



ISPD Asia-Pacific Chapter Newsletter, April 2022

VOLUME 20, ISSUE 1

Prepared by Chia-Te LIAO and Cheuk-Chun SZETO

News from the ISPD

International Society for Peritoneal Dialysis 2022 Congress

11-14 August 2022

Suntec, Singapore

Early Registration: 29 April 2022

Website: <https://ispd2022.com/>

The in-person meeting format for the ISPD Congress from 11-14 August 2022 in Singapore is becoming a reality!

The Singapore government announced a decisive step in living with COVID-19.

From April 1st, all vaccinated travellers could come into Singapore on any flight, from any country without the need for quarantine!

There will be no need for entry approvals for short-term visitors, nor the requirement to enter Singapore via dedicated Vaccinated Travel Lane (VTL) flights.

Moreover, travellers will no longer need to take a COVID-19 antigen rapid test (ART) within 24 hours of entry into the country.

The organising committee hopes that with the easing of these measures, you will consider coming to visit Singapore in August, both to attend the exciting scientific program they have lined up for you at the congress, renew friendships with colleagues and to enjoy a well-deserved break in the beautiful garden city state of Singapore.

See you at the ISPD Congress in Singapore!

ISPD Asia-Pacific Chapter Scholarships in support for ISPD Congress Singapore 2022

Aims

The purpose of the scholarship is to promote PD awareness, knowledge and expertise by attending the ISPD Congress Singapore 2022. It is intended primarily for nephrology trainees, nurses, and other allied healthcare workers in the Asia-Pacific region, especially in the developing countries.

NB. Developing countries refer to those countries eligible for ISPD institutional membership.

Application Process

The ISPD APC aims to offer up to 15 scholarships. The deadline for the application is 8 April 2022.

Each application must include the following documents: (1) A completed application form, and (2) a recommendation letter from the director of the nephrology unit or department.

The application should be submitted to Prof CC Szeto, the ISPD Asia Pacific Chapter Core Group coordinator. The Core Group will review the applications. Preference is given to applicants from low-middle income countries. Notification of the decision will be announced by 22 April 2022.

Amount for the Award

The award funds are to be used to support the early-bird registration fee of US\$ 400 for the ISPD Conference Singapore 2022.

Payment method

ISPD APC will provide batch registration for all successful applicants. The registration details and conference hyperlinks will be sent to the scholarship recipients.

Eligibility

Applicants must be an ISPD members. There is no age restriction, but industrial employees are not eligible.

- For medical applicants, candidates who are under nephrology training or junior consultant would be preferred.
- For applicants of other healthcare professionals, candidates who have a working experience of at least 3 years would be preferred.

ISPD Asia-Pacific Chapter Scholarship

This is a scholarship to support up to 3 months training in clinical PD for doctors and nurses from Asia-Pacific region. Deadline for application for each round: twice a year at 30 June or 31 December. **The next deadline is 30 June 2022.** Details and application procedures can be found under the Regional Chapters – Asia-Pacific Chapter, at the ISPD website.

For full details and application form: [click here](#) ➡

Renew your membership !

Visit <https://ispd.org/memberships/> to join the ISPD or renew your membership. Membership benefits of the International Society for Peritoneal Dialysis include:

- print and/or online subscription to Peritoneal Dialysis International
- Receipt of PD News
- Online access to ISPD Guidelines
- Special registration fees at ISPD Congress, Chapter Meetings and the Annual Dialysis Conference
- Application for ISPD Scholarships and Grants

Membership for developing countries can be done at advantageous rates, by grouping members by institution or region geographical area. Write to admin@ispd.org for more information.

Upcoming Meetings

10th International Society for Peritoneal Dialysis Asia Pacific Chapter meeting

22-24 September 2023, New Delhi, India

Upcoming Webinar: Peritonitis Guidelines Webinar (with ISN)

ISPD has partnered with ISN to present the 2022 Update to the Peritonitis Guidelines to a wide audience through a 1 hour webinar, with the opportunity to ask questions to the main authors of the update.

06 April, 2022 - 12:00 GMT/UTC

2022 Update on the ISPD Guidelines for Peritonitis Prevention and Treatment

Speaker:
Philip KT Li (Hong Kong)

Speaker:
David Johnson (Australia)

Moderator:
Jolanta Malyszko (Poland)

Register for the Peritonitis Guidelines

Webinar: <https://bit.ly/3JVTt4m>

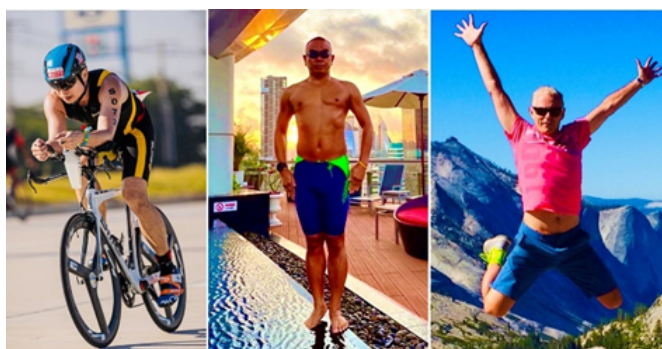
Guideline Update

ISPD and GREX Guidelines Summary: Physical Activity and Exercise in Peritoneal Dialysis

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(middle) Professor Talerngsak Kanjanabuch, M.D., Center of Excellence in Kidney Metabolic Disorders, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

(right) Professor Paul N Bennett, Clinical Health Sciences, University of South Australia, Adelaide, Australia



