

DIALYSIS, RENAL TRANSPLANTATION, CLINICAL ENGINEERING, AND DIET THERAPY FOR DIABETES MELLITUS AND CHRONIC KIDNEY DISEASE

2021

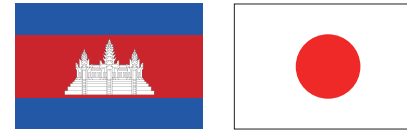
JAC-DSC

Japanese Assistance Council of establishing
Dialysis Specialists system in Cambodia



JAC-DSC

~ intensive seminar ~
August 29, September 5, 2021
Phnom Penh, Cambodia (on Web)



DIALYSIS, RENAL TRANSPLANTATION, CLINICAL ENGINEERING, AND DIET THERAPY FOR DIABETES MELLITUS AND CHRONIC KIDNEY DISEASE

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*August 29, September 5, 2021
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Japanese Assistance Council of Establishing Dialysis Specialists
System in Cambodia (JAC-DSC)

International University (IU), Phnom Penh, Cambodia

Supported by

Cambodian Association of Nephrology (CAN)

NGO Ubiquitous Blood Purification International (NGO UBPI)

Japanese Society for Technology of Blood Purification (JSTB)

President of the Japanese Assistance Council of Establishing Dialysis Specialist System in Cambodia (JAC-DSC)

Hideki Kawanishi, M.D., Ph.D.



Vice President, Kidney Center and Surgery, Tsuchiya General Hospital, Hiroshima, Japan
Clinical Professor, Faculty of Medicine, Hiroshima University, Hiroshima, Japan
President, International Society of Blood Purification (ISBP) / Congress President of ISBP 2016
President, Japanese Society for Hemodiafiltration
Council Member, Japanese Society for Peritoneal Dialysis
Council Member, Japanese Society for Dialysis Access
Council Member, Japanese Society for Blood Purification in Critical Care
President, NGO Ubiquitous Blood Purification International (NGO UBPI), Yokohama, Japan
Guest Professor, International University, Phnom Penh, Cambodia

Dear Participants.

Congratulation for “the intensive seminar of Dialysis, Renal Transplantation, Clinical Engineering, and Diet Therapy for Diabetes Mellitus and Chronic Kidney Disease in Cambodia 2021”. This seminar will be informed the important message for ESRD/CKD field in Cambodia and South East Asian countries.

The number of patients being treated for ESRD globally was estimated to be 3,200,000 at the end of 2017 and, with a 6% growth rate, continues to increase at a significantly higher rate than the world population. In particular, the remarkable increasing rate was shown in Asian countries. However, the access to treatment is still limited in many developing countries and a number of patients with terminal renal failure do not receive treatment. In order to save these patients, it is necessary to enhance the dialysis system, the educated staff and association of each countries.

Japanese Assistance Council of Establishing Dialysis Specialist System in Cambodia (JAC-DSC) was organized the several education programs from 2015. Moreover, the Cambodia Association of Nephrology was stated at 2016 and approval by International Society of Nephrology (ISN). This is a great opportunity recognized worldwide for the Cambodian Nephrology Society. I hope that everyone will grow in the renal area with this educational program.

We will expect to be built the cooperation between JAC-DSC and Cambodian Nephrology Team and younger generation.

Finally, the current COVID19 pandemic puts many people at risk. Overcoming this is the important challenge at the moment. We need to bring together everyone’s strength.

Adviser of the JAC-DSC

Akihiro Yamashita, Ph.D.



Professor, Department of Chemical Science and Technology, Faculty of Bioscience and Applied Chemistry, Hosei University, Tokyo, Japan
Vice President and Executive Director, NGO UBPI, Yokohama, Japan
Guest Professor, International University, Phnom Penh, Cambodia

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ISN Oceania South East Asia Regional Board Member

Secretary General of the JAC-DSC

Haruki Wakai, M.D.



President, Reiseikai Medical Corporation, Tokyo, Japan
Director, Shinagawa Garden Clinic, Tokyo, Japan
Assistant Director, Gotanda Garden Clinic, Tokyo, Japan
Council Member and Secretary, Japanese Society for Home Hemodialysis
Auditor Secretary, Japanese Society for Renal Nutrition
Director and Vice Secretary General, NGO UBPI, Yokohama, Japan
Guest Professor, International University, Phnom Penh, Cambodia

// Introduction of Chairpersons //

Svay Kamol, M.D.



