

# The Cambodian Journal of Nephrology

Meeting Issue

The Sixth Annual Conference of  
Cambodian Association of Nephrology 2023  
Lim Vadhana, Congress President



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6th Annual Conference of  
Cambodian Association of Nephrology  
16th-December-2023  
Sokha Hotel Phnom Penh, Cambodia



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# The Cambodian Journal of Nephrology

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Remark by  
**Prof. Lim Vadhana**

President of the Cambodian Association of Nephrology,  
At the Sixth Annual Conference of the Cambodian Association of Nephrology  
December 16, 2023, Phnom Penh, Cambodia



Greetings, highly respected professors, doctors, colleagues, ladies and gentlemen,  
As can be seen, the number of patients having kidney diseases significantly increases over the past several years. This is a big concern for the development of our society, because those suffering from kidney diseases, without proper care and treatment, will eventually develop to end-stage kidney diseases, which requires further treatment, such as hemodialysis and even renal transplantation. They will face many challenges in their daily lives, including financial problems. Also, they will become the burden for their own families as well as our society. As a result of this, our doctors, especially Nephrologists, are continuously seeking for proper solutions to overcome this issue, under the smart supervision and effective policies conducted by our government and Ministry of Health, as well as the enormous help and contribution of our companion, Japan.

Regarding to this vulnerable issue, what I would like to share to the audiences now is the precaution of traditional medicine and the misuse or self-prescribed medicine. This is actually one of the main factors, leading to severe kidney diseases. According to my observation, this happens will often nowadays. That is why, my advice is, before using any medicine, we should consult with doctors properly, in order to avoid its side effects, organ failures or even death.

For conference today, there are many interesting topics presented by local doctors and international doctors from Japan. The main purpose is to raise awareness to the public, especially to all medical professionals, about how to prevent, diagnose and provide treatment and care for patients with kidney diseases, in order to promote the well-being of Cambodian people.

I strongly hope that this occasion will be a great opportunity for all of us to discuss and share all the knowledge related to kidney diseases, so that we can learn and improve our ability in providing better care and treatment to the patients.

Last but not least, thank you very much for your participation and I wish you all the very best.  
For the time being, I'm honored to announce the opening of the 6th annual conference of Cambodian Association of Nephrology.

LIM VADHANA

**President**



**Prof. LIM Vadhana M.D.**  
- Chef of CHEA SIM Hemodialysis center, Calmette Hospital  
- Lecturer of Nephrology at University of Health Sciences

**Honorable President**



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**Executive Member**



**THIM Pichthida M.D., M.H.A.**  
- Pediatrician in the Nephrology Department at National Pediatric Hospital  
- Director of Khmer Kids Pediatric Clinic

# The Sixth Annual Conference of Cambodian Association of Nephrology The Nephrology in Cambodia After Covid-19 Period Program

Date: December 16, 2023 Venu: Sokha Hotel Phnom Penh, Cambodia

## OPENING SESSION

- 7 :30- 8 :30 Arrival of Participants, Delegates and Speakers (Registration)  
8 :30- 8 :35 National Anthem  
8 :35- 8 :45 Welcome and Opening Speech by Lim Vadhana, President of CAN

## SESSION 1 Moderators

Dr. RITH Sovannara, Prof. Hidetomo Nakamoto

- 8 :45- 9 :05 **Kidney Biopsy for Nephropathology Study**  
Presented by: Dr. SORN Bophaphal, Member of CAN  
  
9 :05- 9 :25 **Peritoneal Dialysis in Japan**  
Presented by: Prof. Hidetomo Nakamoto (Japan)  
  
9 :25- 9 :35 **DKSH Presentation**  
9 :35- 9 :45 **KALBE Presentation**  
9 :45- 9 :55 **TELPHA Presentation**  
9 :55-10:15 **Questions and Answers**  
10:15-10:45 **Coffee Break**

## SESSION 2 Moderators

Dr KOEUT Chansophal, Prof. Ken Tsuchiya

- 10:45-11:05 **Factors Association with Reral Failure in Nephrology Department CCFK Hospital**  
Presented by: Dr. SO Sokchea, Member of CAN  
  
11:05-11:25 **The Importance of Management of CKD-MBD in Dialysis Patients**  
Presented by: Prof. Ken Tsuchiya (Japan)  
  
11:25-11:35 **Dynamic Presentation**  
11:35-11:45 **Fresenius Presentation**  
11:45-11:55 **SEARLE Presentation**

11:55-12:15 Questions and Answers

**BREAK TIME Lunch** (12:15-13:30)

## SESSION 3 Moderators

Dr. HY Chanseila, Prof. Yukie Kitajima

- 13:30-13:50 **Procedure of Arteriovenous Fistula**  
Presented by: Dr. CHY Tith, Deputy President of CAN  
  
13:50-14:10 **Dietary therapy for chronic renal failure and use of food composition tables**  
Presented by: Ms. Yukie Kitajima (Japan)  
  
14:10-14:20 **DKSH Presentation**  
14:20-14:30 **KALBE Presentation**  
14:30-14:40 **TELPHA Presentation**  
14:40-15:00 **Questions and Answers**  
15:00-15:30 **Closing, Photo, Lucky draw**



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## Kidney Biopsy for Nephropathology Study

*SORN Bophaphal M.D.*

*Hemodialysis Center, Khmer-Soviet Friendship Hospital*



Kidney Biopsy is a technic by removing some small pieces of kidney tissue by needle and to be analyzed by Nephropathologist with a few special stains.

It is treated to be a gold standard in nephrology to investigate most kidney disease. We perform this in some conditions: proteinuria (both nephrotic and non-nephrotic), unexplained drop in kidney function, kidney problem due to autoimmune disease, kidney transplants....

For kidney transplant case might be practice before and after transplant depend on condition in order to reduce and investigate organ rejection and also monitoring its complications.

However, kidney biopsy is generally considered safe, but there are also some risks including bleeding, infection, and damage to surrounding organs. These complications are still controlled by healthcare professional.

## Peritoneal Dialysis in Japan

*Hidetomo Nakamoto M.D.*

*Department of General Internal Medicine, Saitama Medical University, Saitama, Japan.*



Peritoneal dialysis (PD) is a dialysis therapy that uses the peritoneum as a dialysis membrane, which was started by Ganter G. in Germany in 1923. In Japan, it has been popular as a treatment for chronic renal failure since 1965. At that time, the method used was to inject and drain 2L of dialysate 10 times, and perform intermittent peritoneal dialysis (IPD) using 20L of peritoneal dialysate per day three times a week. In 1978, Popovich RP and Moncrief JW of the United States reported on continuous ambulatory peritoneal dialysis (CAPD), which used 8 L of dialysate per day as standard.

