Program Orientation

Overview of Workshop on Improving Maternal Health

(Including Remote Medical Care for Maternal and Child Health)

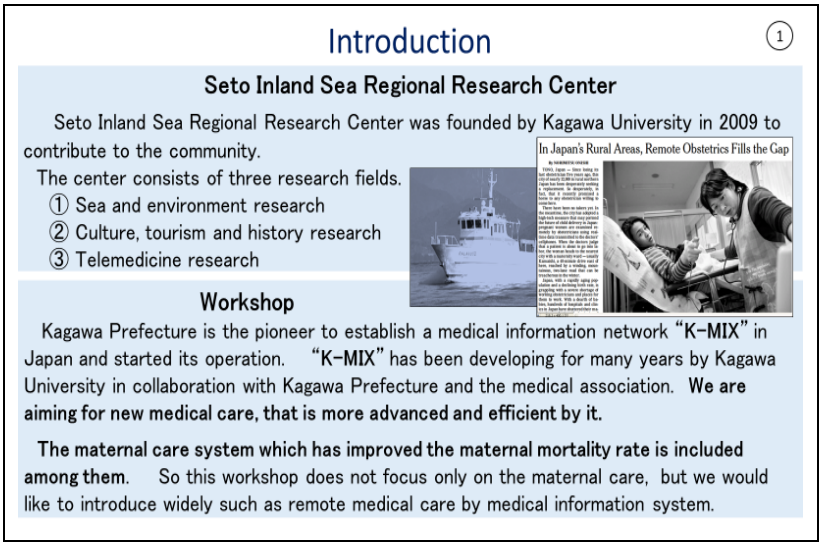
Seto Inland Sea Regional Research Center
Coordinator　Tetsuo Ueno

First of all, I would like to give you a little information, about Kagawa Prefecture. Located in the south west of Japan, Kagawa Prefecture looks out, over the beautiful Seto Inland Sea, which is a rich fishing ground and has delicious seafood.　There are many islands in the Seto Inland Sea made beautiful view.　You can see the deep blue sea against the backdrop of the bright blue sky as well as white sandy beaches with vividly fresh green trees in the background.　Because of its beauty, the Seto Inland Sea is the first national park to be designated in Japan.　We plan to show you, some of the beauty of Seto, when we take you for a cruise on our research center's ship.

I would like to introduce briefly about our Research Center. The center was founded by Kagawa University 10 years ago with the aim of contribution to the local community.

The center covers three research fields:

(1) Marine and environmental research



(2) Culture, tourism and history research
(3) Telemedicine research

(1) The first, I will brief explain about our marine and environmental research.

The Seto Inland Sea had been suffering from a variety of problems such as red tides affecting the aquaculture fishery industry along with past industrialization and urbanization.

By putting a great deal of effort into improving the environment, we have regained beautiful landscape and good water quality. However, as the fishery has not yet fully recovered, therefore our center is researching recovery ways in cooperation with the local community.

Given this, our center built a marine station on the coast and has two research ships. For this workshop, we plan to travel to the island on one of these ships.

(2) Next, I will briefly explain about our culture, tourism and history research.

Recently, many tourists from all over Japan and the rest of the world are visiting the area to enjoy the beauty of Seto.

At present, the islands of the Seto Inland Sea are suffering from people aging and depopulation. Japan itself is suffering from people aging, and a declining birth rate, but the situation faced by these islands is even more severe. Given this, local government and the islanders themselves are calling for young people to stay in the area. To achieve this, it is necessary to overcome various forms of inconvenience, such as inadequate medical treatment and education on the islands. Our center research into the current situation and implementing countermeasures together with the local people.

(3) Finally, about our telemedicine research.

Kagawa Prefecture is a pioneer of establishing the medical information network. This network has researched and developed for many years in collaboration with Kagawa University, Kagawa Medical Association and Kagawa prefecture. We call this network "K-MIX", based on the initials of its full name which is the Kagawa Medical Information eXchange. The aim is to deliver new medical care that is advanced and efficient.

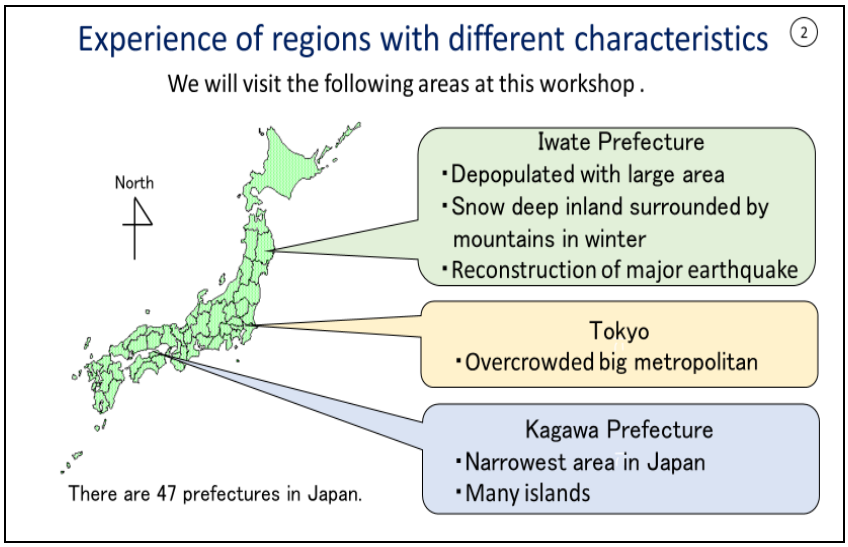
K-MIX now connects 160 hospitals. K-MIX enables patient medical records to be shared among doctors at various hospitals. This allows for the provision of team-based medical care between facilities, such as between clinics, general