Assistant Professor and Lecturer at Health Science Institute of RCAF, Cambodia

Chan Sovandy, M.D.



Vice President, CAN, Cambodia
Adviser, Cambodia-Japan Friendship Blood Purification Center, International University, Phnom Penh, Cambodia
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Thim Pichthida, M.D.



Medical Doctor, Angkor Hospital for Children, Siem Reap, Cambodia
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Shunichiro Urabe, C.E., Ph.D.



Eijin Clinic, Hiratsuka, Japan

Nov Tam, M.D., SCHP, B.A.



Clinical Director, Reiseikai Japan Clinic Phnom Penh

Phon Elin, M.D.



Deputy Clinical Director, Reiseikai Japan Clinic Phnom Penh

Minoru Ito, M.D., Ph.D.



Assistant Director, Department of Nephrology and Dialysis Center, Yabuki Hospital, Yamagata, Japan
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Associate Professor, Department of Blood Purification, Tokyo Women's Medical University, Tokyo, Japan
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Ryoichi Sakiyama, Ph.D.



Associate Professor, Bioartificial Organs Lab, Department of Biomedical Engineering, Osaka Institute of Technology, Osaka, Japan

KIM Sam Oudum, BEd, LLB, BMedSci, M.D.



Internal Medicine Resident (DES) 2nd Batch of International University (IU)
Resident Internist at Emergency Department of Khmer Soviet Friendship Hospital

// Introduction of lecturers //

(Alphabetical order by last name)

Takayuki Abe, C.E.



Tokyo Women's Medical University, Department of Clinical Engineering, Tokyo, Japan

Satoshi Ebihara, R.N., C.E., B.A.



Chief Registered Nurse, Reiseikai Medical Corporation, Tokyo, Japan
Clinical Engineer, Bachelor of Arts

Motoko Kato, C.E.



Eijin Clinic, Hiratsuka, Japan

Yoshikazu Kuroki, M.D., Ph.D.



Research Associate, Department of Urology, Osaka City University Graduate School of Medicine, Osaka, Japan

Kanenori Maeda, M.D., Ph.D.



The Department of Urology, Nephrology and Dermatology Maeda Clinic, Nagasaki, Japan

Shohei Matsuzawa, C.E.



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Toshihide Naganuma, M.D., Ph.D.



Lecturer, Department of Urology, Osaka City University Graduate School of Medicine, Osaka, Japan
Guest Professor, International University, Phnom Penh, Cambodia

Hyogo Nakakura, M.D., Ph.D.



Chief Director of Department of Hemodialysis and Apheresis of Arisawa General Hospital, Osaka, Japan

Makoto Saito, C.E.



Public Tomioka General Hospital

Takatoshi Sakurasawa, C.E., B.S.



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Junji Uchida, M.D., Ph.D.



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Guest Professor, International University, Phnom Penh, Cambodia

Hiroki Yabe, R.P.T., Ph.D.



Associate Professor, Department of Physical Therapy, School of Rehabilitation Sciences, Seirei Christopher University, Shizuoka Japan.

Kazuyuki Yamaguchi, M.D.



Postgraduate student and Medical Doctor, Osaka City University Graduate School of Medicine, Department of Urology, Osaka, Japan

Hiroko Yamamoto, C.E., M.M.A.



Tokyo Medical And Dental University, Medical Hospital

The intensive seminar of Dialysis, Renal Transplantation, Clinical Engineering, and Diet Therapy for Diabetes Mellitus and Chronic Kidney Disease in Cambodia 2021 (on Web)

Day-1: August 29, Sun., 2021

Opeing 8:20- 8:30

Information for participants *by Kenichi Kokubo (Vice president of the JSC-DSC)*

Opening Remark *by Hideki Kawanishi, M.D., Ph.D. (President of the JSC-DSC)*

Lecuture 1 8:30-9:20

Chairpersons (facilitators): Thim PichThida, Toru Hyodo

8:30- 8:45 【01】 Histroy of renal replaceent therapy by Hideki Kawanishi, M.D., Ph.D.

8:45- 9:05 【02】 Management and clinical practice of vascular access
by Toshihide Naganuma, M.D., Ph.D.

9:05- 9:20 【03】 CKD and Dialysis Treatment in Children by Hyogo Nakakura, M.D., Ph.D.