In Japan, according to a statistical survey report by the Japanese Society of Dialysis Medicine at the end of 2021, the number of PD patients was 10,501 (3.0% of all dialysis patients), exceeding 10,000 for the first time since its introduction. There are two types of PD: CAPD, which is performed continuously, and IPD, which is performed intermittently by hospitalized patients, but CAPD is currently widely used as maintenance dialysis.

Up until now, the mainstream idea was that patients who chose hemodialysis (HD) should stay on HD for the rest of their lives, and patients who chose PD

should do PD as much as possible, but in recent years PD and HD have become complementary to each other as renal replacement therapy. The general idea is to maintain the living conditions of renal failure patients as good as possible. Therefore, it has become possible to shift from PD to HD, and sometimes to perform combination therapy in which PD and HD are used simultaneously. On the other hand, there is a shift in thinking toward utilizing the strengths of individual therapies on a case-by-case basis, such as using PD in combination with HD patients who have poor water management (comprehensive renal replacement therapy).

During the Great East Japan Earthquake in March 2011, PD patients suffered less damage, and during the novel coronavirus disease (COVID-19) epidemic that began at the end of 2019, PD patients were more susceptible than HD patients. The usefulness of PD as home dialysis is being reconsidered.



## Factors Association with Reral Failure in Nephrology Department CCFK Hospital

SO Sokchea M.D.

Nephrology department, Cambodia-China Friendship Preah Kossamak Hospital



### Introduction

Renal failure is the burden diseases that affect over two million people in the world and treated with end-stage renal diseases. These diseases often require renal replacement therapy (RRT), of which hemodialysis (HD) represents the most commonly used measure.

### Objective

To identify the association factors of renal failure at nephrology department in Cambodia-China Friendship Preah Kossamak Hospital from 01st January 2023 to 01st July 2023.

### Methodology

Retrospective Cohort study used secondary data from daily report of nephrology department in Cambodia-China Friendship Preah Kossamak Hospital from 01st January 2023 to 01st July 2023. All the diagnoses were based on ICD-10 Codes Version: 2019. The data was entered to Microsoft Excel by compare with system Pethyoeng and analyzed by using Stata software 14.2.

### Result

In the study, there were 102 patients consisted of 57 (55.88%) males, age (Mean=49.78, Std. Dev.=16.6, Min=11, Max=87), 91 (89.22%) chronic kidney diseases, 14 (13.73%) acute kidney injury, 13 (12.75%) End-Stage renal diseases, 31 (30.39%) hemodialysis, 59 (57.84%) hypertension, 30 (29.41%) diabetic type II, 24 (23.53) acute pulmonary edema, 04 (3.92%) uremic syndrome, 06 (5.88%) lupus erythematosus, 2 (1.96%) liver cirrhosis, 43 (42.16%) anemia, 19 (18.63%) nephrotic syndrome, 8 (7.84%) pneumonia, 06 (5.88%) urinary tract infection, 01 (0.98%) epididymitis, 01 (0.98%) cancer, 01 (0.98%) cardiopathy, 01 (0.98%) sepsis.

### Conclusion

The study shows that renal failure is potentially influenced by associated factors. Interdisciplinary medical doctor is needed and should consider all the diseases for decrease cost effective and get more effectiveness of treatment.

## The Importance of Management of CKD-MBD in Dialysis Patients

Ken Tsuchiya M.D., Ph.D.

Tokyo Women's Medical University  
Department of Blood Purification



The definition of CKD-MBD is different than the previously recognized as “renal osteodystrophy”, and it refers to a systemic disorder of mineral and bone metabolism due to CKD manifested by either one or a combination of the following: Abnormalities of calcium, phosphorus, parathyroid hormone (PTH), or vitamin D metabolism. Abnormalities in bone turnover, mineralization, volume, linear growth, or strength. Vascular or other soft-tissue calcification.

It is well known that in considering CKD-MBD, in addition to the conventional vitamin D metabolism, Ca levels, and PTH fluctuations, P toxicity has come into focus, and klotho and FGF23 have been added as new factors. These related factors cross talk and create a regulatory network. Therefore, it is essential to recognize the interrelationships among these factors in order to understand the pathophysiology and treatment of the disease.

The main problem is that the abnormalities in CKD-MBD cause new complications, which are like chain reactions, and the direct tissue damage caused by phosphorus is particularly significant, although Ca, PTH and other factors are involved. Unfortunately, this cannot be overcome by dialysis

alone, but rather by a combination of old and newly introduced drugs to achieve the best possible outcome, and of course, patient cooperation, including diet therapy, is also essential.

So, I just summarize my talk and please take home message as follows;

Proper management of CKD-MBD is of critical importance. This is because of the high potential for new serious complications. New complications can significantly impair the patient's quality of life. Calcimimetics is highly likely to play a significant role in the management of CKD-MBD by lowering iPTH as well as Ca levels. Phosphorus is a direct organ-damaging agent whose management is a combination of diet therapy and medication.

## Procedure for Arteriovenous Fistula (AVF)

CHY Tith M.D.<sup>1)</sup>, KONG Kim Seak M.D.<sup>1)</sup>,  
Ass.Prof. SVAY Kamol M.D., M.P.H., and T.M.<sup>2) 3) 4)</sup>

1) Department of hemodialysis, Preah Ket Mealea hospital  
2) Assistant Professor, Health Science Institute of RCAF  
3) Member of Health Commission and Council of Khmer Language, Royal Academy of Cambodia  
4) PhD candidate of the Health Science, Royal Academy of Cambodia



### Introduction

Preah Ket Mealea Hospital, a state hospital, has been receiving the military and civilian patients and has been providing all kinds of disease treatments including for heart diseases and providing dialysis (4) under the ministry of national defence.

Hemodialysis access by arteriovenous fistulas (AVF) is still essential for dialysis specialist and nephrologist to help patients with chronic kidney disease (CKD) continue their daily life.

Our practice and experience in AVF from January 2020 to October 2023, we performed on 540 patients (unofficial data and non-published in any medical journal). Among all the patients, we did not count the number of cases of postoperative vascular failure (AVF), but with minimal damage. For the 572 CKD patients undergoing the hemodialysis (unofficial data and non-published in any medical journal) who have undergone the hemodialysis, AVF, AVG, tunneled cuffed catheters, we do not categorize by age for AVF, we categorize by age all three types. We expose only a type of AVF in our conference of 540 patients with CKD from 10 years to 89 years who have been undergoing hemodialysis in our department.

### Method

For AVF methods, we perform three methods (5) :

1. side-to-side anastomosis
2. end-to-side anastomosis
3. end-to-end anastomosis

The second type of surgery is end-to-side anastomosis, we have performed most of the above three types of surgery. In this technique, we cut the cephalic vein and connect it to the radial artery on the wrist, wrist, or forearm.

The benefits of AVF include the low risk of

infection, the high blood flow, the low levels of vascular occlusion and narrowing, ease of the surgery, and long lasting.