hospitals, specialty hospitals, pharmacies and so on. Of course, it is also possible to provide team-based medical care between maternity clinics and hospitals.

Team-based maternal care has contributed to reducing the maternal mortality rate and to increasing the number of safe births. As this team-based medical care takes place among distant facilities, it is also a type of remote medical care.

I will explain this in a little more detail later.

This map of Japan shows 47 prefectures. The northern parts of Japan are cold in winter and they are sparsely populated. Tokyo is located of the center of Japan and Kagawa Prefecture is located the area of mild weather.



We plan to visit three prefectures that all have quite different characteristics.

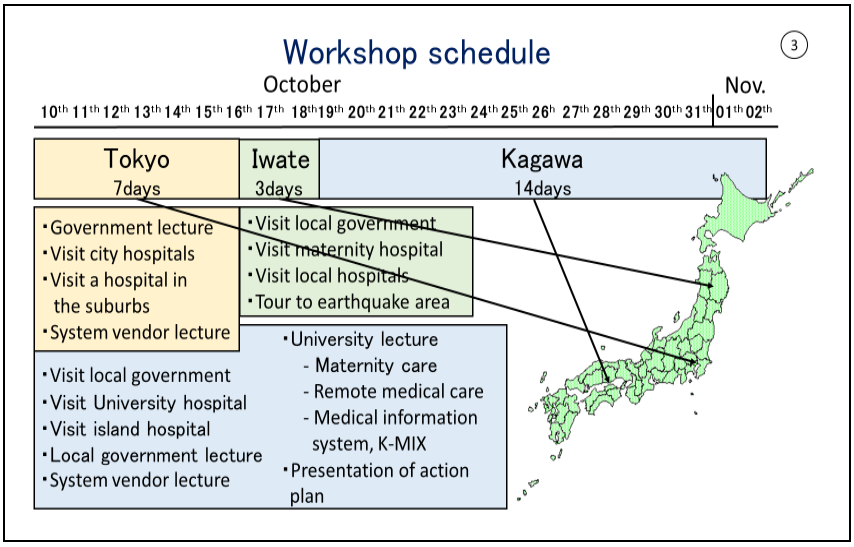
Iwate Prefecture has a low population despite its extensive area. The inland areas are covered in deep snow during the winter which can cause traffic disruptions. As a result, pregnant women are difficult to get to a hospital. Moreover, maternity clinics in these mountainous areas are not staffed by doctors. Therefore, a remote maternal care system that links mountainous areas and town areas has been developed and implemented in Iwate Prefecture. We will be able to show you, this remote maternal care system, thanks to the cooperation of Tono city and hospitals in Iwate Prefecture.

The coastal areas of Iwate Prefecture, and other parts of north-east Japan were hit hard by a huge earthquake six years ago. The earthquake killed about 20,000 people and injured about 6,000 people. The tsunami that was triggered by this earthquake caused a huge amount of damage. Waves of between 5 and 40 meters hit coastal towns over and over. Houses and roads were washed away and many towns were destroyed completely. The victims who were disappointed

have been greatly encouraged by the support that they have received from overseas and from volunteers. Now, there are gradually being restored. Our center is also cooperating by providing scientific support for the reconstruction of the aquaculture industry. We plan to show you the current situation.

Tokyo is Japan's largest metropolitan area and it is one of the most overcrowded cities in the world. It has large number of huge hospitals that are well equipped and well-staffed. We plan to show you some of these as well.

Kagawa Prefecture has 24 inhabited islands. The largest one is Shodoshima, which has a population of 30,000. On the way to Shodoshima, the ship's captain will take a detour, so you can see some of the smaller islands from the ship. The smaller islands that you will see have a population of 100 to 200 people. We developed the remote medical care system for the residents of these islands.



This picture shows the workshop schedule from October 10 to November 2.

In Tokyo, we will be holding lectures and visiting hospitals for seven days. Also, as the Japanese government is situated in Tokyo and there are various large-scale computer system vendors, we will study trends in maternal care and remote medical care from the viewpoint of central Japan.

