The Center is located near JR Shin-Osaka Station, and it’s accessible directly from the north side of JR Kishibe Station.

About 7 min. from JR Shin-Osaka Station
Accessible directly via a walkway (about 100 m) from the ticket gate at Kishibe Station (above the train platforms)
Pursuing new treatments through our Hospital, Open Innovation Center, and a major regional Research Institute, medical cluster

The National Cerebral and Cardiovascular Center's new location, which opened in July 2018, brings the Hospital, Research Institute, and Open Innovation Center together under a single roof. We now have more operating and catheter rooms, including four hybrid operating rooms where surgical procedures and catheter treatment can be performed at the same time, as well as more cutting-edge equipment such as gamma knife and PET systems. The new facility also offers an extensive suite of research equipment, including one of Japan's largest animal laboratories.

One of the new location's most defining characteristics is the new Open Innovation Center (OIC), which is designed to foster collaboration research that goes beyond the Center to bring in a variety of partners such as research facilities operated by private-sector businesses and universities. We expect the OIC not only to develop cutting-edge medical devices, but also to communicate information about the prevention of diseases that will become more prevalent as Japan's population ages, along with new findings with relevance for home nursing care, both of which will be key areas going forward.

The Center's relocation has transformed the area on the north side of JR Kitano Station into a major medical cluster known formally as the Northern Osaka Health and Biomedical Innovation Town and popularly as KENTO. This area is the largest and most unique of the clusters surrounding the six institutes that make up Japan's National Centers for Advanced and Specialized Medical Care and Research. With the opening of the Suita Municipal Hospital in December 2018, we gained the ability to pursue joint initiatives to address the needs of Japan's aging population.

The cluster is also home to a nursing home, a park and gym designed to promote health, and even a restaurant that specializes in the Kansai's (Kan-sai) diet promoted by the NCVC. KENTO makes it possible for concerted, multi-partner programs in areas ranging from prevention to cutting-edge treatment and research, one of which includes the distribution of wearable monitors to people who live in nearby condominiums to collect blood pressure, pulse, and other data.

Introducing an NCVC that's brand new, inside and out

The Basic Act on Measures to Address Stroke, Heart Disease, and Other Cardiovascular Diseases in Order to Lengthen Healthy Life Spans, which was enacted in December 2018, includes provisions that create a national patient registry. This leading role played by the national government has made it possible to register more patient cases than was possible in the past, and we've responded by setting up place structures to allow the NCVC to present more findings.

We also need to continue to pursue cutting-edge preventive initiatives. In addition to implementing preventive methods and intervention studies that take advantage of the findings of the Kansai cohort study which has been underway for more than 30 years, it will be important to study methods for treating cerebral and cardiovascular disease in cancer patients in partnership with the Suita Municipal Hospital. Such efforts reflect our commitment to an approach that explores and takes into account the interrelationships within the body's many systems.

Advanced medicine demands a cutting-edge approach, so we will leverage our extensive track record, including such innovative methods as catheter-based treatment of aortic aneurysms and mitral insufficiency, to establish safe techniques and promote them nationwide.

It is important to pursue close collaboration among the Hospital, Research Institute, and OIC. The Research Institute has discovered a number of new cardiovascular regulatory peptides, and it will work closely with the Hospital going forward to develop new treatment techniques based on the extensive patient care data that the NCVC has accumulated. Dialogue between researchers and physicians will be an essential part of that process, which is why we created the Science Café at the OIC. We are utilizing that space to generate new ideas through face-to-face interactions while creating opportunities for dialogue with stakeholders from numerous fields.

Striving to become a model medical cluster through community-wide collaboration

Our goal is to transform the KENTO cluster into a model medical community. To accomplish that goal, we will need to build a successful treatment back record and establish systems for accommodating patients as quickly as possible. To that end, we will strengthen our already-robust partnerships with medical associations so that we can improve treatment results by having physicians refer patients to the NCVC immediately when necessary, and we will study how to build systems for offering bystander treatment.

We are also eager to work with physicians in private practice to develop methods for preventing cerebral and cardiovascular disease. One example is an initiative to take preventive steps at the examination stage. We will establish a process by which data from health check-ups can be shared and patients referred to the NCVC as necessary. Since the KENTO cluster is located in both Suita and Itami, we will expand the scope of the Kansai cohort study to include residents of Itami so that we can accumulate and analyze more patient case data as we work to generate new research findings for the prevention of cerebral and cardiovascular disease.

Kinya Otsu
President
National Cerebral and Cardiovascular Center

Philosophy
We strive to promote the health and happiness of the people of Japan as part of the National Centers for Advanced and Specialized Medical Care and Research by elucidating and controlling cerebral and cardiovascular disease.

Basic Policies
- We provide model, cutting-edge care for cerebral and cardiovascular disease.
- We offer safe, high-quality care based on a transparent and highly ethical approaches.
- Our Research Institute and Hospital work together closely to pursue cutting-edge research into cerebral and cardiovascular diseases.
- We train a variety of specialists and leaders in cardiovascular care.
- We create workspaces that ensure pride and motivation on the part of all employees.
Contributing to the community and its health as a member of the KENTO cluster

The Northern Osaka Health and Biomedical Innovation Town (known familiarly as “KENTO”) is an area of about 30 hectares running east to west in Suita and Settsu.