### Result:

AVF surgery has been performed on 94.4% of the 572 patients (unofficial data and non-published in any medical journal) with CKD who underwent hemodialysis in Preah Ket Mealea Hospital in the last four years. Failure to repeat surgery is extremely rare, especially in the elderly and diabetics whose arteriosclerosis.

### Conclusion:

Due to its long-term use and low side effects, AVF is considered to be the longest-running and most effective way to treat chronic hemodialysis patients, AVF should be considered the best option for the chronic kidney disease (GFR less than 25 ml / min / 1.73m<sup>2</sup>).

### Reference:

1. Levy, Jeremy, et al. Oxford Handbook of Dialysis. 2001. (P106-228)
2. Themes, U. F. O. "Arteriovenous Fistulas." Radiology Key, 30 June 2019, radiologykey.com/arteriovenous-fistulas/.
3. Toshihide, N. Standard procedure for arteriovenous fistula and superficialization. 2017.
4. <https://www.khmertimeskh.com/501332638/> July 28, 2023
5. <http://www.laminatemedical.com/2016/12/17/types-anastomosis-creation-avf>

## Dietary therapy for chronic renal failure and use of food composition tables

Yukie Kitajima R.D., Ph.D.

Department of Medical Nutrition, Tokyo Healthcare University



The goals of diet therapy in chronic kidney disease are to slow the decline in renal function, prevent the onset and severity of hemodialysis complications, and prevent nutritional disorders. The basics of a dialysis diet are salt and water restriction, adequate energy and protein intake, and potassium and phosphorus restriction. However, if standard hemodialysis (3 times/week, 4 hours/treatment) is not possible, a low-protein diet should be used. In chronic renal failure patients with diabetes, blood glucose must also be controlled. In a low-protein diet, the reduced intake of protein foods (meat, fish and eggs, etc.) must be accompanied by adequate energy intake to maintain nutritional status and prevent the buildup of unwanted toxins. Blood glucose management requires that the amount of carbohydrate in each meal be constant. These

practices require the use of food composition table that show the nutrient content of foods. Since there are no dietitians in Cambodia, there were no food composition tables for Cambodians. Therefore, a project was started by Cambodian doctors to create a food composition table in Khmer, which has now been completed. This table can be used to check the amount of protein, carbohydrate, potassium and other nutrients in each food, and provide guidance on how to select and add foods to ensure adequate intake. For blood glucose management, food composition tables can be used to identify food groups with carbohydrate content that raise blood glucose levels. This presentation will illustrate the use of specifically food composition tables in the carbohydrate counting approach required for low-protein diets and glycemic control.

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The technique and efficacy of arteriovenous fistula (AVF) massage therapy:  
It is beneficial for Cambodian hemodialysis patients.

Motoko Kato<sup>1)2)</sup>, Shunichiro Urabe<sup>2)3)</sup>, Akira Kato<sup>1)2)</sup>, Momoko Fukazawa<sup>1)</sup>,  
Shohei Matsuzawa<sup>1)</sup>, Toru Hyodo<sup>2, 4)</sup>

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4) Cambodian Association of Nephrology, Phnom Penh, Cambodia

Background and Cambodia’s Specificities

The vascular access is essential for hemodialysis (HD) therapy and the management of access condition has the great influence for successful hemodialysis. The vascular access, since it is used on a regular basis, should be reliable and easy to use, with minimal risk to the patient. A good functioning vascular access is a prerequisite to obtain a successful dialysis treatment. There are several ways to gain vascular access (arteriovenous fistula, arteriovenous graft and central venous catheter).

The arteriovenous fistula (AVF) is the preferred vascular access compared with the arteriovenous graft (AVG) and the catheter due to the relatively longer access life resulting from fewer episodes of thrombosis and infections, fewer hospital admissions, and lower costs. The arteriovenous fistula are the preferred type of access because it utilizes the patient’s own vessels and does not require permanent placement of foreign materials such as those needed to create an graft or catheter. About 90% hemodialysis patient have an arteriovenous fistula in Japan. While a fistula is easier to work with than other access types, that doesn’t mean it’s completely care-free.

The vascular access trouble causes a decrease in dialysis efficiency. In some cases, dialysis is not possible. When there is a stenosis in a vascular access vessel, percutaneous transluminal angioplasty (PTA) is one of the treatment choices. PTA has been positioned as the first choice of treatment for stenosis lesions frequently observed in arteriovenous fistula (AVF) in hemodialysis patients in Japan. However, PTA has rarely been implemented in Cambodia, Laos, Mongolia, and Vietnam. The reason is that it is a method that uses an expensive special balloon catheter, and PTA itself has not been developed for very long, only about 20 years even in Japan.

PTA is a procedure that can open up a blocked blood vessel using a small, flexible plastic tube, or catheter, with a “balloon” at the end of it. When the tube is in place, it inflates to open the blood vessel, or artery, so that normal blood flow is restored. (Fig.1)

Stable development and management of vascular access is increasingly required in Cambodia due to increased use of dialysis therapy, and training of doctors in this technique is urgently required. However, in Cambodia, there are encountered several difficulties that need to be addressed, including problems with facilities, including medical equipment and drugs, financial limitations. So here are some tips to take care of a fistula to maintain optimal blood flow for dialysis treatments.

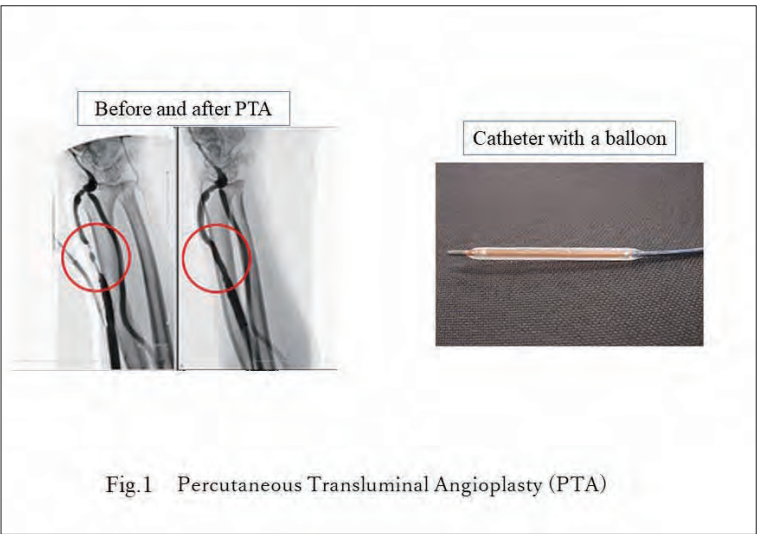


Fig.1 Percutaneous Transluminal Angioplasty (PTA)