On October 16, we will travel to Tono city in Iwate Prefecture by bullet train. We will hold lectures and visit hospitals for three days. We will also visit the mayor of Tono city. And visiting a maternity hospital and local hospitals. We will tour some of the earthquake-hit areas.

On October 19, we will fly to Kagawa Prefecture via Kansai Airport. At first, we will visit the governor of Kagawa Prefecture. We will hold lectures and visit hospitals for 14-days. The lectures will be held at the campus of the university's medical faculty and the campus of its headquarters. The two campuses are about

15 km apart.

The medical faculty has an attached hospital which operates a perinatal center which we will visit. At the university, the professors will give lectures on various topics, such as perinatal care, the K-MIX and remote medical care.

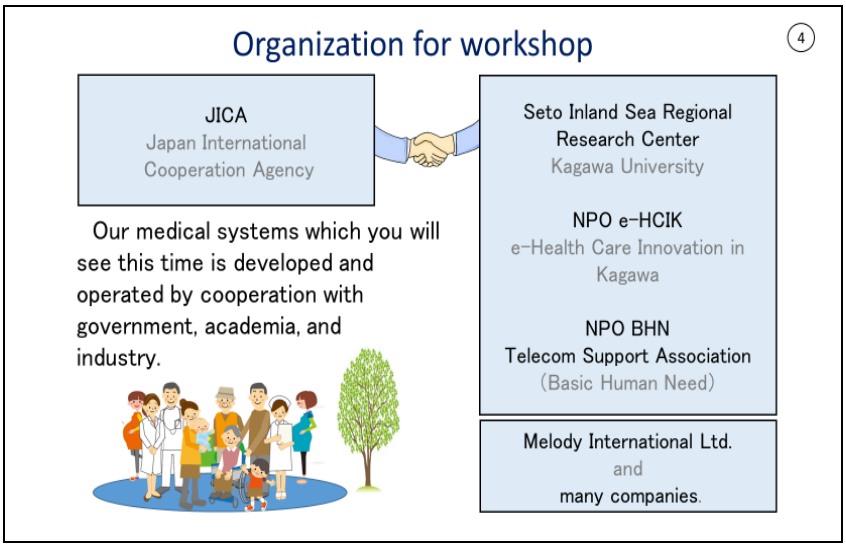
In addition, we have scheduled some remote lectures from other universities and foreign countries that will be conducted via a video conference system. We have also arranged for some companies to give lectures and demonstrations of products for maternal and remote medical care.

On the tour, we will visit Shodoshima Central Hospital. And we will visit a screening center for breast cancer, uterus cancer and some other cancer. We will also take a trip to an elderly care center that is promoting collaboration in the provision of medical care and nursing care.

Not only that, we will also visit some companies that are developing health products in collaboration with the university. We hope that, these company tours will give you a feel for production sites and society in Japan.

At the university, you will present your Inception Report, then formulate an action plan and announce it at the end.

The medical systems of ours have been developed and are now operated, in cooperation with local government, academia, and industries. In fact, this workshop will be conducted in collaboration with them.

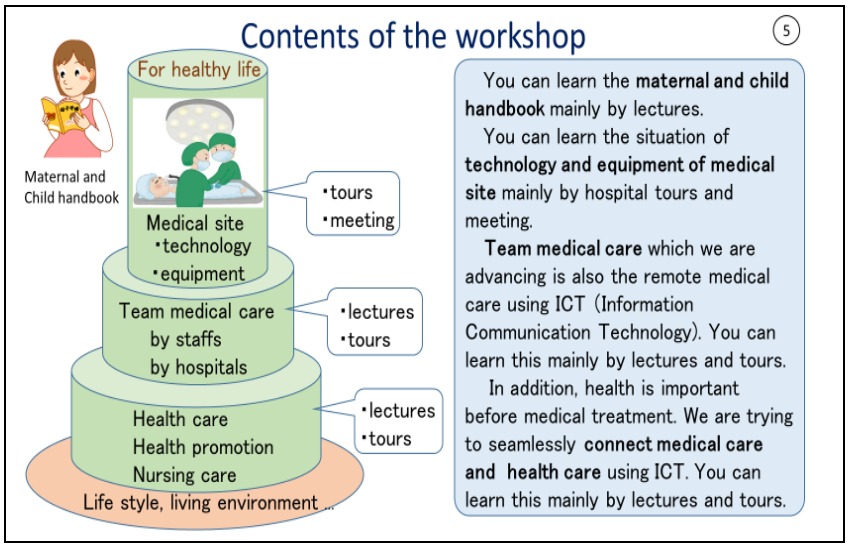


We will conduct this workshop with our Center and JICA as core partners and in cooperation with e-HCIK and BHN. Melody International and several other companies will also be cooperating in the holding of the workshop.

The NPO, e-HCIK is e-Health Care Innovation in Kagawa. It was established to enhance the medical system at the request of Kagawa Prefecture.

The BHN Association is a NPO in Tokyo that has "Basic Human Needs" as its slogan. BHN is also working to support efforts to improve maternity care overseas.