Designed around the concept of health and medicine, it includes the NCVC as well as Suita Municipal Hospital, KENTO Railside Park, a shopping center (Vierra Kishibe KENTO), and wellness residences for seniors. Going forward, the NCVC will work through its Open Innovation Center to pursue a variety of partnership initiatives that the KENTO cluster makes uniquely possible in an effort to help transform the area into a model medical cluster that can play a leading role in the drive to lengthen healthy lifespan.

National Cerebral and Cardiovascular Center

Profile of the NCVC

- Facility: 2 underground stories, 10 aboveground stories, and 2-story tower
- Site: 33,845.47 m²
- Outpatient treatment: 700 to 800 per day
- Building: 129,845.84 m²
- Beds: 550
- Parking: 304 vehicles

Becoming a leading region in cerebral and cardiovascular disease prevention, treatment, and research
The optimal treatments provided to all patients by teams of specialists of NCVC

NCVC’s mission is to provide less invasive high-quality treatment with the help of a team of collaborating experts.

Introduction of Departments

Department of Cardiovascular Medicine

- Coronary Diseases
  - Diseases of coronary arteries, which supply nutrients to the heart, such as myocardial infarction and angina pectoris, are treated by experts in this division.

- Vascular Diseases
  - Catheter-based treatment for vascular diseases such as occlusive arteriosclerosis is provided. The division collaborates with the Division of Vascular Surgery as required.

- Arrhythmias
  - Various catheter-based treatments, including the balloon ablations, are possible. The number of device implantation is a top rank in Japan. We are also working with left atrial appendage closure devices.

- Pulmonary Circulation
  - This division is among the few centers that specialize in pulmonary hypertension in Japan, and treats patients from all over the country. It is a world leader in invasive treatments for a wide range of diseases of the pulmonary vascular system, including chronic thromboembolic pulmonary hypertension.

- Department of Cardiovascular Surgery

- Adult Cardiac Surgery
  - The team of adult cardiac surgery takes care of valvular heart disease, ischemic heart disease, heart failure, and others. The treatments cover off-pump coronary artery bypass grafting, minimally invasive cardiac surgery, robotic surgery, complex valve repair, transcatheter valve replacement, and valve-in-valve technology.

- Vascular Surgery
  - This division is always ready to deal with patients who require very emergency attention, such as those with acute aortic dissection, and has expertise in minimally invasive treatments for a wide range of cases. An exclusive outpatient section has also been set up for the treatment of various lesions in the lower limbs.

- Pulmonary Surgery
  - The new hospital can provide the improved prognosis for patients with cardiovascular diseases. In addition, the Emergency Department was newly established on April 1, 2020.

- Adult Cardiac Surgery
  - The team of adult cardiac surgery takes care of valvular heart disease, ischemic heart disease, heart failure, and others. The treatments cover off-pump coronary artery bypass grafting, minimally invasive cardiac surgery, robotic surgery, complex valve repair, transcatheter valve replacement, and valve-in-valve technology.

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- Pulmonary Surgery
  - The new hospital can provide the improved prognosis for patients with cardiovascular diseases. In addition, the Emergency Department was newly established on April 1, 2020.

We are administrating prompt initial evaluation and treatments to improve the clinical outcomes in patients with cardiovascular diseases all year round.

The new hospital hasexperienced transition among emergency, radiology (CT, MRI section), echo laboratory, catheterization laboratory, and operation room, which provides optimal treatments for patients. We also have a high performance “Doctor Car” and new heliport to transfer the severely ill patients from other hospitals. The updated new hospital can provide the improved prognosis for patients with cardiovascular diseases. In addition, the Emergency Department was newly established on April 1, 2020.

Very well-planned treatment for all patients including those with severe conditions

Emergency response for patients with severe conditions is also well-organized. For those with severe heart failure because of myocardial infarction, fulminant myocarditis, etc., we provide the latest treatments such as implantation of a ventricular assist device, which can directly assist the left ventricle with a small axial flow pump, inserted into the heart percutaneously through a subclavian artery or femoral artery.

For patients suffering acute aortic dissection, we can offer wide range of treatments, such as hybrid surgery in which surgery and stenting are combined, as an optimal therapy.

Minimally invasive treatment by the “Heart Team”

The heart team by cardiologists and cardiac surgeons gives optimal treatment for each individual patient. Patients can select the option from surgery including robotic surgery and left ventricular assist device implantation, catheter-based therapy such as transcatheter valve replacement or clip device, hybrid therapy and so on. Because of the one heart team, patients can receive seamless treatment.

Rapid percutaneous catheter-based treatment for cardiogenic shock

We proactively undertake percutaneous catheter-based treatments (Impella® 100-LCMO) for patients with cardiogenic shock caused, for instance, by acute myocardial infarction, severe cardiac failure, and so on. Our aim is to improve the hospital outcomes through adoption of rapid percutaneous catheter-based circulation assistance.

Catheter-based treatment for mitral regurgitation

This is a catheter-based treatment wherein the part responsible for mitral regurgitation is clipped. The first case treated by this technique in a clinical trial was carried out at NCVC. Thus, we played a pivotal role in introduction of this treatment. It is a minimal invasive treatment that can be used for high-risk patients and we have a wealth of experience with this treatment.

Balloon pulmonary angioplasty (BPA)

It is now possible to open the stenosed lesions in pulmonary arteries using a catheter for patients with chronic thromboembolic pulmonary hypertension. Many reputable NCVC is a leading hospital of this procedure in the world.