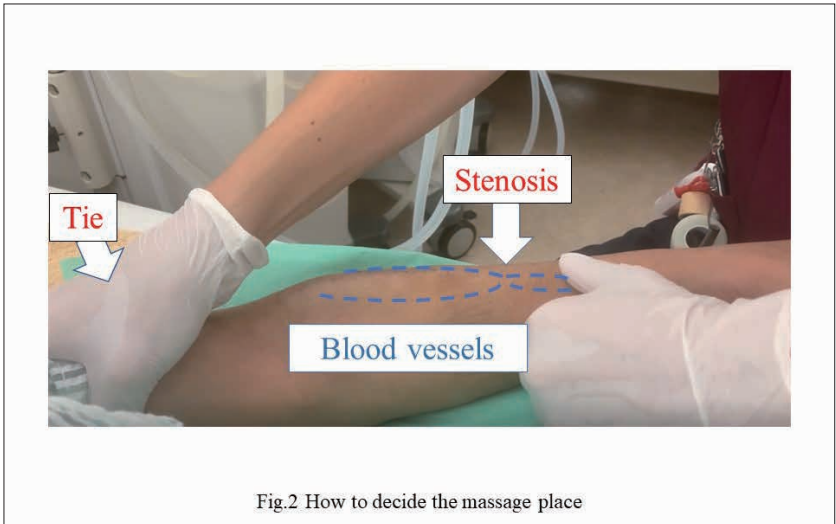


Fig.2 How to decide the massage place

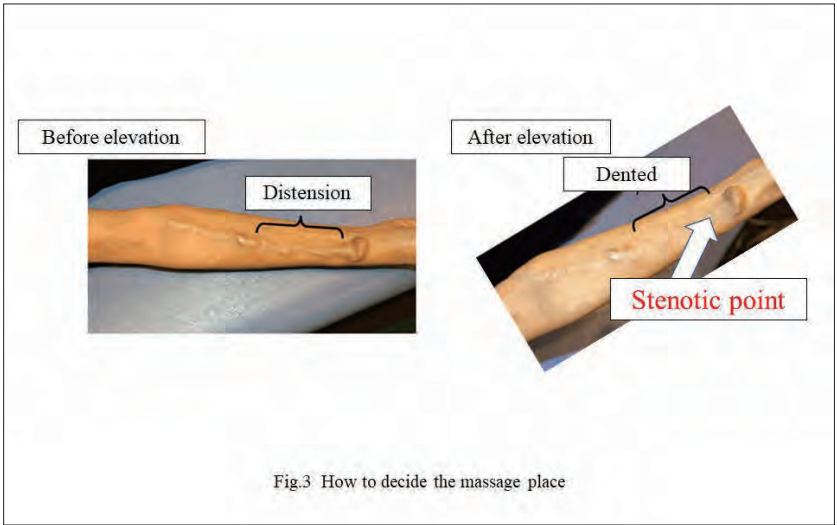


Fig.3 How to decide the massage place

# Arteriovenous Fistula (AVF) Massage Therapy

The basis of vascular access control is physical findings. Visual inspection of the vascular access, palpation, auscultation with a stethoscope, check these three points at the beginning and end of dialysis. Make sure the dialysis needle stick locations are rotated. If the same area is punctured many times, a lump will be formed and the blood vessel wall will become thick and hard, increasing the possibility of stenosis and occlusion. Therefore, repeated punctures on the same site should be avoided.

It is also important to teach the upper limit of weight gain as patient education. This is because if the patient gains a lot of weight, the amount of water removed will also increase. An increase in the amount of water removed leads to a decrease in blood pressure. A sudden drop in blood pressure leads to vascular access obstruction. We recommend dry weight should be appropriately set. Inappropriate dry weights can lead to lower blood pressure.

Recently, the arteriovenous fistula (AVF) massage has been developed and revealed its effectiveness. Ishida et al. were the first to develop it and reported the disappearance of AVF stenosis sounds with AVF massage [1]. Yoshikawa et al. reported that a comparison using stethoscope and echo color Doppler ultrasound before and after AVF massage showed that mean flow volume (FV) increased from  $782 \pm 27$  to  $800 \pm 29$  mL/min and mean resistance index (RI) decreased from  $0.520 \pm 0.007$  to  $0.512 \pm 0.008$ . Similar FV and RI values were recorded immediately after AVF massage at zero and three months. In the three patients who had previously undergone PTA of their AVF, AVF patency increased from  $147 \pm 40$  to  $269 \pm 59$  days. Longitudinal observations showed that blood flow and RI immediately after massage at 3 months were similar to those at the start (0 months), with no decrease in blood flow or enhancement of AVF resistance. They concluded that this therapy could improve stenosis and maintain AVF function and patency in HD patients [2].

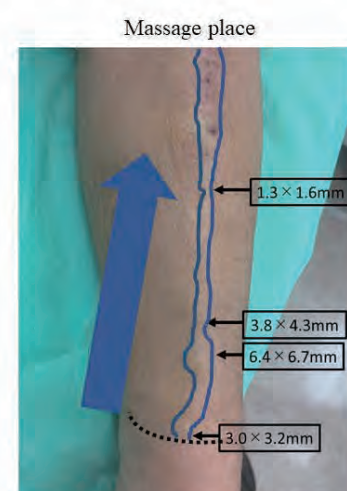


Fig.4 Sharing with staff / patients  
Create a photo of patient's vascular access as shown on the slide.

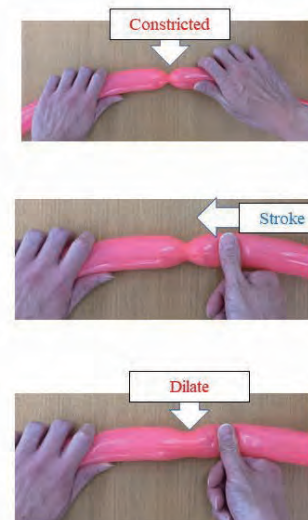


Fig.5 Principle of venous distension

And this time we're going to show you how. There are two types of arteriovenous fistula massage, one is the methods for patients to just stroke their own arteriovenous fistula at home, and the other is the pressure AVF massage for the dialysis staff to stroke the stenotic vessels with pressure.

It is explained how to decide the location of the arteriovenous fistula massage. When the patient's arm is tied, blood vessels can be confirmed. If there is a stenosis, some of the blood vessels will be dented. The dented area is the massage area. We use the tourniquet and staff's arms when tightening the patient's arm (Fig.2). Raising the patient's arm reveals the location of the stenosis. First, check the blood vessels before raising the patient's arm. The patient's arm is then raised above the shoulder. Do not bend elbows and raise your arms from shoulders. At that time, check the blood vessels. If the blood vessel is dented, the place is a stenosis. (Fig.3) The location of the massage will be shared by the staff and the patient. It would be even better if the blood vessel diameter could be determined by ultrasonography if you have it (Fig.4). You must and can determine the massage place by your physical examination.

The arteriovenous fistula massage principle is illustrated using a balloon model.