Melody International is a local medical ICT company. ICT is Information Communication Technology. Melody's female president hopes that, Melody products will be used by pregnant women around the world.

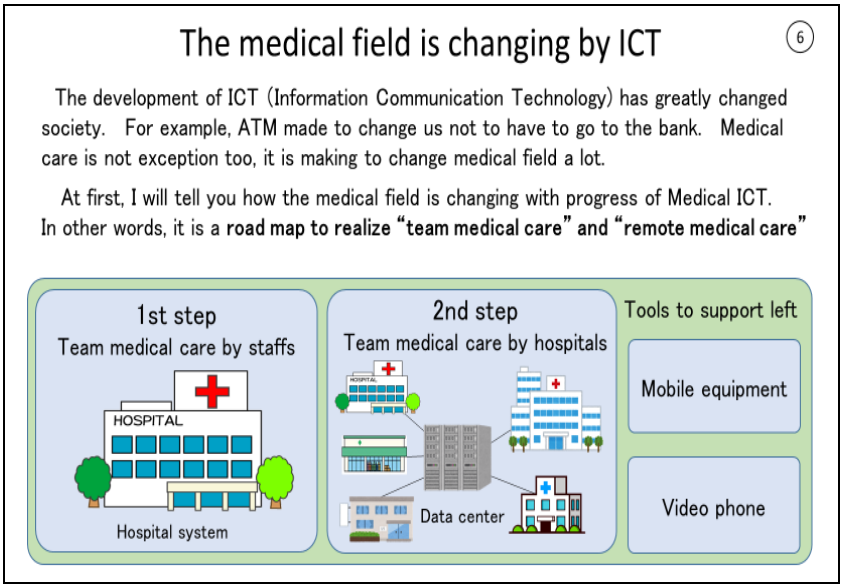


The first aim of workshop is to learn about the medical technologies and equipment used at the medical sites through the hospital tours and the meeting.

The second aim is team-based medical care that we are advancing also involves remote medical care using ICT. You will learn through the lectures.

The third aim is that your health is important before medical treatment, so we are working to seamlessly connect medical care and health care using ICT. You will learn through the lectures and the tours.

The other aim that for people to live healthy, it is necessary for their living environment to be improved, including in terms of their lifestyles and meals as well as utilities, such as the water supply and sewage handling.



The development of ICT has had a great effect on society. For example, the availability of ATMs means that we no longer have to go to the bank to use many of its services. Thanks to the Internet, we can now make various purchases from home. The development of the mobile phone means that we can now talk to anyone, anywhere and anytime. Medical care is no exception, as ICT is completely transforming the medical field.

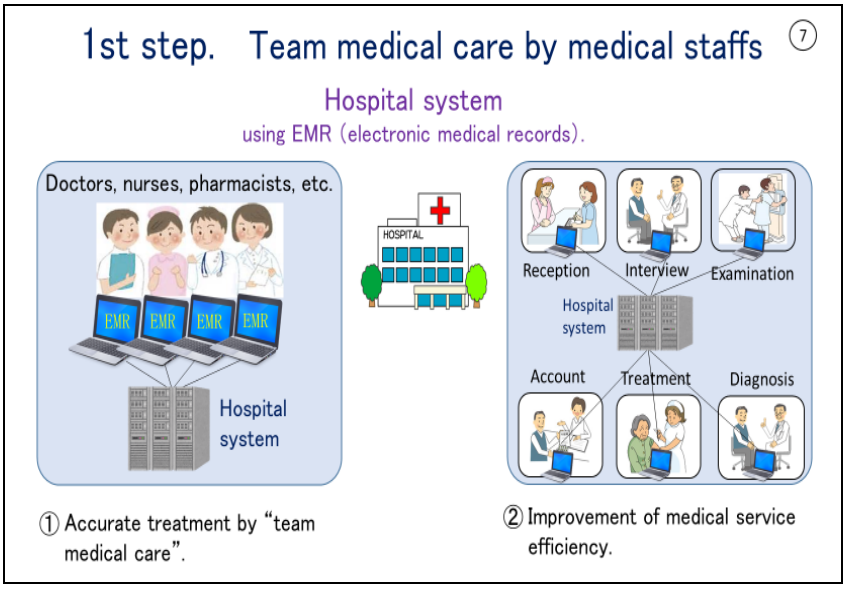
First, let's take a look at how the medical field is being transformed, through the advancement of medical ICT. In a sense, ICT is like a road map for the realization of team-based medical care and remote medical care as shown here.

The first major transformation is the provision of team-based medical care by medical staff at hospitals. This development has made it possible to deliver more accurate medical care and for further improvements to be made to hospital work efficiency. The hospital system has made this possible.

The second major transformation is the provision of team-based medical care by hospitals. The sharing of patient records among hospitals has made this possible. K-MIX is on this second step.

Mobile equipment, video phones and so on, are some of the tools that are used to support the provision of remote medical care, home care and other such services.

