University
- The Ministry of the Russian Federation for Atomic Energy, The Ministry of Defense of the Russian Federation (eds.) (1996), *USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions 1949 through 1990*, Russian Federal Nuclear Center- VNIIEF