9:20- 9:30 Coffee Break (Q&A session in breakout room)

Lecuture 2 9:30-10:20

Chairpersons (facilitators): Tam Nov, Kenichi Kokubo

9:30- 9:50 【04】 “Long-time hemodialysis”and “Frequent hemodialysis” by Kanenori Maeda, M.D., Ph.D.

9:50-10:05 【05】 Clinical aspect of hemodiafiltration by Hideki Kawanishi, M.D., Ph.D.

10:05-10:20 【06】 The Current Status and Future Challenges of ERS in Cambodia
by Thim Pichthida, M.D.

10:20-10:30 Coffee Break (Q&A session in breakout room)

Lecuture 3 10:30-11:15

Chairpersons (facilitators): Thim PichThida, Toru Hyodo

10:30-10:45 【07】 Burden of Cambodian Dialysis Patients under COVID-19 Crisis by Nov Tam, M.D.

10:45-11:00 【08】 Practical working flow in a dialysis center by Satoshi Ebihara, R.N., C.E., B.N.

11:00-11:15 【09】 Monitoring for circulatory dynamics during hemodialysis by Takayuki Abe, C.E.

11:15-13:00 Lunch Break (Q&A session in breakout room)

Lecuture 4 13:00-14:05

Chairpersons (facilitators): Phon Elin, Toru Hyodo

13:00-13:20 【10】 Cardiovascular and cerebral vascular disease by Yoshikazu Kuroki, M.D., Ph.D.

13:20-13:35 【11】 CKD-MBD by Hideki Kawanishi, M.D., Ph.D.

13:35-13:50 【12】 Acute kidney injury (AKI) by Yoshikazu Kuroki, M.D., Ph.D.

13:50-14:05 【13】 Apheresis and continuous renal replacement therapy by Hiroko Yamamoto, C.E.

14:05-14:15 Coffee Break (Q&A session in breakout room)

Lecuture 5 14:15-15:20

Chairpersons (facilitators): Nov Tam, Hideki Kawanishi

14:15-14:35 【14】 Basic carbohydrate counting by Phon Elin, M.D.

14:35-15:00 【15】 Advanced carbohydrate counting, Pre-Dialysis Diabetic CKD Diet Therapy
by Toru Hyodo, M.D., Ph.D. and Phon Elin, M. D.

15:00-15:20 【16】 Diet Therapy (control of salt and protein) by Yukie Kitajima, R.D., Ph.D.

Day-2: September 5, Sun., 2021

Lecuture 6 8:30-9:30

Chairpersons (facilitators): Kim Sam Oudum, Minoru Itoh

8:30- 8:50 【17】 Kidney transplantation as renal replacement therapy by Junji Uchida, M.D., Ph.D.

8:50- 9:10 【18】 Management Against Renal Anemia by Norio Hanafusa, M.D., Ph.D.

9:10- 9:30 【19】 Peritoneal dialysis (Basics and Up to date) by Hideki Kawanishi, M.D., Ph.D.

9:30- 9:40 Coffee Break (Q&A session in breakout room)

Lecuture 7 9:40-10:20

Chairpersons (facilitators): Svay Kamol, Norio Hanafusa, M.D., Ph.D., Sunichiro Urabe

9:40-10:00 【20】 Sarcopenia, frail, nutrition in CKD patients by Minoru Ito, M.D., Ph.D.

10:00-10:20 【21】 Excercise therapy for daialysis patients by Hiroki Yabe, RPT, Ph.D.

10:20-10:30 Coffee Break (Q&A session in breakout room)

Lecuture 8 10:30-11:25

Chairpersons (facilitators): Kim Sam Oudum, Kenichi Kokubo

10:30-10:55 【22】 Dose and kinetics of Dialysis Therapy by Akihiro C. Yamashita, Ph.D.

10:55-11:10 【23】 Performance criteria of dialyzer -clearance- by Ryoichi Sakiyama, Ph.D.

11:10-11:25 【24】 Hemodialysis and hemodiafiltration -blood circuit and operation-
by Shunichiro Urabe, C.E., Ph.D.

11:25-13:00 Lunch Break (Q&A session in breakout room)

Lecuture 9 13:00-13:50

Chairpersons (facilitators): Chan Sovandy, Ryoichi Sakiyama

13:00-13:20 【25】 Blood Pressure Control and Water and Sodium Restriction in Dialysis Patients
by Shohei Matsuzawa, C.E.