Next, I will explain these steps in a bit more detail.



The first step is the provision of team-based medical care by medical staff at hospitals. In conventional medical care, the doctor is at the center of the process while the nurses, pharmacists and other medical support staff follow the instructions of the doctor. This is because medical staff other than the doctor do not have easy access the paper-based patient medical records. However under the hospital system, all member of the medical staff can easily gain access and use the electronic medical records, anytime and anywhere from a terminal. This is because electronic medical records have been developed and the medical records have led to the computerization of entire hospitals. As a result, nurses can make full use of their nursing expertise and pharmacists can make full use of their pharmaceutical expertise.

But, for team-based medical care to be fully realized the medical staff themselves have to change their mindset which obviously takes time. Given this, three universities in Kagawa Prefecture that have facilities such as a medical faculty, a pharmacy department and a nursing science department are providing training on how to conduct team-based medical care, in cooperation with.

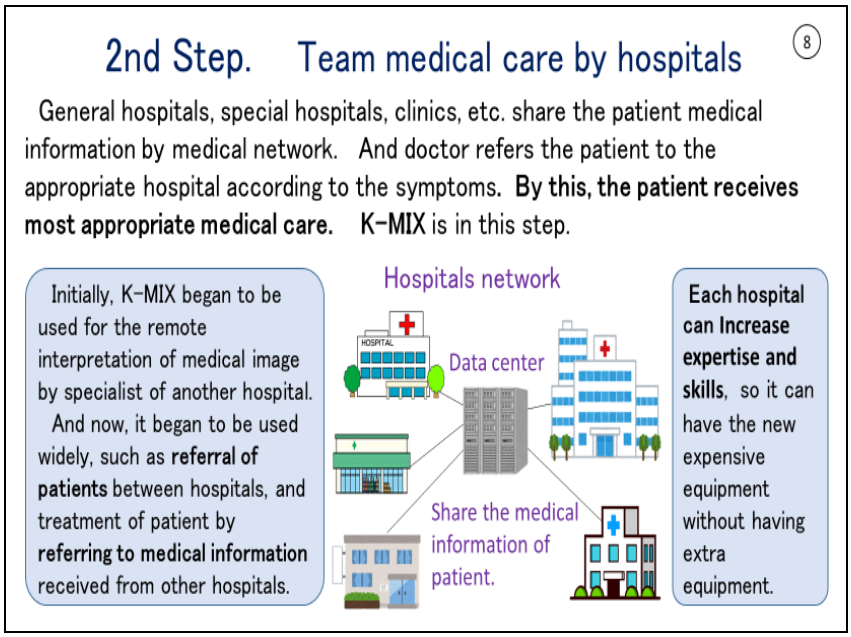
The hospital system improves the efficiency of hospital operations which in turn improves patient service by reducing waiting times and allowing the hospital to treat more patients.

For example, the ICT support process starts from a staff member at reception room input basic information of the patient. The doctor inputs information obtained during the consultation and the examination. In the examination room, medical staff carry out the examination, according to the instructions from the doctor that are displayed on the computer screen. Next, the doctor makes a

diagnosis and inputs treatment instructions. When the patient arrives at the accounts section to make payment, the invoice and prescription have been prepared already.

The second step is the provision of team-based medical care by hospitals.

In this step, general hospitals, specialty hospitals, clinics, and other medical facilities share patient medical records via the medical hospitals network. By this, Doctors refer patients to the appropriate hospital based on their symptoms.



For example, if a doctor working at a clinic thinks that it would be difficult to provide treatment, the doctor refers the patient to the appropriate hospital instead. After the patient has undergone surgery or another treatment at the referred hospital and is in the recovery stage, the patient is then referred back, to the original clinic again. The hospital and clinic share the patient records via the hospitals network. In this way, the clinics take on the role as the family doctor. The Japanese government recommends that referrals be given between hospitals. K-MIX supports this.

Under the team-based medical care by hospitals, each hospital can utilize their expertise to treat the patient in cooperation with other hospitals.