A long, thin is constricted at one point. Both hands are placed on the balloon, one on either side of the constriction, and the left hand is used to squeeze the balloon above the constriction. The right hand is pressed down to prevent the air from leaving the balloon, which is thus distended by the pressed-down air. This causes the constriction to dilate, and repeating the process eliminates it entirely (Fig.5).

On non-dialysis days, the patient massages himself. We instruct you not to pressure it too much. The patients confirm that there is a vascular beat then. This contributes to the self-care of patients.

This massage was restricted to only AVF patients, many of whom suffer from poor blood volume due to stenosis immediately above the forearm anastomosis. The lack of subcutaneous fat makes these forearm stenoses easily accessible to pressure by the vascular access massage, meaning that the veins are readily distensible. That is also recommended in patients with immature vascular access. In some of our patients, the use of AVF massage resulted in flow volume reaching an adequate level.

This experience suggests that AVF massage may be effective in patients with immature AVF development.

## Contraindications of AVF Massage Therapy

Contraindications are that it should not be performed on an AVF that has been occluded by a blood clot. When performing AVF massage, confirm that the AVF is not obstructed by checking the sound of the AVF with a stethoscope or by observing the thrill and pulsation with the fingers. This is to avoid blood clots from flowing into the bloodstream and causing pulmonary embolism.

## Conclusion

This massage therapy requires no particular location or equipment and can therefore be used by any dialysis institution. This is the biggest advantage of popularizing vascular access massage in Cambodia.

## [Reference]

- 1: Y Ishida, T Mizugami, Y Tsuchiya, et.al: Report of stenosis sound disappearance by arteriovenous fistula massage. Kidney & Dialysis 2013; 74: 84-6. English translation as the article is in Japanese.
- 2: T Yoshikawa, T Masuda, T Sugase, et. al: Effects of arteriovenous fistula massage on shunt patency and stenosis in hemodialysis patients. J. Jpn. Soc. Dial. Ther. 51(5):305-311, 2018 English translation as the article is in Japanese.

The scheme of construction: Cambodian Food Composition Table: Report 1

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1: The project to prepare Cambodian Food Composition Tables and the purpose of this manuscript

There are no dietitians in Cambodia. There is also no food composition table. The doctors of the Cambodian Association of Nephrology studied nutritional counseling at overseas conferences and publications and came to the conclusion that it is essential to create a tool for nutritional counseling, namely a Cambodian version of food composition tables.

The Cambodia Food Composition Tables project was launched at 2021. The meaning and progress of the project, as well as the use of the Table of Food Composition for the renal failure patients and diabetic patients, was explained at the 6th Cambodian Association of Nephrology by Professor Kitajima of the Japanese Society of Renal Nutrition and Metabolism and NGO Ubiquitous Blood Purification International. Some of the slides of that lecture are included in this paper.

2: Role of Food Composition Tables (in Japan) [1].

Food is a basic substance in supporting human life and health. It is extremely important to clarify the composition of food consumed by the public on a daily basis in order to maintain and promote the health of the people. It is extremely important for the maintenance and promotion of people’s health, and it is also essential as a basis for formulating plans to ensure a stable food supply.

In Japan, the Standard Tables of Food Composition of Japan (hereinafter referred to as “Tables of Food Composition”) have played a role in providing basic data on food composition since they were first published in 1950. In other words, the Tables of Food Composition are widely used not only for school and hospital lunch management, dietary restrictions, and nutritional guidance such as therapeutic diets, but also in the daily lives of ordinary households as the public’s interest in nutrition and health grows. It is also used in administrative activities as basic data for the creation of the Dietary Reference Intakes (Nutritional

Requirements) by the Ministry of Health, Labour and Welfare, various statistical surveys to grasp and evaluate the nutritional status of the population such as the National Health and Nutrition Survey (National Nutrition Survey), the creation of food supply and demand tables by the Ministry of Agriculture, Forestry and Fisheries, basic data for setting the food self-sufficiency rate target in the Food, Agriculture, and Rural Area Basic Plan, and reference data for the establishment of various food standards and criteria. Furthermore, in terms of education and research, the Tables of Food Composition are used in the departments of Nutrition, Food Science, Home Economics, Health and Physical Education, and in research fields such as nutrition, food science, domestic science, life science, medical science, and agricultural science.

The purpose of the Tables of Food Composition is to provide basic data on the components of food consumed by the public on a daily basis to a wide range of related fields.

3: How to use the Table of Food Composition (using that of Japan as an example)

The “Standard Tables of Food Composition of Japan” lists the component values per 100g of each food ingredient. Based on this table, we calculate the nutritional value of dishes and foods. Nutrient calculation is an essential skill for dietitians and physicians who provide dietary counseling to patients with diabetes and renal failure. Nutrition counseling is the process of teaching this skill to patients and enabling them to perform nutrient calculations. Anyone can calculate nutritional values using the Standard Tables of Food Composition of Japan. In recent years, computer software based on the Standard Tables of Food Composition has become available, making it easy to perform calculations.

- A) Weigh all ingredients and condiments used in the dish. (Weighing means weighing only the edible parts that can actually be eaten)
- B) Look up the relevant foods in the “Standard Tables of Food Composition”.
- C) Calculate the nutritional value per weight of each food and seasoning using the component values listed in the “Standard Tables of Food Composition.

< Formula >

Nutrition value of “Standard Tables of Food Composition” x Serving Size of Food (g) / 100 (g)

- D) Add up the results of the calculation for each food and seasoning

4: Excerpts from the Cambodian Food Composition Tables project in progress and explanation of the use of food composition tables for dialysis patients, conservative and dialysis diabetic nephropathy patients (Special Lecture of the 6th Cambodian Association of Nephrology (Prof. Kitajima)).



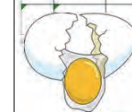
អាហារ ប្រភេទ Food Group	ថាមពល (kcal) ENERG KCAL	ប្រូតេអ៊ីន Protein g/100g	កាបូអ៊ីដ្រាត Carbohydrate g/100g	សូឌីយ៉ូម Sodium mg/100g
ប្រេងប្រាំង Rice	264	2.6	9.3	4.4
ប្រេងប្រាំង Rice	279	2.7	9.4	1.3
ប្រេងប្រាំង Rice	353	14.9	6.8	2.7
ប្រេងប្រាំង Rice	381	4.5	7.8	1.7
ប្រេងប្រាំង Rice	237	2.3	2.9	1.6

Fig. 1: Ongoing Project of Cambodian Food Composition Table

STANDARD TABLES OF FOOD COMPOSITION IN JAPAN - 2015 - (Seventh Revised Edition)

Table: Standard tables of food composition (Proximates, minerals and vitamins, etc.)