13:20-13:35 【26】 Management of dry weight by Takatoshi Sakurasawa, C.E., B.S.

13:35-13:50 【27】 Quality Management of Dialysis Fluid by Ayumi Takizawa, C.E., M.T.

13:50-14:00 Coffee Break (Q&A session in breakout room)

Lecuture 10 14:00-14:50

Chairpersons (facilitators): Kim Sam Oudum, Kenichi Kokubo

14:00-14:15 【28】 Managemant of vascular access - massage for vascular access - by Motoko Kato, C.E.

14:15-14:30 【29】 Peripheral Artery Disease of Dialysis Patients and Monitoring for lower-limb ischemia
by Makoto Saito, C.E.

14:30-14:50 【30】 Home Hemodialysis and COVID 19 measures in a dialysis center by Haruki Wakai, M.D.

Closing 14:50

Closing Remark *by Toru Hyodo (Vice president of the JSC-DSC)*

Information for participants *by Haruki Wakai (Secretary General of the JAC-DSC)*

[01] History of renal replacement therapy

Hideki Kawanishi, M.D., Ph.D.

Modern dialysis therapy started in the 1960s. Since then, several new developments in dialysis machines and systems have occurred and have made dialysis a life-saving treatment for patients with CKD.

[02] Management and clinical practice of vascular access

Toshihide Naganuma, M.D., Ph.D.

Vascular access (VA) is created in the patient's body to allow large volumes of blood to circulate between the patient and dialysis machine. VA is an essential component in dialysis therapy. I would like to show you a video of the typical arteriovenous fistula (AVF) creation procedure at our hospital.

Daily management of VA is also very important, due to its frequent use and changing the state of VA stenosis and the state of puncture and hemostasis at the previous treatment.

In this lecture, we will discuss about VA management including VA puncture method, monitoring and surveillance of VA stenosis.

[03] CKD and Dialysis Treatment in Children

Hyogo Nakakura, M.D., Ph.D.

The time has passed where the only goal is to prolong the life of pediatric patients with chronic renal failure. The present goal is to nurture the physical and mental health of these children to a level equal to that of healthy children. Children with chronic renal failure need to reliably assess renal function. In children, Schwartz formula is often used to calculate kidney function. This formula is clinically useful as it allows estimation of the normal serum Cr level from the patient's body. Unlike adults, many of the causes of childhood kidney failure are congenital and hereditary diseases. In children with CKD, most complications are similar to adults. But one of the child-specific complications is poor growth. Sufficient medical care is required to prevent poor growth.

PD is often the first choice for kidney replacement therapy in children with chronic renal failure. For children, PD is chosen because of its many advantages over HD. As renal replacement therapy for children with chronic renal failure, HD is also selected, but we need to be careful enough to do it. I would like to talk about the CKD and dialysis treatment in children.

[04] "Long-time hemodialysis" and "Frequent hemodialysis"

Kanenori Maeda, M.D., Ph.D.

Our normal kidneys work 24 hours a day. However, conventional hemodialysis is performed only 12 hours a week. At the present stage, insufficient hemodialysis care system (hemodialysis shortage) should not be accepted at least, since the upper limit of the hemodialysis dosage is not shown.

I will introduce data from DOPPS that is the Dialysis Outcomes and Practice Patterns Study from 11 countries and areas. DOPPS is a prospective cohort study of in-center hemodialysis patients. In this study, when treatment time was 30 minutes longer per one session, we recognized improvement in all-cause mortality, the rate of sudden death, risk of any hospitalization, risk of cardiovascular hospitalization and the risk of hospitalization due to chronic heart failure or fluid overload.

Additionally, I will show data from the Japanese Society for Dialysis Therapy Renal Data Registry (JRDR). A huge observational cross-sectional study from JRDR was conducted to determine the relationship between the treatment time and some objectives. In this study, as the treatment time becomes longer per one session, Kt/V urea, the control of serum phosphate levels and nPCR (normalized protein catabolic rate) are improving. As the treatment time becomes longer, the reduction rate of serum β_2 MG levels, the serum albumin levels and blood hemoglobin levels increases.

I will introduce about the Hemodialysis Product. This new index called HDP is a simple formula. The HDP equals hours per dialysis session times sessions per week squared. The authors write that a HDP above 70 is adequate for end-stage renal failure patients. This means that the times of sessions a week is more important than treatment time per session. The North American prospective randomized controlled trial validates that the HDP is appropriate as a surrogate marker.