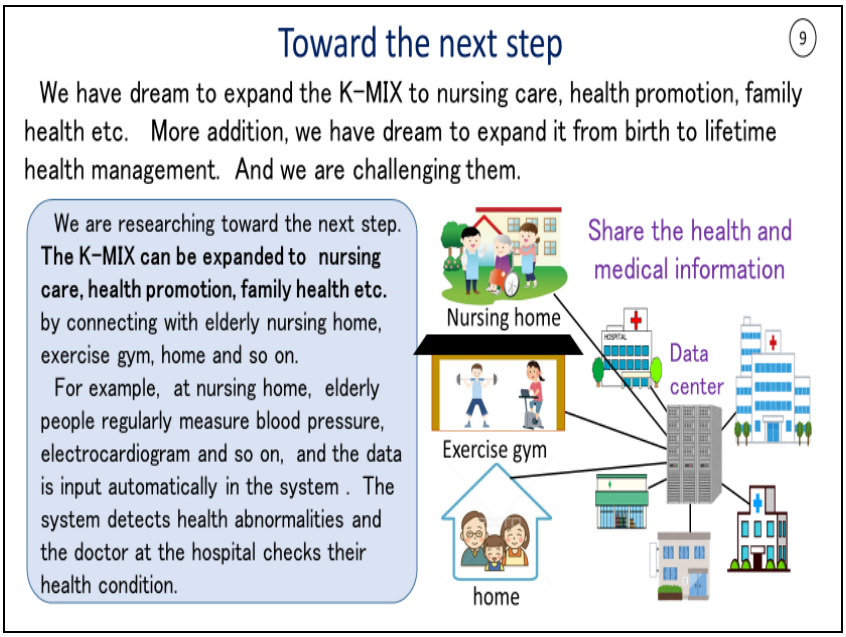
K-MIX was initially used that specialist remotely read medical images. Now, it has a wider range of applications, such as referring patients between hospitals and treating patients by referring to medical records, received from other hospitals.

Each hospitals and other medical facilities can clarify their respective characteristics and enhance their specialties. This can help reduce the overall

medical expenses in Japan since this means that each hospital can focus on its own specialty, thereby allowing them to purchase the latest expensive equipment without having to spend money on unnecessary extra equipment.

But, the hospitals network requires the use of advanced technologies to build and strictly manage security systems for its operation. In addition, it takes time to train the medical personnel required for the provision of team-based medical care and to gain the understanding of local residents. Kagawa Prefecture is attempting overcome these two steps as a pioneer.

Next, I would like to explain a little about the next step that we are now starting to research.

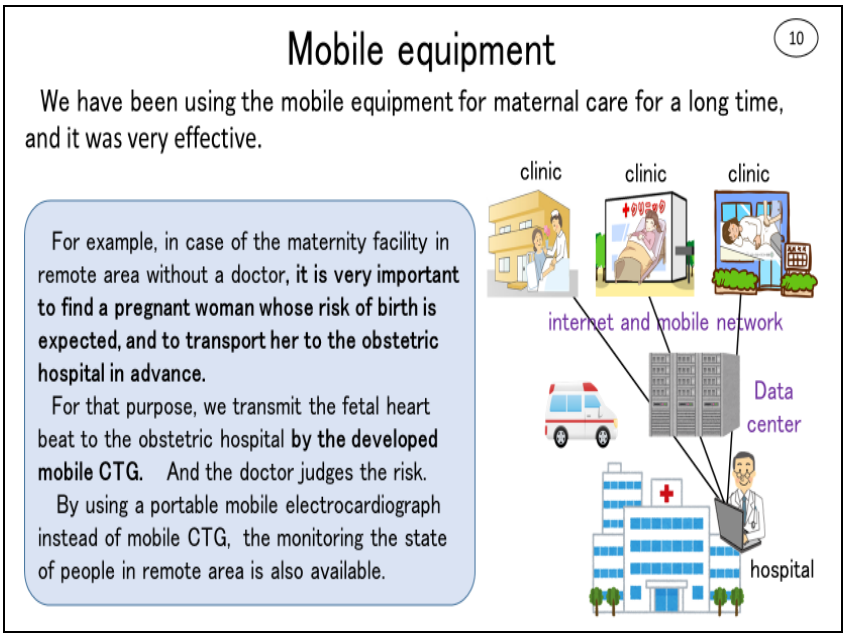


Ideally, we would like to link K-MIX, not just to hospital but also to nursing homes, gyms, homes and so on.

For example, doing this would allow the data obtained from regular health checks, such as blood pressure monitoring and electrocardiograms to be input into the system automatically. If the system detects any health abnormalities, a hospital doctor can check their health condition. Of course, public health nurses and exercise trainers will also be able to provide appropriate guidance by getting their health data with their consent. This will allow us to expand the system from a medical care to a health management.

We also hope to expand the system, from birth to lifetime health management, by inputting data on people's health of whole life. Regular health checks are conducted every year in Japan, so if we can link this health data automatically, we will be able to monitor the trends in health conditions. By realizing this goal, we will be able to seamlessly connect cooperation with activities such as health management, medical-care, elderly-care and home-care.

We have been using mobile equipment to provide maternal care for a long time and this has proven to be very effective. For example, if a maternity clinic in a remote area is without a doctor, it is very important to identify pregnant women whose risk of birth is expected, then to transport them to an obstetric hospital in advance.