Food Group	Item No.	Index No.	Food and Description	Refined	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Fatty acid, triacylglycerol	Fatty acid, saturated	Fatty acid, monounsaturated	Fatty acid, polyunsaturated
				Tagamame	REFUS E	ENERG KCAL	ENERG WATER	PROTEIN	FATNL EA	FATNL EA	FATNL EA	FATNL EA	FATNL EA
				Unit	%	kcal/100 g	J/100 g	g/100 g	g/100 g	g/100 g	g/100 g	g/100 g	g/100 g
12	12003		Eggs100g = Energy 151kcal, Protein 12.3g										
12	12004	1744	Eggs, hen, whole, raw		151	632	76.1	12.3	10.6	10.3	(8.6)	(2.84)	(3.69)
			Eggs, hen, whole, boiled		151	632	75.8	12.9	(11.1)	10.0	(8.2)	(2.70)	(3.55)



1 Eggs = 60g    Energy 151kcal  $\times$  60/100  $\div$  91 kcal  
Protein 12.3g  $\times$  60/100  $\div$  7.4g

Fig.3: Examples of use of the table

## Nutrient items to be checked in dialysis patients

Dialysis patients with diabetes are an important item for the basic Carbohydrate Counting

Food Group	Item No.	Index No.	Food and Description	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Carbohydrate, total, calculated by difference	Sodium	Potassium	Phosphorus
				Unit	kcal/100 g	kJ/100 g	g/100 g	g/100 g	g/100 g	mg/100 g	mg/100 g	mg/100 g
11	11219	1708	Chicken, broiler, breast, meat with skin, raw	145	607	65.1	23.3	9.1	0.1			
11	11287	1709	Chicken, broiler, breast, meat with skin, roasted	233	974	55.1	34.7	9.1	0.1			
11	11220	1710	Chicken, broiler, breast, meat without skin, raw	116	487	74.6	23.3	1.9	0.1			
11	11288	1711	Chicken, broiler, breast, meat without skin, roasted	195	815	57.6	38.8	3.3	0.1			
11	11221	1712	Chicken, broiler, thigh, meat with skin, raw	204	853	68.5	16.6	14.2	0	62	290	170
11	11222	1713	Chicken, broiler, thigh, meat with skin, roasted	241	1010	58.4	26.3	13.9	0	92	390	230
11	11223	1714	Chicken, broiler, thigh, meat with skin, boiled	237	993	62.9	22.3	15.2	0	47	210	160

Fig. 2: It is enough for dialysis patients only to check the Energy, Protein, Carbohydrate, Sodium, Potassium, and Phosphorus.

Figure 1 is part of the Cambodian version of the Food Composition Table that we have been working on since 2021. We used the Japanese Food Composition Table and the Food Composition Tables of countries with similar climates to Cambodia, which were collected in cooperation with the International Society of Renal Nutrition and Metabolism.

Figure 2 shows the parts of energy, protein, carbohydrate, sodium, potassium and phosphorus in the table. In fact, for dialysis patients, conservative and dialysis diabetic nephropathy patients, conservative non dialysis renal failure patients, it is sufficient to focus only on these parts of the daily diet therapy. As for phosphorus, it is rarely used except in dialysis patients. The Japanese Table of Food Composition covers all food components and elements, but for renal failure and diabetes, only these parts are almost sufficient. Therefore, the Cambodian Association of Nephrology is currently preparing a Table of Food Composition for Renal Failure and Diabetes that is limited to these components.

Figures 3-5 show examples of the use of food composition tables.

Item No.	Index No.	Food and Description	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Carbohydrate, total, calculated by difference	Sodium	Potassium	Phosphorus
			Unit	kcal/100 g	kJ/100 g	g/100 g	g/100 g	g/100 g	mg/100 g	mg/100 g	mg/100 g
01086	91	Rice, short grain, paddy rice, half-milled, "meshi" (cooked rice)	168	703	60.0	2.5	0.3	37.1	1	29	34
01087	92	Rice, short grain, paddy rice, under-milled, "meshi" (cooked rice)	168	703	60.0	2.5	0.3	37.1	1	29	34
01088	93	Rice, short grain, paddy rice, nonglutinous rice, well-milled, "meshi" (cooked rice)	168	703	60.0	2.5	0.3	37.1	1	29	34
01154	94	Rice, short grain, paddy rice, glutinous rice, well-milled, "meshi" (cooked rice)	202	846	52.1	3.5	0.5	43.9	0	28	19
01089	95	Rice, short grain, paddy rice, well-milled, rice with embryo, "meshi" (cooked rice)	167	699	60.0	2.7	0.6	36.4	1	51	68

Fig.4: Examples of use of the table

200 / 168  $\times$  100g  
Energy 300kcal  $\div$  rice 120g

Item No.	Index No.	Food and Description	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Carbohydrate, total, calculated by difference	Sodium	Potassium	Phosphorus
			Unit	kcal/100 g	kJ/100 g	g/100 g	g/100 g	g/100 g	mg/100 g	mg/100 g	mg/100 g
11121	1595	Pork, large type breed, Boston butt, lean, raw	157	657	71.3	19.3	19.2	0.2	42	310	180
11122	1596	Pork, large type breed, Boston butt, fat, raw	688	2879	23.5	5.5	70.7	0	21	110	56
11123	1597	Pork, large type breed, loin, lean and fat, raw	263	1100	49.9	19.3	19.2	0.2	42	310	180
11124	1598	Pork, large type breed, loin, lean and fat, roasted	328	1372	49.9	26.6	22.7	0.3	52	400	250
11125	1599	Pork, large type breed, loin, lean and fat, boiled	329	1377	51.9	23.9	24.1	0.3	25	180	140

Fig.5: Examples of use of the table

10 / 19.3  $\times$  100g  
Protein 10g  $\div$  pork 50g



### Prediction formula for potassium accumulation

Formula of Sugimoto et al.

$$Y = 12X - 26$$

Y = Potassium accumulation per body weight (mg/kg/day)

X = Serum potassium level at the beginning of the week (mEq/L)

**Potassium equivalent to 1 mEq/L serum Potassium value = 12 mg/kg/day potassium**

For example, if we want to reduce a patient's potassium level from 6.5 mEq/L to 5.5 mEq/L

Patient's DW; 50.0kg  
 $12\text{mg} \times 50.0\text{kg} \times (6.5 - 5.5) = 600\text{mg}$

Fig.6: Method for Calculating Potassium Accumulation in Triple-Weekly Dialysis

### How to reduce intake of 600mg

Item No.	Index No.	Food and Description	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Carbohydrate, total, calculated by difference	Sodium	Potassium	Phosphorus
			Unit	kcal/100 g	kJ/100 g	g/100 g	g/100 g	g/100 g	mg/100 g	mg/100 g	mg/100 g
07103	878	Pineapple, candied		1469	12.0	0.5	0.2	86.8	1	23	5
07104	879	Blue berried honey								190	25
07106	880	Passion fruit, juice	64							280	21
07107	881	Bananas, raw	86	360	75.4	1.1	0.2	22.5	1	360	27
07108	882	Bananas, dried	299	1251	14.3	3.8	0.4	78.5	1	1300	84
Banana 360mg / 100g											
Banana 100g 360mg											
07131	901	Common quinces, raw								180	14
07132	902	Mangoes, raw	268	82.0	0.6	0.1	16.9	1	170	12	
07133	903	Mangosteen, raw	280	81.5	0.6	0.2	17.5	1	100	12	
Mango 170mg / 100g											
Mango 150g 170 × 150/100 = 255mg											

Fig.7: Examples of use of the table

Fig.7: Examples of use of the table

Figure 6 is a simplified formula for estimating potassium accumulation for a patient receiving hemodialysis three times a week [2]. Since twice-weekly hemodialysis is the mainstream in Cambodia, it is desirable to create a simplified formula for twice-weekly hemodialysis in Cambodia.