Long-time hemodialysis and frequent hemodialysis are excellent treatment options.

[05] Clinical aspect of hemodiafiltration

Hideki Kawanishi, M.D., Ph.D.

Hemofiltration (HF) and hemodiafiltration (HDF) have developed for the removal of middle molecular (MM) solute near the molecular weight (MW) of 1 kDa since the middle molecular hypothesis in the 1970s. A large amount of substitution fluid is required for stable large filtration HF/HDF, but there is a limit to the off-line (bottle/back) method, and developed online HDF (ol-HDF) using a substitution fluid of aseptic/endotoxin-free by membrane separation technology. Currently, ol-HDF is generally replaced with 15-26 L (50-100 mL/min) for post dilution and 24-72 L (100-300 mL/min) for pre dilution, and it is high to obtain the amount of substitution fluid. It is necessary to increase the blood flow rate and total dialysate volume to compensate for the decrease in actual dialysate volume. Therefore, HF is clinically useful for dialysis-related distress syndromes, while the effects of HDF are due to improvement in removal efficiency. However, this increased removal efficiency does not produce adequate clinical differences at present when dialyzers themselves are highly efficient. This point is important when the clinical significance of HDF is evaluated.

[06] The Current Status and Future Challenges of ESRD in Cambodia

Thim Pichthida, M.D.

Hemodialysis (HD), acting as an artificial kidney, is one of the treatment options for end stage renal disease (ESRD). In Cambodia, the burdens of ESRD and hemodialysis have been increasing yet there is no national registry currently. Cambodia has its own obstacles to promote a better hemodialysis. In this lecture, the history, present condition, and issues of hemodialysis and nephrology in Cambodia will be discussed.

[07] Burden of Cambodian Dialysis Patients under COVID-19 Crisis

Nov Tam, M.D.

Cambodia detected its first case of COVID-19 just 3 days before WHO declared that the outbreak constituted as PHEIC, long before a third cluster outbreak was declared on February 20, 2021. It has disrupted all aspects of life in Cambodia. As in many other countries affected by the virus, economic hardship, lockdowns in cities, and food insecurity ensued. Before COVID-19, hemodialysis patients already faced major burdens. The pandemic appears to be decreasing their quality of life and survival even further. We learn to better understand the situation of dialysis patients and the challenge they face in receiving essential medical care. This will help us together to find ways and the need to improve the situations for hemodialysis patients in Cambodia.

[08] Practical working flow in a dialysis center

Satoshi Ebihara, R.N., C.E., B.N.

Dialysis therapy requires the cooperation of many medical professionals. Nurses and clinical engineers perform most of the daily practical work. In this lecture, the practical working flow at a standard dialysis room in Japan will be explained through the use of video footage. This virtual experience will allow you to familiarize yourself with dialysis treatment.

[09] Monitoring for circulatory dynamics during hemodialysis

Takayuki Abe, C.E.

Extracorporeal blood circulation and water removal during dialysis therapy greatly affects the hemodynamics of the patient during hemodialysis treatment. Hemodynamics is important for the safety of the treatment and the monitoring of hemodynamics by a blood volume measurement is effective to know the patient's condition during hemodialysis. In this lecture, the principle and clinical usefulness of blood volume monitoring during treatment will be discussed.

[10] Cardiovascular and cerebral vascular disease

Yoshikazu Kuroki, M.D., Ph.D.

Compared to the general population, dialysis patients show 2–5 times higher risk of incident acute myocardial infarction and poorer survival rate after acute myocardial infarction. This is also true for cerebrovascular diseases. The high incidence and high fatality rate are considered to synergistically increase the risk of death due to CVD. In this lecture, cardiovascular and cerebral vascular disease will be explained.

[11] CKD-MBD

Hideki Kawanishi, M.D., Ph.D.

Mineral and bone disorder is a major complication in patients with CKD, particularly those undergoing dialysis, and is a problem that has yet to be conquered. In this lecture, the role of parathyroid hormone, phosphorus, and calcium in CKD and international guidelines for the treatment of CKD-MBD will be introduced.

[12] Acute kidney injury (AKI)

Yoshikazu Kuroki, M.D., Ph.D.

Acute kidney injury (AKI) is an abrupt loss of kidney function that develops within 7 days. Generally it occurs because of damage to the kidney tissue caused by decreased kidney blood flow from any cause, exposure to substances harmful to the kidney, an inflammatory process in the kidney, or an obstruction of the urinary tract. In this lecture, we will discuss the mechanism and management of AKI.