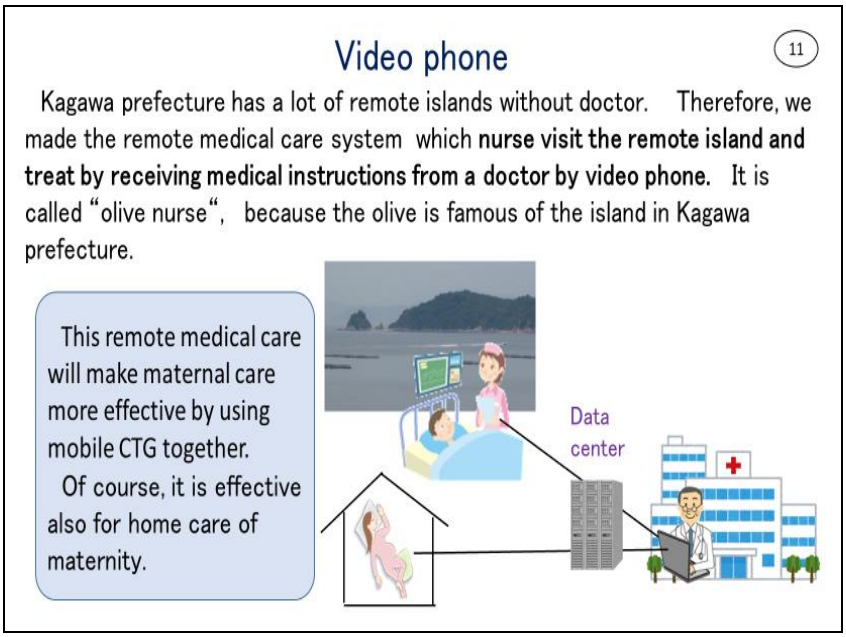


To identify such pregnant women, we measure the fetal heart beat with a mobile CTG, “mobile Cardio tocoGram”, that we have developed and transmit it to the obstetric hospital. After that, a doctor can assess the risk of childbirth. This is also a form of remote maternal care.

This system is also attracting attention in countries, despite having a high birth rate, have many difficult-to-access mountainous areas without any doctors. In fact, the system is now being used in Chiang Mai, Thailand. A summary of the situation will be provided from Chiang Mai by video phone.

By using a mobile electrocardiograph, instead of a mobile CTG, we can also monitor the health state of people living in remote areas.

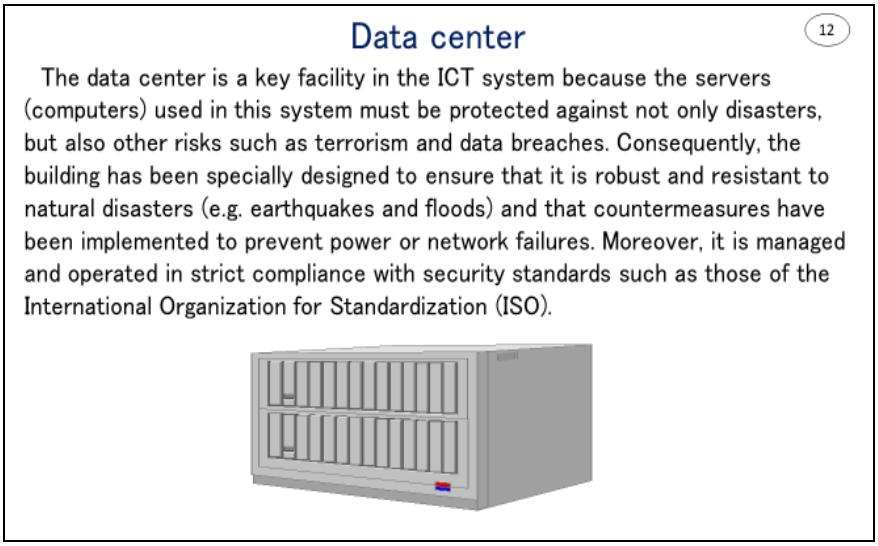
Kagawa Prefecture is home to a lot of remote islands, that have no doctors. Given this, we developed a remote medical care system that allows nurses to visit these islands and treat patients there based on medical instructions given by a remote doctor via a video phone. We call these nurses "olive nurses", because the islands in Kagawa Prefecture are famous for their olives.



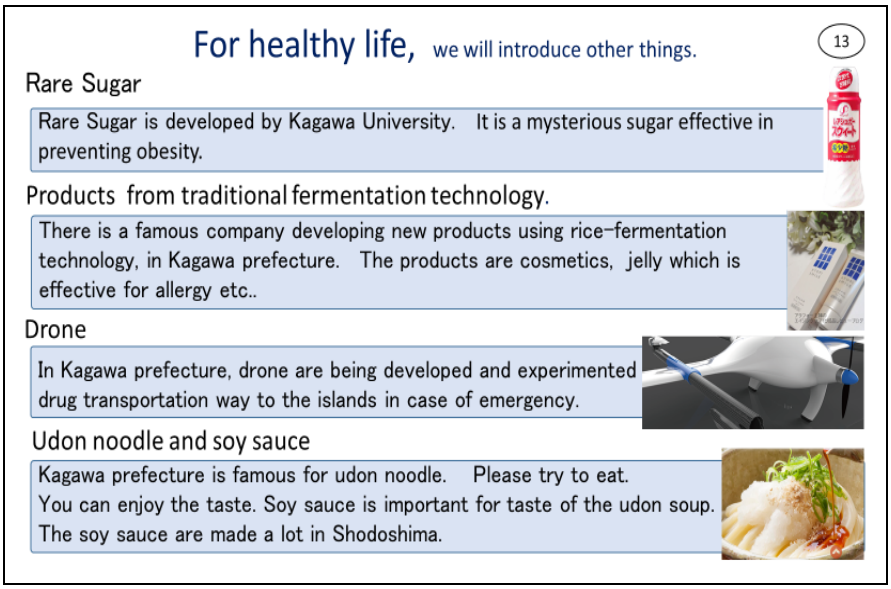
This remote medical care system helps us to deliver more effective maternity care by using mobile CTGs in combination. This system also can offer an effective home maternity care.