Figure 7 shows an example of the use of the Food Composition Table with respect to potassium.

### Carbohydrate counting

Carbohydrates as 60% of 1800 kcal  
 Energy of carbohydrate 1g = 4kcal  
 $1800 \times 60\% / 4 = 270\text{g/day} = 90\text{g/meal}$

Carbohydrate 90g

Carbohydrates in side dishes other than the main meal should be 15 g.

Carbohydrate of rice; 75g



how many grams?

Item No.	Index No.	Food and Description	Energy (kcal)	Energy (kJ)	Water	Protein, calculated from reference nitrogen	Lipid	Carbohydrate, total, calculated by difference	Sodium	Potassium	Phosphorus
			Unit	kcal/100 g	kJ/100 g	g/100 g	g/100 g	g/100 g	mg/100 g	mg/100 g	mg/100 g
01086	91	Rice, short grain, paddy rice, half-milled, "meshi" (cooked rice)	167	699	60.0	2.7	0.6	36.4	1	43	53
01087	92	Rice, short grain, paddy rice, under-milled, "meshi" (cooked rice)	168					37.1g / 100g	1	35	44
01088	93	Rice, short grain, paddy rice, nonglutinous rice, well-milled, "meshi" (cooked rice)	168	703	60.0	2.5	0.5	37.1	1	29	34
01154	94							100g × 75g / 37.1g	0	28	19
01089	95							Carbohydrate 75g ÷ rice 200g	1	51	68

Fig.8: Examples of use of the table

Figure 8 illustrates the use of the Food Composition Table in the carbohydrate counting method. The carbohydrate counting for diabetics can be used in both hemodialysis and non-dialysis cases. The carbohydrate counting is a simple diabetic diet therapy that can be used with or without insulin. Since only carbohydrate raises blood glucose levels, it is only necessary to consume equal amount of carbohydrate in three meals. Because carbohydrate is mainly found in staple foods, the patient can quickly remember the amount and type of carbohydrate foods. Almost only rice, bread, and noodles need to be remembered for quantity and energy. Occasional snacks, such as cake, are only examined on a case-by-case basis and are infrequent. Patients with conservative diabetic nephropathy should follow a low-sodium and low-protein diet with the addition of the carbohydrate counting. The labels of the foods we usually purchase often list the amounts of energy, carbohydrate, protein, and salt on the label. Recently, this labeling and the use of food composition table have made it easier for patients to follow a low-protein, low-sodium plus carbohydrate counting.

### 5:Conclusion

In the future, Cambodia will need diatitians. Before that can happen, the doctors of the Cambodian Association of Nerphrology must first solve the difficulties they have faced, one by one. One of them is nutritional counseling, and an indispensable part of that counseling is a food composition table. Then, when the time is right, universities will probably set up nutrition departments and train dieticians. Until then, our efforts will be needed.

### [Refference]

- 1 STANDARD TABLES OF FOOD COMPOSITION IN JAPAN - 2015 - (Seventh Revised Version): Ministry of Education, Culture, Sports, Science and Technology Japan.  
[http://www.mext.go.jp/en/policy/science\\_technology/policy/title01/detail01/1374030.htm](http://www.mext.go.jp/en/policy/science_technology/policy/title01/detail01/1374030.htm)
- 2: Sugimoto M, Gushiken N, Hyodo T. Prediction of daily potassium accumulation from serum potassium level before dialysis at the beginning of the week. Dialysis Care. 7(11), 2001, 1159-61 (translation from Japanese).