Leadless devices

Various miniaturized devices that do not require transvenous leads have most become available. These devices can significantly reduce the physical burden on patients as they can reduce the risk complications like infections and eliminate the need for pockets. We select the optimal treatment according to the patient’s background.

Robotic surgery using da Vinci Surgical System

The system is equipped with four arms and a 3D camera. Surgeons operate in the console and remotely control the system. The system operates on patients. Robotic surgery is indicated for heart valve repair and internal thoracic artery harvest. NCVC provided excellent outcomes with two expert surgeons.

Endovascular stent grafting

In cases with acute aortic syndromes such as acute aortic dissection and rupture of an aortic aneurysm, we carry out, if suitable, minimally invasive stent grafting wherein an artificial blood vessel is embedded within the affected blood vessel, apart from performing direct access open-heart surgery.
Cutting edge stroke treatment systems established for reducing stroke disabilities

At NCVC, we are conducting world-leading treatments in cerebrovascular diseases including acute care and drug development.

Introduction of Departments

Cerebrovascular Medicine and Neurology

Comprehensive acute stroke care is provided in Stroke Care Unit (SCU), NCVC has contributed to establish various acute medical treatments such as intra-aortic balloon pump therapy and diagnostic methods of acute stroke like ultrasonography and other imaging modalities. Our stroke service is available 24/7 to perform reperfusion therapy including endovascular thrombectomy in close collaboration with Neurosurgery Department. We are actively cooperating with local rehabilitation hospitals, long-term care hospitals/facilities and family physicians.

Neurosurgery

A major feature of this division is that it can provide top level treatments in microsurgery, endovascular surgery (catheter-based treatment) and stereotactic radiosurgery (gamma knife). We have a Neurocritical Care Unit (NCU) and can handle emergency neurosurgery and endovascular intervention on a 24-hour basis.

Mechanical thrombectomy

In our institute, various stent type thrombectomy devices and reperfusion catheters can be used for successful recanalization of the occluded cerebral vessels. Taking into account the location of occluded vessel and the type of thrombus embolus, a team of the specialists for neuroendovascular therapy administers the treatment to achieve successful recanalization promptly and safely.

Intracranial stereotactic radiosurgery (Gamma Knife)

Building on the Leksell Gamma Knife® precision and adding new technology, Leksell Gamma Knife® Neo™ gives clinicians the option to perform single orfractionated frame-based or frameless treatments, allowing for more individualized delivery—without sacrificing precision and accuracy.

Acute stroke rehabilitation

It is known that reorganization of the structure, function, and nerve fiber connections (rewired physiology) of the affected tissue occurs most strongly within minutes to a few hours. Thus, we provide rehabilitation at an early stage after the stroke onset so that the best function can be restored to the maximum extent possible. We are also working on a new rehabilitation program designed specifically for this phase of stroke.

Rapid and appropriate assessments to reduce disabilities in hyper-acute stroke

We work on improving stroke outcomes through rapid acute management to reduce time to treatment. Specifically, we provide educational activities which enable people to recognize stroke symptoms and paramedics to achieve speedy transportation with feedback in cases. We share patients’ information and perform interactive exchange of opinions with commensurate rehabilitation hospitals. We are leading stroke care in Japan as we have introduced intravenous t-PA and endovascular thrombectomy using imaging selection in acute stroke beyond standard therapeutic time window.

Brain surgery that capitalizes on cutting edge technology and facilities

The department provides surgical treatment for all types of cerebrovascular disorders including intracranial aneurysms, cerebral arteriovenous malformations, moyamoya disease, and carotid artery stenosis. We deal with refractory cases through a hybrid treatment of direct neurosurgery, endovascular intervention and gamma knife. The safety and effectiveness of simultaneous direct neurosurgery and endovascular intervention in hybrid operating rooms (2011 onwards) has improved further with the opening (in 2018) of a biplane hybrid operating room for neurosurgery. Also, a special outpatient unit has been set up for treating cerebral arteriovenous malformations and moyamoya disease. This has now become a main treatment hub for these diseases in the country.

Research on blood vessel disorders as a possible cause of dementia

Injury to blood vessels can lead to risk of dementia. Therefore, we are carrying out a clinical trial to examine the possibility of widening the therapeutic use of drugs that act on blood vessels. Cilostazol was found to have a role in promoting excretion of amyloid β. Based on this, we are conducting a physician-led clinical trial on patients with mild cognitive impairment jointly with several medical institutions from all over Japan. We have also demonstrated through our research that taicillin, a component found in wild plants, prevents aggregation of amyloid β, contributes to recovery, and improves spatial cognitive ability.

Research on relationship between tooth decay bacteria and brain hemorrhage (NAMESSES Study)

It is known that certain tooth decay bacteria get into blood vessels and cause bad effects when they enter cerebral blood vessels. Currently, we are conducting some animal studies on the relationship between asymptomatic oral symptoms, brain hemorrhage and tooth decay and gingivitis in collaboration with Department of Dentistry of NCVC.

Adrenomedullin (AMFIS Study)

Research to establish adrenomedullin, a peptide hormone, as a therapeutic drug for cerebral infarction is ongoing. Treatment through blood vessels is widely used but the use of such treatment to protect damaged blood vessels is the first of its kind, and a path breaking effect is expected.