The data center is a key facility in the ICT system, because the servers used in this system must be protected against not only disasters but also other risks such as terrorism and data breaches.

Consequently, the building has been specially designed to ensure that it is robust and resistant to natural disasters, such as earthquakes and floods and that countermeasures have been implemented to prevent power or network failures. Moreover, it is managed and operated in strict compliance with security standards such as International Standard (ISO).



The servers for K–MIX, for the CTG system, and for the video phone system, are installed in a highly secure data center. These servers are connected to terminals via the Internet, so they can be used from all over Japan, and anywhere else in the world. Of course, you can use them, from your country too.



The health of the mother, during her pregnancy is important, for ensuring a healthy birth. Given this, we would like to introduce some other health-related products of Kagawa prefecture.

・Rare Sugar.

Rare Sugar is a product developed by Kagawa University. This mysterious type of sugar is effective in helping to prevent obesity. It has already been successfully commercialized and it is now used for sweets, drinks and other such products. We will be taking you on a tour of the Rare Sugar factory.

・Products made using traditional fermentation technologies

A well-known company in Kagawa Prefecture is developing new products using rice fermentation technologies. This company creates high-quality cosmetics using traditional Japanese technologies based on Japanese sake brewing techniques and it also produces a type of jelly that is effective in preventing allergies. You will see this factory on the tour.

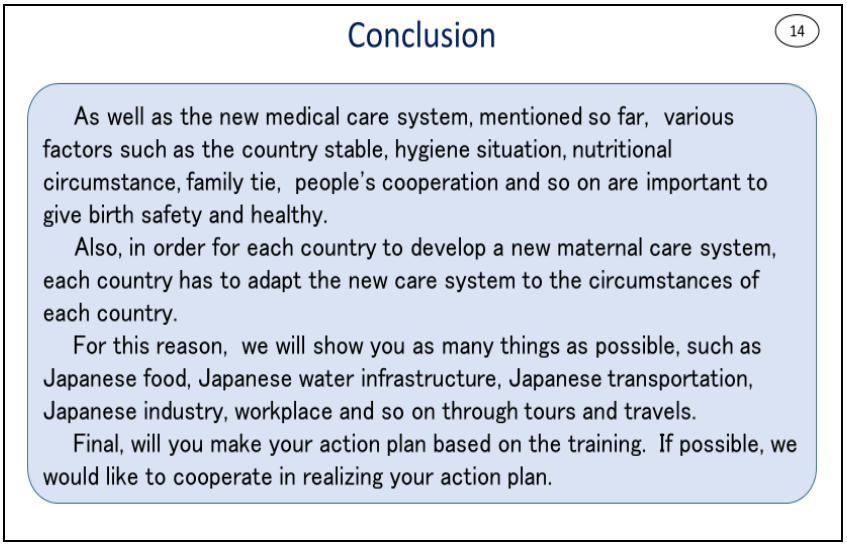
・Drones

In Kagawa Prefecture, drones are being experimented as a transporting medication to the islands in the event of an emergency. I think that it will also prove useful in remote mountainous areas with poor road conditions.

・Udon noodles and soy source

Kagawa Prefecture is famous of udon noodles. Will you try it. By the way, soy source is a key ingredient for the taste of udon soup. Large quantities of soy source are made in Shodoshima. Soy source is a core

ingredient in many types of Japanese food which is said to be very healthy. We will show you the soy sauce factory on the tour.



In addition, for the maternal care, other factors are important in ensuring a safe and healthy birth include the country's political stability, hygiene levels, nutritional status, family ties and so on.

Also, to develop a new maternal care system, it needs to adapt the system to its local circumstances.

For this reason, we aim to not only provide you with information on maternal care but also introduce many aspects of the situation in Japan as possible.

To start, we will ask you to present your Inception Report which provides the actual circumstances of your country.

At the end, we will ask you to formulate an action plan based on this training. And we will cooperate in helping you to realize your action plan as possible.

Just like the personal computer, smartphone, and Internet, ICT can be used in developed and developing countries as equal. I think the most important point is how to use ICT well.

Let's take this occasion to build lasting friendships and work together to create a brighter future.

Thank you.