[13] Apheresis and continuous renal replacement therapy

Hiroko Yamamoto, C.E.

Hemodialysis, hemodiafiltration, and hemodiafiltration are used in the treatment of patients with end-stage renal failure. Other blood purification therapies such as plasma exchange, direct blood transfusion, double filtration plasmapheresis, and plasma adsorption are classified as apheresis and are used to treat a variety of diseases. Continuous renal replacement therapy are used for the patients with acute kidney injury. In this lecture, the methods of apheresis and continuous renal replacement therapy will be discussed.

[14] Basic carbohydrate counting

Phon Elin, M.D.

Diabetes is the main cause leading CKD and dialysis induction in many countries as well as in Cambodia. Blood sugar control is important in diabetes patient, as it helps to prevent the complications. Basic carbohydrate counting is the basic meal planning option for managing blood glucose levels. Recently, carbohydrate counting has been shown to be a powerful method to control blood sugar in diabetic dialysis patients. In this lecture, the basic carbohydrate counting will be described as the diet therapy for CKD diabetic patients.

[15] Advanced carbohydrate counting, Pre-Dialysis Diabetic CKD Diet Therapy

Toru Hyodo, M.D., Ph.D. and Phon Elin, M.D.

According to the fact that only carbohydrate raises blood sugar, not fat, not protein, the advanced carbohydrate counting is practiced for insulin therapy patients. Every diabetic patient learns the insulin dose for 1 Carbohydrate Unit (10 g of carbohydrate) to keep good blood sugar level. Every patient injects insulin according to the amount of carbohydrate which he or she eats. However, they have already learned the basic carbohydrate counting. As the result, they inject almost the same dose of insulin at every meal. Only when the patients face the situations that they eat more or less carbohydrate than as usual, they change the insulin dose. They can get the flexibility of eating by the advanced carbohydrate counting. Diabetes is the main cause of dialysis induction in many countries. There are no dietitians who deal with CKD patients in Cambodia. Nephrologists must know how to treat with such diabetic and non-diabetic CKD patients by diet therapy. In this lecture the basic concept of diet therapy for these patients is explained.

[16] Diet Therapy (control of salt and protein)

Yukie Kitajima, R.D., Ph.D.

The purpose of diet therapy is to avoid malnutrition and prevent the progression of various hemodialysis related complications. The basics of the dialysis diet are as follows:

1. Control of salt and water intake
2. Appropriate energy intake
3. Control of potassium intake
4. Appropriate protein intake
5. Control of phosphorus intake

It is most important for dialysis patients to restrict salt. The first theme of this lecture will focus on ways to control salt. Also, if it is difficult for Cambodian dialysis patients to have regular dialysis (eg, 3 times / week), they need low-protein diet therapy. The second theme will cover foods high in protein and cooking methods to reduce protein content with specific examples.

[17] Kidney transplantation as renal replacement therapy

Junji Uchida, M.D., Ph.D.

Kidney transplantation is the optimal renal replacement therapy for patients with End-stage kidney disease (ESKD) because of greater longevity and better quality of life compared to dialysis therapy. Due to the scarcity of deceased donor and constantly growing kidney transplant waiting lists, living donor kidney transplantation accounts for approximately 90% of all kidney transplants in the Japan. The strategies have developed to overcome the problem of shortage of deceased donors. A kidney transplant candidate with an ABO- incompatible living donor has options to proceed with desensitization for ABO-incompatible transplantation. ABO-incompatible living donor kidney transplantation has been performed since the late 1980s in Japan. In this lecture, I would like to discuss significance of kidney transplantation as renal replacement therapy and ABO-incompatible kidney transplantation.

[18] Management Against Renal Anemia

Norio Hanafusa, M.D., Ph.D.