Development of a covered stent system for intracranial aneurysms

A novel microporous covered stent system (NCVC-CS) was developed by the collaboration between the Research Institute and Department of Neurosurgery of NCVC for treatment of intracranial aneurysms. It is expected to prove a critical tool supported by the Japan Medical Association and JETA were awarded to evaluate its efficacy and safety, resulting in an excellent outcome. The system is now in distribution for early pharmaceutical approval.
Achieve consistent support for cardiovascular diseases, from prevention and early detection to rehabilitation

We are working on early detection and appropriate treatment of lifestyle-related diseases such as hypertension. Furthermore, we believe it is important to prevent cardiovascular diseases such as stroke and myocardial infarction.

Introduction of Departments

- Diabetes and Lipid Metabolism
  Specialized medical examination and treatment are provided for diabetes, dyslipidemia, arteriosclerosis, obesity, hypertension, etc., based on the rapidly advancing treatment strategies and testing devices, and the latest medical findings. The goal is the prevention of cardiovascular disease.

- Nephrology and Hypertension
  We work on detailed diagnosis and treatment of kidney disease and hypertension. In addition, we provide various extracorporeal circulation therapies, mainly haemodialysis.

- Division of Preventive Healthcare
  We are usually using in-office care, family care, and “Pre-Advanced Comprehensive Cardiac Examination”, specialized in early detection of circulatory diseases. Additionally, we are working on the development of “Kokusai Health Management System” with ICT.

- Department of Preventive Cardiology
  We perform health examinations and provide health guidance based on the results. We aim to prevent cancer and dementia through the prevention of aggravation of heart failure. Furthermore, we aim to support the physical health of men and women of all ages.

- Stroke and Cardiovascular Rehabilitation
  Cardiovascular diseases such as stroke and acute myocardial infarction have common risk factors (smoking, hypertension, diabetes, etc.) and pathophysiology. This department provides specialized rehabilitation for stroke and other cardiovascular diseases while at the same time working on the education of patients and exercise therapy for preventing re-house.

Prevention of the onset and aggravation of cardiovascular diseases, by the use of the latest therapies for diabetes, dyslipidemia, and obesity

Examination, treatment, and clinical research for preventing the onset and advancement of cardiovascular diseases are undertaken using the latest treatments for diabetes, lipid abnormalities, and obesity. This includes the use of recent rapid advances in therapeutic drugs such as GLP-1 and SGLT-2, improved control of glucose level fluctuations through continuous glucose monitoring (CGM), and improvement of lifestyle through team-based care involving consultation with various specialists including psychologists. We have treated a large number of cases that were found by other institutions to be difficult to treat, including those involving cardiovascular complications and extremely obese patients weighing 200 kg or more, and referred them back.

Specialist diagnosis and treatment for renal diseases and hypertension

Chronic kidney disease is recognized as a major risk factor for end-stage renal disease and cardiovascular diseases. We are actively conducting renal biopsy for diagnosis and specific immunosuppressive treatment for chronic glomerulonephritis. We conduct maintenance dialysis, prevent progression to end-stage renal failure, and prevent cardiovascular disease in patients with chronic kidney disease. We also provide extracorporeal circulation therapies for acute kidney damage and various serious conditions. Recently, we started peritoneal dialysis and started to guide the choice of renal replacement therapy.

Emphasis on comprehensive cardiac rehabilitation aimed at preventing recurrent cardiovascular disease events

During hospitalization for a cardiovascular disease such as acute myocardial infarction, the impaired cardiac function and the forced rest reduce functional capacity, and inevitably cause chronic anxiety about future activities and mobility. In the cardiac rehabilitation program, exercise training improves physical activity and restores self-confidence, and patients can develop appropriate exercise habits and healthy lifestyle to reduce the progression of arteriosclerosis and prevent recurrent cardiovascular disease events.

The Suits Study

The Suits Study is a cohort study of cardiovascular disease in urban populations that summarises classical risk and is cited in various guidelines. We are also developing predictive tools for cardiovascular disease and combating them to implement the prevention of aggravation of heart failure. In addition, we are launching a next-generation cohort study of heart failure and dementia.

Advanced Comprehensive Medical Examination

From September 2013, we have launched the project to accumulate basic information on physical forms and functions in the healthy people to prevent the development of highly advanced medical care. The participants are examined through representative non-invasive tests with highly advanced medical devices for early detection of cardiovascular diseases within 1000 patients in 500 hospitals.

Genomic medicine

Today, Genomic Medicine - personalized medicine based on individual genetic background - is highly awaited in accordance with great technological advancements. In April 2017, NCCV launched the Department of Genomic Medicine in order to integrate already existing division-based genomic healthcare and its innovative new genomic approaches for preventing and treating cardiovascular diseases as well as lifestyle diseases. The introduction for the genomic medical care, including genetic testing and genetic counseling, has been built mainly targeting inherited arrhythmia, connective tissue disorders (Marfan syndrome) and familial hypercholesterolemia. We also aim to provide personalized medicine for individual patients using next generation sequencers, which includes high quality clinical genetic diagnosis, effective therapeutic strategies, and prevention of disease aggravation and even disease onset.

Health Support Center

Cardiovascular diseases can cause sudden death of various conditions such as acute myocardial infarction, acute aortic dissection, and stroke, which are sometimes fatal and leading in time. Therefore, prevention and timely diagnosis before the occurrence of such serious conditions are very important. The newly opened Health Support Center of NCCV carries out a comprehensive cardiovascular examination and consultation (including an in-person delivery, acute mental syndrome, etc.). Those who wish to receive treatment at NCCV are assigned to outpatient or inpatient follow-up.
While paying attention to the burden on the patient, we are engaged in R&D of diagnosis and treatment to bring down the number of lives lost to zero, and strive to establish therapies that would ensure high QOL throughout life.