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1. ទស្សនាវដ្តី The Cambodian Journal of Nephrology ត្រូវបានបោះពុម្ពផ្សាយជាភាសាខ្មែរ អង់គ្លេស និង ជប៉ុនដោយក្រុមហ៊ុន Reiseikai Media (Cambodia) Co.,Ltd. ក្នុងគោលបំណងរួមចំណែកក្នុង វិស័យវេជ្ជសាស្ត្រ ក៏ដូចជាការអភិវឌ្ឍធនធានមនុស្សតាមរយៈការណែនាំពីមូលដ្ឋានគ្រឹះនៃជំងឺតម្រងនោម និង សមិទ្ធផលវេជ្ជសាស្ត្រក្នុងវិស័យសុខាភិបាលអោយបានទូលំទូលាយផងដែរ ។
2. អ្នកនិពន្ធ ត្រូវយល់ច្បាស់ និង ទទួលស្គាល់បទប្បញ្ញត្តិនៃការចុះផ្សាយនេះ ។ សូមចំណាំផងដែរថាបទប្បញ្ញត្តិនេះ អាចនឹងត្រូវបានធ្វើវិសោធនកម្មតាមការសំរេចចិត្តរបស់យើងខ្ញុំ ។
3. រាល់សារណាទាំងអស់ ដែលបានចុះផ្សាយជាមួយយើងខ្ញុំត្រូវបានរក្សាសិទ្ធិដោយ អ្នកនិពន្ធ ។ ក៏ប៉ុន្តែ ក្រុមហ៊ុន យើងខ្ញុំនឹងទទួលបាននូវសិទ្ធិធ្វើការចែកចម្លង ចែកចាយ ផ្ញើជាសាធារណៈ បកប្រែ និងកែសម្រួលផ្សេងៗ បានទូទាំងពិភពលោក ក្នុងកំឡុងពេលដែលបានព្រមព្រៀងមួយ ។ យោងទៅតាមបទបញ្ញត្តិ ក្នុងករណីដែល អ្នកនិពន្ធ ចង់ផ្តល់សិទ្ធិនិពន្ធអោយអ្នកដទៃ ត្រូវមកសុំការអនុញ្ញាតិពីក្រុមហ៊ុនយើងខ្ញុំមុនសិន ។
4. សារណាដែលត្រូវបានបកប្រែ និង កែសម្រួលដោយក្រុមហ៊ុនយើងខ្ញុំនឹងត្រូវបានរក្សាសិទ្ធិគ្រប់យ៉ាងដោយ ក្រុមហ៊ុនយើងខ្ញុំ ។ មាត្រាទី២៤ស្តីពីច្បាប់រក្សាសិទ្ធិរបស់ប្រទេសជប៉ុន និង ច្បាប់រក្សាសិទ្ធិរបស់ប្រទេសផ្សេងៗ មិនត្រូវបានអនុវត្តឡើយ បើសិនជាគ្មានការយល់ព្រមពីក្រុមហ៊ុនយើងខ្ញុំតាមរយៈលាយលក្ខណ៍អក្សរជាមុននោះ ទេ គឺមិនអនុញ្ញាតិអោយ អ្នកនិពន្ធ យកសារណាដែលបានកែសម្រួលរួចនៅក្រុមហ៊ុនយើងខ្ញុំយកទៅបោះពុម្ព នៅទស្សនាវដ្តីដទៃនោះទេ ។
5. អ្នកនិពន្ធ មិនអាចជំទាស់ទៅនឹងការបកប្រែ ឬការកែសម្រួលនៃសារណាដែលក្រុមហ៊ុនយើងបានធ្វើឡើយ ។
6. អ្នកនិពន្ធត្រូវធានាថា សារណាដែលបានសរសេរ មិនស្ថិតនៅក្រោមការរក្សាសិទ្ធិរបស់អ្នកដទៃ ក៏ដូចជាប៉ះពាល់ ដល់កិត្តិយស សិទ្ធិផ្ទាល់ខ្លួន ឯកជនភាព និងសិទ្ធិផ្សេងទៀតរបស់អ្នកដទៃឡើយ ។ ក្រុមអ្នកស្រាវជ្រាវផ្នែក វេជ្ជសាស្ត្រត្រូវតែធ្វើតាមសេចក្តីប្រកាសរបស់ទីក្រុង Helsinki និងពិចារណាវិជ្ជាជីវៈប្រកបដោយក្រមសីលធម៌ ។ ការពិសោធន៍ទៅលើសត្វត្រូវធ្វើឡើងនៅក្នុងបែបបទមួយដែលផ្តល់ការយកចិត្តទុកដាក់ទៅលើការការពារសត្វ ។ ក្នុងករណីអត្ថបទដែលបានសរសេរមានជាប់ពាក់ព័ន្ធនឹងអត្ថប្រយោជន៍របស់បុគ្គល ឬ អង្គការ ឬ ក្រុមហ៊ុននោះ អ្នកនិពន្ធត្រូវសរសេរបញ្ជាក់អំពីអត្ថប្រយោជន៍ ឬ ផលប៉ះពាល់ដែលអាចកើតមានទាំងនោះ ទៅក្នុងអត្ថបទដែល បានសរសេរផងដែរ ។
7. អ្នកនិពន្ធ អាចយកសារណាដែលបានប្រកាសរួចនាសិក្ខាសិលាឬទស្សនាវដ្តីផ្សេងៗមកដាក់បាន ។ ក៏ប៉ុន្តែក្នុង ករណីចំនួនចម្លងចំនួនដែលបានសរសេរនៅក្នុងសារណាដែលបានដាក់ជូន មានអត្ថន័យដូចគ្នាខ្លាំងទៅនឹងសារណា ដែលបានចេញផ្សាយរួចរាល់នៅក្នុងទស្សនាវដ្តីដទៃនោះ អ្នកនិពន្ធ ត្រូវពិនិត្យអោយច្បាស់ដោយផ្ទាល់ជាមួយ នឹងបទបញ្ញត្តិនៃការចុះផ្សាយក៏ដូចជាបទបញ្ជានៃការចូលរួមសិក្ខាសិលា ឬត្រូវធ្វើការទំនាក់ទំនងជាមុនទៅកាន់

- ម្ចាស់ដើមនៃសារណាក្នុងករណីចាំបាច់ដើម្បីធ្វើការសុំអនុញ្ញាតិសម្រាប់អត្ថបទ ក្នុងគោលបំណងជៀសវាងការ រំលោភបំពានលើក្រមសីលធម៌នៃការស្រាវជ្រាវ ។ លើសពីនេះ អ្នកនិពន្ធត្រូវសរសេរអោយបានច្បាស់ពីប្រភព ដែលបានដកស្រង់ដូចជា ឈ្មោះសៀវភៅ ឈ្មោះអ្នកនិពន្ធ ថ្ងៃចេញផ្សាយ និងទំព័រជាដើមផងដែរ ។
8. ទស្សនាវដ្តីរបស់យើងខ្ញុំ មិនធ្វើការហាមប្រាម អ្នកនិពន្ធ ពីការយកសារណាទៅចេញផ្សាយនៅទស្សនាវដ្តីដទៃ ឡើយ ។ ក៏ប៉ុន្តែ យើងខ្ញុំសូមជម្រាបផងដែរថា សារណាដែលដាក់ជូនទស្សនាវដ្តីយើងខ្ញុំហើយ អាចនឹងមិនអាច ចុះផ្សាយម្តងទៀតនៅក្រុមហ៊ុនទស្សនាវដ្តីនោះទេ ។ ម្យ៉ាងវិញទៀត យើងក៏សូមបញ្ជាក់ផងដែរថា ក្នុងករណី អ្នកនិពន្ធយកសារណាមកដាក់ជូនយើងខ្ញុំ ធ្វើអោយសារណាដែលនោះមិនអាចយកទៅផ្សាយក្នុងទស្សនាវដ្តី ដទៃ យើងខ្ញុំមិនទទួលខុសត្រូវឡើយ ។
  9. ការជ្រើសរើសសារណា ធ្វើឡើងដោយការវាយតម្លៃពីគណៈកម្មាធិការរៀបចំការបោះពុម្ពផ្សាយ ដោយមានការ ពិនិត្យឡើងវិញជាមុន ។
  10. សារណាដែលបានដាក់ជូនហើយមិនអាចដកវិញបាននោះទេ ។
  11. ការកែតម្រូវរបស់អ្នកនិពន្ធអាចធ្វើឡើងបានតែម្តងប៉ុណ្ណោះតាមកាលបរិច្ឆេទកំណត់ដែលបានស្នើ ។ អ្នកនិពន្ធ អាចកែតម្រូវបានក្នុងករណីបាត់ពាក្យ ឬ ខុសអក្ខរាវិរុទ្ធប៉ុណ្ណោះ ។ មិនត្រូវសរសេរបន្ថែមនោះទេ ។
  12. 1) សារណាត្រូវសរសេរដោយប្រើកុំព្យូទ័រ ។  
2) ត្រូវប្រើខ្នាត A4 បញ្ជ្រាវ និង មានគំលាតសមស្រប ។
  13. ទាំងអ្នកនិពន្ធ និង ក្រុមហ៊ុននឹងមិនត្រូវបានបង់ប្រាក់សម្រាប់ការបោះពុម្ពផ្សាយនៅក្នុងទស្សនាវដ្តីនោះទេ ។
  14. សូមយកសារណារបស់អ្នកមកដាក់ជូនតាមរយៈអាសយដ្ឋានខាងក្រោម ៖

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