The chronic kidney disease (CKD) patients, including on hemodialysis, often experience anemia due to the decreased activity of erythropoietin because this hormone is produced in the kidneys. Although anemia is associated with worse outcomes, the normal hemoglobin levels have been shown not to improve outcomes or even to be associated with worse outcomes as well. Therefore, many guidelines recommend the target hemoglobin levels to be lower in CKD patients than the general population. Many hemodialysis patients also experience iron deficiency. The strategies against renal anemia include the administration of erythropoiesis-stimulating agents (ESAs) and/or iron. Transferrin saturation (TSAT) calculated from serum iron levels and total iron binding capacity (TIBC), and serum ferritin are two markers to be investigated in dialysis patients as iron indices. The target levels of these indices are quite different between the Japanese Society for Dialysis Therapy (JSdT) guideline and other guidelines. In Japan, conservative use of iron is recommended; the upper limit of serum ferritin allowed is 300ng/ml, while the Kidney Disease Improving Global Outcomes (KDIGO) guideline allows up to 500ng/ml. ESA hyporesponsiveness can occur in many conditions such as inflammation or wasting. This condition, which requires a high dose of ESA but cannot attain adequate hemoglobin levels, is shown to be associated with poor clinical outcomes of the patients. In this lecture, these topics will be discussed.

[19] Peritoneal dialysis (Basics and Up to date)

Hideki Kawanishi, M.D., Ph.D.

Peritoneal dialysis has been applied as a self-care and home-based procedure for patients with ESRD and has contributed to restoring and maintaining patients' social and family lives. In this lecture, peritoneal dialysis theory, devices, systems, and use in the clinical setting will be discussed.

[20] Sarcopenia, frail, nutrition in CKD patients

Minoru Ito, M.D., Ph.D.

Nutritional problems in CKD patients are complicated, and its causes are multifactorial. Malnutrition, Inflammation, and Atherosclerosis affect the nutrition of CKD patients strongly. In this lecture, we will focus on the special features of the nutrition of CKD and discuss the management of malnutrition for the patients.

[21] Exercise therapy for dialysis patients

Hiroki Yabe, RPT, Ph.D.

The decline in physical functions such as muscle strength and exercise tolerance is a major problem for CKD patients undergoing dialysis. Exercise therapy is the only treatment that can improve the physical function of dialysis patients. Clinicians must manage physical function and provide exercise therapy to prevent future adverse events. This lecture focus on the importance of physical function assessment and methods of exercise therapy.

[22] Dose and kinetics of Dialysis Therapy

Akihiro C. Yamashita, Ph.D.

The most important device of the dialysis therapy is a dialyzer, among which membrane is the crucial part of the device. Since there are many kinds of dialysis membrane, we should first learn their physicochemical properties including solute removal performance as well as biocompatibility. Since dialysis dose is usually represented by KT/V, we should learn how we compute the value and how we utilize the value for prescription, although it is not a universal index to evaluate the treatment.

[23] Performance criteria of dialyzer -clearance-

Ryoichi Sakiyama, Ph.D.

- 1) The clearance is introduced as an index representing the function of the living kidney and is used as a performance evaluation of the artificial kidney. The clearance is affected by various conditions when the clearance measured.
- 2) Internal filtration is filtration caused by pressure loss in the dialyzer in hemodialysis. Purification of the dialysate is very important since the dialysate flows into the living body side by internal filtration.

[24] Hemodialysis and hemodiafiltration -blood circuit and operation-

Shunichiro Urabe, C.E., Ph.D.

In the actual hemodialysis treatment, blood flow rate, dialysis fluid flow rate, and water removal rate are appropriately controlled by the dialysis machine. Especially in hemodiafiltration (HDF), the circuit configuration is more complicated because the system flow replacement fluid into the blood should be added, which differs depending on the dilution method. We should correctly understand which circuit configuration should be selected and how the blood flow, dialysate flow, replacement fluid flow, and water removal are distributed in the circuit. In this lecture, the configuration of blood circuits and operation for HDF treatment will be explained.

[25] Blood Pressure Control and Water and Sodium Restriction in Dialysis Patients

Shohei Matsuzawa, C.E.

Dialysis patients cannot excrete urine if the residual renal function is completely diminished. Therefore, the amount of drinking water is equal to all weight gain. Since the weight gain is a factor related to life prognosis, it must be properly managed. For this reason, we must know the relationship between the weight gain and salt intake. The salt intake between the inter-dialysis can be calculated by using the following formula based on the serum salt concentration in HD patients (approximately 140 mEq/L): The increase in the body weight (Kg) x 140 x molecular weight of salt (58.5)/1,000 = The increase in the body weight (Kg) x approximately 8 g. In other words, the formula means the consumption of salt at approximately 8 g per 1.0 kg weight gain (water retention of 1.0 L). Please introduce this formula to patients and utilize it.

[26] Management of dry weight

Takatoshi Sakurasawa, C.E., B.S.