Introduction of Departments

- **Pediatric Cardiology**: A wide range of patients, including those with congenital heart disease which is our main area of expertise, are diagnosed and treated. These include patients with arrhythmia, Kawasaki disease, cardiomyopathy, Kawasaki disease, coronary artery disease, chronic heart failure and complicated congenital heart diseases, and those with severe heart failure who require heart transplantation.

- **Pediatric Cardiovascular Surgery**: Treatment of Adults with Congenital Heart Disease. More than 300 adult patients are treated under hospitalization and managed annually. In particular, we provide preoperative consultation and preoperative medical examination to patients aimed at improving the quality of life of such patients as those who have undergone the Fontan surgical procedure.

- **Pediatric Cardiovascular Surgery**: We provide surgical treatment for any type of pediatric cardiovascular diseases. We are also the specialists for adult with congenital heart disease (ACHD) of any age groups, regardless of corrected or uncorrected.

- **Obstetrics**: We handle almost 300 cases of delivery annually. Pregnancy and delivery management of mothers who have heart disease, those with congenital heart disease, and whose fetuses have heart disease, is also provided.

One of the best pediatric cardiovascular departments in Japan

We have been contributing to develop new surgical strategies for complex congenital heart diseases, including the “Double Switch Operation (DSO)” for congenitally corrected transposition of great arteries and Ross procedure for congenital aortic valve diseases. Both procedures require high levels of technical expertise and only a few medical facilities in the world can undertake them. Fontan procedure without cavo-pulmonary bypass, which only a few institutes can achieve in the world, is possible in our hospital with excellent outcome of post-Fontan patients more than 100 and long-term (>20) years of follow-up. We have also been actively promoting the development of cutting edge diagnosis and treatments such as catheter-based treatment. Patients come from all over the country for pediatric heart transplants and artificial heart treatment.

Safe and reliable pregnancy and delivery management

In recent years, the possibility of women who would have earlier given up on pregnancy becoming pregnant has been increasing. In pregnancies complicated by heart disease, we support both the mother and the child by providing painless delivery through epidural anesthesia for protecting heart function, complete prenatal checkup of the fetal heart, and non-invasive prenatal testing (NIPT). It has been our endeavor to make NCVC a place that connects lives of generations, such as when a baby girl with heart disease born here grows up to adulthood and returns to see her own child at the place of her birth.

Fetal stage diagnosis of heart disease

We use ultrasonography to test the fetal heart for disease. Currently, about 75% of all fetal heart disease that requires immediate hospitalization treatment can be diagnosed at the fetal stage. Thus, treatment can be planned even well before birth.

Common congenital heart disease in babies

We are ready for the treatment of the most critical form of congenital heart disease such as hypoplastic left heart syndrome, and right atrial isomerism with total anomalous pulmonary venous connection and others. The common congenital heart disease such as ventricular septal defect and strabismus of Fallot are also welcome to treat in our institute. We have successful experiences to treat adults with congenital heart disease.

Congenital heart disease in infants

Currently, many patients with congenital heart diseases overcome the effects of clinical diagnosis and reach adulthood. NCVC is one of the biggest facilities in Japan serving adult patients with congenital heart diseases. They have pathophysiological conditions evaluated, given catheter-based treatment, so operated, and given preoperation testing if they are necessary.

Compact extracorporeal venous assist device (EVA) for treatment of acute severe heart failure

The compact extracorporeal venous assist device (EVA) is a minimally invasive heart assist device used for treatment of patients with severe heart failure. It is a portable, ultra-small, low-weight, and portable device that can be placed in the body through a cut in the chest and activated with outpatient surgery. The EVA has been successfully utilized in a wide range of patients with severe heart and/or respiratory failure.

Cryopreserved homograft transplantation

Cryopreserved homograft transplantation is the leading edge technology in transplantation medicine. The cryopreserved heart valve and blood vessel were developed at the National Cerebral and Cardiovascular Center from 2016. Artificial vascular conduits are also developed. Cryopreserved homografts are better suited for heart replacement in congenital heart disease, heart valve replacement surgery of young patients with congenital heart disease, and patients with severe infective endocarditis.

Technology that firmly links life from the fetus to adulthood

Innovative therapeutic strategies for severely advanced heart failure

We are engaged day after day in research and clinical practice to save patients’ lives and improve their QOL by bridging basic studies and clinical care.

Introduction of Departments

- **Pediatrics, Obstetrics and Gynecology**: Can be planned well even before birth.

- **Heart Failure**: The ongoing treatment, including drug treatment, catheter-based treatment for valvular disease and coronary artery disease, is provided to patients from all over Japan. The division also has the first palliative care service in Japan specialized in advanced heart failure and its diseases.

- **Department of Transplant Medicine**: Transplantation cardiology is taking a leading place in providing interdisciplinary therapeutic strategy for severely advanced heart failure which cannot be treated with conventional medical or surgical therapies. For this, the foundation of medical practice of pediatric cardiovascular assist device (PCD) for cases of acute and severe heart failure is also established. Therapeutic strategy for severe heart failure includes the use of PCD and heart transplantation is given to those advanced heart failure patients with dilated cardiomyopathy and post-myocardial infarction cardiomyopathy.

- **Department of Artifical Organs, Research Institute**: We have developed a variety of artificial organs that have contributed to advances in the treatment of severe heart failure. These include an extracorporeal venous assist device, which is the first one to be clinically available in Japan. Both bench and basic researches have been performed focusing on clinical management of artificial organs to suppress complications under clinical use as well as to improve quality of life of patients. We have achieved excellent results in the application of variety of artificial organs with innovative technologies.

- **Organ and Tissue Transplantation Treatment**: We are ready for the treatment of the most critical form of congenital heart diseases such as hypoplastic left heart syndrome and right atrial isomerism with total anomalous pulmonary venous connection and others. We are also ready for the treatment of heart failure and other heart diseases. The division also has the first palliative care service in Japan specialized in advanced heart failure and its diseases.
Nurses are required to sharpen knowledge and skills, as practitioners of nursing and coordinators of team medicine, to provide high-quality care made possible by the capabilities of all nurses.

**The philosophy of the Department of Nursing**

_Nurses should properly understand the needs for patients who have different health conditions. They shall treat patients with the latest knowledge and technology to assess nursing care to perform their duties with personal attention and creativity.

_Understanding the social changes related to medical care, nurses should support patient’s decision making by building good relationships. The role of the nurse is to work with various other professionals as coordinators of interdisciplinary teams, and in change of nursing professionals for the part of insurance and health care._

_As nurses who specialize in cardiovascular disease nursing, we constantly try to educate nurses, motivate others to grow through education and always make efforts to disseminate updated information nationwide._

The NCVC Career Ladders supports nurses to achieve their goals

The Department of Nursing has NCVC Career Ladders that supports nurses to achieve their individual career goals on their responsibilities and to help design their career based on their capabilities, life style and social needs.

The General Ladders are structured for helping the basic growth as a nurse while pursuing their careers. The Specialist Ladders are designed for enhancing their specialties for cardiovascular disease nursing. The General Ladder in particular has activity goals in each level in order to grow in skills in nurse philosophy, and to continue their efforts to achieve the goals through group training and on-site job training.

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**State-of-the-art imaging technology for minimally invasive treatments and surgeries**

**Diagnosis of Radiology**

_Please find more information on page 16._

_Providing the high quality clinical data for patients_

**Clinical Laboratory Medicine and Genetics**

_Please find more information on page 15._

**Pharmacy**

_Duties of pharmacists in the ward strengthened to promote appropriate use of pharmaceutical products_

**Clinical Engineering**

_Providing support to healthcare workers through the operation and management of advanced medical devices_

**Clinical Engineering**

Support of clinical engineers for patients with artificial hearts

_The Department of Clinical Engineering operates and manages advanced medical devices. With regard to work related to ventilator assist devices (VAD), in particular, clinical engineers with specialist certification take care of operation of the devices, training of the patient and family members, and hospital staffs after discharge so that patients with VAD can live in comfort without anxiety during the waiting period from the hospitalization up to transplantation._
Next generation healthcare realized through open innovation

Alliances with companies and universities promoted by the Department of Industrial-Academic Collaboration

Collaboration with private corporations and universities is essential for the realization and diffusion of innovative medical technologies. By further development of technology needs based on clinical needs directly linked to the advanced medicine, the Department of Industrial-Academic Collaboration aims to create the next generation of medical devices, pharmaceuticals, and healthcare businesses.

Accumulating specimens and clinical information in Biobank

The NVCV Biobank, established in June 2012, has developed with the collaboration of more than 12,000 patients as of 2019. The Biobank provides specimens and clinical information from patients with cardiovascular and cardiovascular related diseases to approved NVCC researchers and data from academic and medical affiliates in joint research or collaborating research with NVCC. The Biobank is a project for medical research and development of the new diagnostic testing, treatment and prevention using stored human samples such as blood, serum, and residual tissues dissected during surgery or autopsy combined with medical information.

Committed to improve the quality of healthcare through programs of the Division of Education and Human Resource Development and the OIC Training Center

The Division of Education and Human Resource Development needs to develop educational and training programs in which the trainees learn basic medical technology, surgical operation and management of the latest medical devices. Apart from providing medical education, we also aim to propose concepts of new medical services and promote their development to improve medical care, anticipating the needs of the future.

We conduct various training programs and seminars on clinical research management, specific clinical research projects of physicians and training in designated nursing procedures, and conduct mock training at the Center. In particular, the OIC training center which is the only facility in Japan that specializes in cerebrovascular and cardiovascular medicine, is equipped with a large number of advanced simulators.

Committed to create a world-class biomedical innovation cluster by activating innovation

Open innovation which utilizes resources from anywhere in the world has now become essential for realizing next generation healthcare. In Japan, however, the mobility of research talent is very low, and the flow of the necessary knowledge is also underdeveloped. At NVCV therefore, the Research and Development Initiative Center was established in April 2019 to create the Open Innovation Center (OIC) with a structure that would facilitate convergence of the required knowledge and utilization of resources. Science Cafe has been opened in OIC to increase opportunities for communication between researchers and medical doctors with the hope of incubating new ideas. Interaction among researchers will be accelerated by providing seminars and other events. Joint researches with many private companies will be conducted under one roof in the newly established Open Innovation Laboratory.

Examples of joint with private corporations

1. KENTO Condominium Project

Our joint project with Kimitsu Real Estate Co., Ltd. is progressing at the condominium apartment house in Northern Osaka Health and Biomedical Innovation Town (KENTO). The residents only take a highly advanced health examination of NVCC for circulatory diseases (once per unit) using the NVCC Health Management system (e.g., receiving advice from NVCC by transferring data such as blood pressure or body weight to pre-installed medical equipment in each unit via Internet). In contrast to periodic health examination like cohort study, we aim to develop new preventive methods of cerebral and cardiovascular diseases by collecting and analyzing daily-based longitudinal dataset.