Administration of appropriate dry weight (DW) is an important issue to normalize blood pressure and improve the quality of life (QOL) and prognosis of dialysis patients. Indicators for evaluating appropriate DW include physical findings like blood pressure and laboratory findings like cardiothoracic ratio on chest x-ray. However, since no single indicator to determine DW has been established, frequent evaluation of several indicators is the primary strategy to determine DW. This lecture will explain the characteristics of each indicator used for determining appropriate DW and the management methods of DW.

[27] Quality Management of Dialysis Fluid

Ayumi Takizawa, C.E., M.T.

Quality assurance of dialysis fluid purification is a vital component of dialysis treatment. Toll-like receptor mediated cytokine production can result from bacterial endotoxin contamination of dialysis fluid during dialysis treatment. Both scheduled and random water quality testing need to be performed in conjunction with equipment maintenance. The cleanliness of water used for dialysis is confirmed by measuring endotoxin and viable bacteria count. This lecture will cover quality assurance methods and problems faced during the dialysis fluid production process

[28] Management of vascular access - massage for vascular access -

Motoko Kato, C.E.

The vascular access (VA) is essential for hemodialysis therapy and the management of access condition has the great influence for successful hemodialysis. Recently, the VA massage has been developed and revealed its effectiveness. There are two kinds of VA massages, one is the methods for patients just to stroke their own VA at home and the other is the pressure VA massage for the dialysis staffs to stroke the stenotic vessels with pressure. In Japan, it is reported that these massages keep VA condition for longer period. We will show the practice of AVF massage by video images in this lecture.

[29] Peripheral Artery Disease of Dialysis Patients and Monitoring for lower-limb ischemia

Makoto Saito, C.E.

Diabetes is a well-known risk factor for peripheral arterial disease (PAD) of the legs. CKD has also been reported to be an independent risk factor for PAD of the legs. It is known that PAD incidence is high among dialysis patients with stage 5D CKD and is associated with very poor prognosis. In the Dialysis Outcomes and Practice Patterns study (DOPPS), the worldwide and Japanese prevalence rates of PAD in dialysis patients are reported to be 25.3% and 11.5%, respectively. In this lecture, peripheral artery disease of dialysis patients and early detection and monitoring for PAD.

[30] Home Hemodialysis and COVID 19 measures in a dialysis center

Haruki Wakai, M.D.

HHD is a treatment option that allows patients to perform hemodialysis at home under the supervision of physicians. A hemodialysis machine is installed in the home, and the patient performs hemodialysis by manually assembling the circuit, performing shunt puncture, monitoring his/her condition during dialysis, and retransfusion. HHD has various benefits. It allows dialysis to be performed at home at any time, and the biggest benefit is that it is possible to dialyze a large volume of blood, which is known to yield a good prognosis. Dialysis should be performed gradually over time. It can loosen food restriction, improve nutrition, and help physical conditioning. Since it can be performed at home at any time, it allows a large volume of blood to be dialyzed more easily. Outpatient dialysis is provided up to fourteen times a month in principle, while HHD can be performed every day or every other day. When the number of dialysis days is increased, adequate dialysis can be provided "more frequently", which helps in stabilizing the physical condition of the patient. In this lecture, we introduce general matters of HHD, examples of present HHD and examples of HHD introduction in foreign countries.

And also, I will make a short presentation about measures against COVID-19 in a dialysis center in Japan.



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Tel: (855) 23 881-623, H/P: 099 899 069, 016 203 040 Email: info@iu.edu.kh Website: www.iu.edu.kh

Privilege for participants

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* The final test would be held at International University (IU) in Cambodia after the COVID-19 crisis settles down.

1. A participant with an attendance rate of 70% or higher and an excellent final test score.
2. A participant who is highly motivated and qualified to become a dialysis healthcare professional.
3. A participant with a certain level or higher English skills.
4. A participant who is courteous and follows the rules.
5. A participant who is in good health, without infectious disease and full vaccinated.
6. A participant who wishes to participate in the training in Japan and can obtain family consent.
7. A participant who can obtain a passport.
8. A participant who is less than 40 years old.
9. A participant who has never been to Japan by support of Japanese organization (JAC-DSC, JSTB, JSDT, etc.).

* Selection will be made by the JAC-DSC. Objections to the selection results will not be allowed.

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*Participants need to pay “5 USD” to cover web seminar preparation and venue preparation costs.

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