2. KENTO Heart Safe City Project

This is a joint research project with Philip’s Japan, Automated external defibrillators (AEDs) have been positioned systematically in the KENTO and persons who can provide emergency treatment before the arrival of emergency medical service are being trained as first responders. With this project, we pursue to achieve the world’s highest survival rate after cardiac arrest.

Omics Research Center deciphers unexplored molecular basis of cardiovascular diseases by means of multi-omics approaches

Omics Research Center (OIC) was founded in April 2015 aimed at interrogating unexplored molecular mechanisms underlying several cardiovascular diseases and identifying novel biological, genetic, and clinical markers to achieve early diagnosis and prevention of patients at risk. OIC implements multi-omics approaches including comprehensive genomic, genetic, proteomic, transcriptomic, and even physiologic analyses and takes advantage of international collaborations.

Analyzing nationwide dataset in the Center for Cerebral and Cardiovascular Disease Information

The center is collecting data related to cerebrovascular and cardiovascular diseases throughout Japan to accurately identify the causes of morbidity and mortality. For this purpose, the center updates the Japanese Registry of All Cerebral and Vascular Disease (J-RADS) jointly with the Japanese Circulation Society and performs the Japan Stroke database and Disease Registry. The center’s goal is to accurately capture disease-related information, to formulate the detailed dataset, to enhance the statistical registration system, to provide the research environment for analyzing the nationwide dataset and give those results back to people and to investigate common risk factors and solution of both stroke and cardiovascular disease by aggregating the nationwide dataset.
A dietary approach to preventing cerebral and cardiovascular disease

The NCVC is promoting the Karushio diet, a new low-salt population approach to meals.

The Karushio Project is a broad initiative to promote dietary improvements in order to prevent cerebral and cardiovascular disease

The NCVC is working to develop and discover intellectual assets as a way to give something back to society in the form of research findings and other expertise. One result of that effort is the Karushio diet, a new approach to reducing salt in order to highlight flavor. Reflecting the belief that diet is part of the treatment process, the NCVC offers patients delicious meals that contain less than 2 grams of dietary salt per serving. Karushio meals are distinguished by the way they use soup stock and by their colorful combinations of ingredients. Specifically, they prepare soup using soup stock that is seasoned with dried bonito shavings, soy sauce, salt, and sugar. In addition to creating more consistent flavors, this soup stock serves to highlight the flavor of individual ingredients. We’ve embarked on a number of initiatives in response to requests from patients who have expressed a desire to enjoy the NCVC’s meals even after they’ve been discharged, including selling low-salt based kitsh, publishing a collection of low-salt recipes, and holding cooking classes. We also worked with overseas partners to produce a Russian version of the recipe collection with changes to accommodate Russian culture.

We’re looking for delicious, low-salt meals through the S-1 Grand Prix (S-1g)

We host the S-1g, a recipe contest that solicits delicious, low-salt meal ideas. Winning recipes are featured in campaigns to raise awareness of the need to lower salt intake in various regions. The contest’s name reflects the ideal of reducing salt content in each meal to 1 gram.

We’re working with corporate partners to raise awareness through our Karushio certification system

Our Karushio certification system is geared to make it easier for consumers to choose healthy foods by testing commercially available low-salt foods submitted by manufacturers and granting those that meet certain criteria the right to display a certification mark.

Basic research closely linked to the work of the Hospital: To better understand cerebral and cardiovascular diseases and to develop methods for their diagnosis, treatment, and prevention

More than 30% of deaths in Japan are caused by cerebral and cardiovascular diseases. To make improvements, the excellent researchers undertake globally unique research making full use of world-class facilities.

Gene analysis for realizing precision medical care for cerebral and cardiovascular diseases

We perform genetic analysis for menigitic diseases using targeted resequencing, whole exome and whole-genome analysis. SNP typing and its analysis enable us to discover the new risk alleles for common diseases. These analyses are supported by an advanced technique of informatics for big data.

Elucidation of the molecular mechanisms of diseases for developing new treatments

In research aimed at elucidation of the molecular mechanisms of cardiovascular diseases, we have identified novel transcription factors that regulate fetal cardiovascular development. Further, in research focused on pulmonary hypertension, we identified the roles of interleukins and developed a new method of treating Takayasu arteritis.

Research with an integrative perspective encompassing all levels from the molecule to the individual

We pursue research that uses integrated analytical techniques covering the wide range, comprising molecules, cells, tissues to individual for elucidating the novel mechanisms of cerebral and cardiovascular diseases and establishing new methods of treating them. We have discovered new factors and physiological phenomena through the analysis of vascular endothelial cells of small blood vessels and blood components, and studies on animal models of diseases.
Responsibilities of this National Center for Advanced and Specialized Medical Care and Research (NC) where cerebral and cardiovascular specialists of medical care and research are trained

The NC focuses its efforts in education of young healthcare providers and researchers, as a center that leads Japan’s cerebral and cardiovascular care.

Various opportunities offered for nurturing human resources

NCVC’s physician training program has two streams. One is a Resident Training Program for doctors who have completed junior residency to acquire wide-ranging knowledge and technical expertise. The other is a Specialist Training Program for doctors to hone their skills in specialized fields chosen by them. Residents and Specialist doctors trained by us, whose number now exceeds 2,000, are actively sharing their merit in Japan and abroad.

As for nurses’ training, we have a system for training not only generalists but specialist or educator nurses. Training in designated procedures, a first of its kind program started by the NC, and NCVC’s Cerebral and Cardiovascular Expert Nurse (CVEN) accreditation program are contributing to improvement in the quality of nursing.

Our Research Fellowship Program is for nurturing young research talent. The Research Institute of the NCVC undertakes peptide exploration and device development, apart from research on pathophysiology. Therefore, we accept also researchers from fields other than medical research. Quite a few young researchers are producing many promising research results through collaboration with the Hospital, which is a unique feature of the NCVC.

Training of young doctors to prepare them to shoulder the task of developing cerebral and cardiovascular medical care in Japan

The resident training period for doctors after completing junior residency is three years and the trainee doctors acquire all-round experience in the department they choose.

The specialist training period for doctors who have completed the senior residency is two years in principle and they receive specialized training in the field of their specialization. A shorter training than previously is also available from FY2018 in response to changes in training system of young doctors.

NCVC actively undertakes clinical research that might lead to the development of new treatment methods apart from providing cutting-edge treatment. A large number of research papers with a resident or specialist trained doctor as the senior author have been published. Also, it is possible for the doctors to obtain a postgraduate degree through our joint postgraduate school program.

Advanced nursing practitioners are produced through designated procedure training courses

From FY2019, we are the first National Center to start a category 2 type designated procedure training course. This training course, named the “Special Case Intensive Management course”, capitalizes on the advantages of this advanced treatment hospital that provides highly advanced cerebral and cardiovascular medical care. We have created an educational program and system where specialist doctors with rich experience and other specialists work together to train the nurses so that they can perform their roles satisfactorily in the interdisciplinary medical teams that treat severely ill patients who require intensive care.

In particular, nurses acquire heightened clinical insight and an ability to assess the patient’s condition through the highly practical education received at the training center within the NCVC. The goal is to enable the nurses to contribute to safe and high-quality medical care based on transparency and a high level of ethics.

Youthful talent channeled into controlling cerebral and cardiovascular diseases

As a research fellow, one can entirely concentrate on research activities at the Research Institute. Research is not restricted to conventional basic and clinical medicine but includes numerous fields such as genomics, medical science, peptide and protein science, physiological function analysis, molecular imaging, regenerative medicine, drug discovery, and development of artificial organs and diagnostic methods. This has yielded highly innovative outcomes and patented products and technology. An Open Innovation Center (OIC) has been established as a unit that links the Research Institute with the Hospital. The OIC will function as a hub of advanced clinical research and translational research and moreover promote collaboration with industry.

Education and Training
Specialists at the cutting-edge collaborate with the aim of creating next generation medical treatment and health care

Hospital

The NCVC is one of the innovative medical institutions in the world, providing advanced treatment of cardiovascular and cerebrovascular disorders. It is the only national center for advanced and specialized medical care and research in Japan that focuses on cerebral and cardiovascular diseases.

Research Institute

The most distinctive feature of the NCVC Research Institute is its ability to address the real issues facing clinicians and disseminate research findings back to clinicians. We are actively pursuing R&D and the clinical application of its results jointly with the hospital.

The intellectual assets, resources, and data that we have accumulated until now will all be used for enhancing open innovation through collaboration with industry and academia. We have adopted unique measures such as setting up the “Open Innovation Lab” as a joint research hub, and the “Science Café” as a space for interaction and information exchange among the staff.

OIC

The NCVC has been engaged in treatment and prevention of cerebral and cardiovascular diseases since its inception in 1977, with the hope of enhancing people’s health and happiness. We have been ceaselessly moving forward for controlling cerebral and cardiovascular diseases, with an open attitude about adopting new technologies.

1987 Dr. Teruo Yoshida installed as the first president
1990 Construction of the radiology ward completed
1992 Dr. Takuma Kusumoto installed as the second president
1993 The National Cardiovascular center was approved as an advanced treatment hospital
1995 Dr. Yasunori Kawamura installed as the third president
1996 Nationwide network offering integrated medical support for cerebral and cardiovascular diseases (J-NET) established
1997 Heart Transplant Office established
1998 Twentieth anniversary ceremony held
1999 Division of Clinical Trial Management established

2000 Construction of the biotechnology ward completed
2001 Second Conference on the Medical Research and Development Agency
2002 Dr. Hideki Watanabe installed as the fourth president
2003 Construction of the genomics healthcare ward completed
2004 Advanced Medical Engineering Center opened
2005 Clinical Research Center opened
2006 Two-year Strategy for Conquering Cerebral and Cardiovascular Diseases formulated
2007 Thirtieth anniversary ceremony held
2008 Dr. Nobuo Hashimoto installed as the fifth president
2009 Cell Processing Center established

2010 Construction of the radiology ward completed
2012 Ten-year Strategy for Conquering Cerebral and Cardiovascular Diseases
2013 Heart Transplant Office established
2015 NCVC comes under National Research and Development Agency
2016 Ethics Research Center opened
2017 Second Conference on the Medical Care Cluster Formation Council held
2018 NCVC certified as Asia’s first and only academic institution
2019 Construction of the biotechnology ward completed
2020 Construction of the radiology ward completed
2021 Dr. Kinya Otsu takes charge as the sixth president
2022 Emergency Department established
2023 Reorganized as an institution with an independent administration