As we all know that physical activity and working activity can improve both physiological and mental health in peritoneal dialysis (PD) patients but there was only scarce information on how to do exercise safely and effectively in PD patients. In January 2022, through a well-designed process and robust work by the Global Renal Exercise Network (GREX) and the International Society for Peritoneal Dialysis (ISPD), "Practice recommendations on physical activity and exercise in peritoneal dialysis" were published in *Peritoneal Dialysis International*. There were four main categories of recommendations include 1) timing of physical activity; 2) specific activities; 3) symptoms and side effects; and 4) nutrition and fitness. The strength of each recommendation is indicated as either Level 1 (recommend) or Level 2 (suggest), and the certainty of the supporting evidence is shown as A (high certainty), B (moderate certainty), C (low certainty), or D (very low certainty). Unfortunately, most recommendations are only suggestions with low or very low certainty, given the limited evidence base in this area. This narrative summarizes these valuable recommendations, further information on the rationale of recommendation/suggestion, the question regarding patients' perspective, and research question is free for all as it is open access and can be found at:

<https://journals.sagepub.com/doi/10.1177/08968608211055290>.

1. Timing of physical activity (Practice points 1.1–1.2)

1.1. Physical activity and catheter insertion: Regardless of surgical technique, walking is safe and should be encouraged as soon as possible following catheter insertion. (1D) Activities associated with increased intra-abdominal pressure (IAP) should be delayed for at least 2-3 weeks after buried/laparoscopic catheter insertion and 4-6 weeks after open surgery. (2D)

1.2. Intra-abdominal volume recommended during physical activity: For activities that are not associated with a significantly higher IAP, such as walking, hiking, and jogging, PD fluid does not need to be drained prior to exercise unless the 'fullness' contributes to patient discomfort. (2D) PD fluid should be drained prior to exercise for weightlifting, snow shoveling, and jumping, which are associated with much higher IAP. (2C)

2. Specific activities (Practice points 2.1–2.5)

2.1. Swimming and water sports: Routine exit-site care should be performed after swimming and water sports. (1C) A transparent waterproof dressing or colostomy bag is suggested to secure and protect the catheter and exit site from getting wet during shower or swimming. (2D) Swimming or other water sports should preferably take place in either

seawater or swimming pools known to be well maintained (private or municipal) to limit exposure to waterborne pathogens. (2D)

2.2. Contact sports and sports requiring vigorous activity: Contact sports where there is the risk of physical trauma or repetitive rubbing occurring to the catheter site are not recommended. (1D) Patients may need to temporarily modify or cease their sporting activities if their PD fluid becomes pink or red-tinged, suggesting intra-peritoneal bleeding. Following resolution, activity may resume when approved by a relevant professional within the PD care team. (2D) Sports that require frequent bending, squatting, or lifting may be best done without PD fluid in-situ. (2D) A PD belt during sports may provide enhanced protection and comfort to the catheter and catheter site. (2D)

2.3. Core strength: Since the stronger core muscles can support the low back and prevent/manage low back pain (1C), core strengthening exercises are recommended for PD patients. (2C) Stronger transverse abdominal muscles can support increased IAP secondary to PD fluid, potentially reducing hernia risk. (2D)

2.4. Work: PD patients should be encouraged to continue to work (1C), and clinicians should support patients to liaise with their employer to discuss continuing employment. (2C) Clinicians should discuss if the person's employing organization has a corporate wellness program that the patients could safely participate in. (2D) For those primarily sitting at work, intermittent movement should be performed throughout the work shift. For example, perform sit-to-stands, calf raises, arm circles, marching in place every hour. (2D) Functional exercises targeted to work tasks should be performed. For example, for those performing lifting tasks much of the day, exercises such as targeted stretching, core strengthening, shoulder press, seated/standing row, and deadlifts could be recommended. (2D)

2.5. Sexual activity and sexual dysfunction: Patients' concerns regarding body image, the impact of scars, weight changes, and safety of sexual activity need to be addressed by clinicians, especially the fear of catheter dislodgement. (1C) The risk of PD fluid leak or dislodgement during sexual activity (after four weeks post-insertion of PD catheter) is low. (2C) Age, blood pressure, medications, iron treatment, glucose levels, and lipid levels can contribute to sexual dysfunction and should be assessed. (1C) Pharmaceutical treatment of erectile dysfunction should be discussed on an individual basis. (2D)

3. Symptoms/side effects (Practice points 3.1–3.6)

3.1. Exit-site care and exercise: Wearing breathable and freshly laundered clothing during physical activity to decrease sweating near the exit site is recommended. (1D) The exit site should be cleaned immediately after it becomes soiled or wet during exercise, and the exit site should be cleaned routinely at least twice per week. (1C) When engaging in moderate to vigorous activity, the catheter should be secured with tape to prevent trauma to the catheter/exit site. (2D) Applying a non-occlusive dressing, such as gauze, may reduce microtrauma to the skin that may result from skin friction during moderate to vigorous activity. (2D)

3.2. Perspiration (sweating): Shower and clean the PD exit site shortly after any vigorous exercise that leads to sweating to limit any potential risk of infection associated with perspiration. (1D)

3.3. Cardiovascular-compromised individuals: Personalized short-term and long-term training goals should be clearly defined. (2C) A personalized and multidisciplinary approach should be adopted in the prescription, monitoring, and supervision of exercise, taking into consideration the severity and nature of heart disease, medical comorbidities, and usual functional status. (1C) A graduated approach in exercise prescription with gradual progression in exercise intensity and duration as tolerated should be adopted. (1C)

3.4. Frailty: Physical activity and/or exercise training programs can prevent and reduce physical frailty and reduce the risk of disability. (1B) Use screening tools and physical function test results to assess strength, balance, and guide exercise prescription. (1C) Consider exercises like walking or stationary cycling, body-weighted resistance exercises, and balance exercises, particularly for those at high risk of falls. (2B) Design exercise programs that fit into each individual's lifestyle and provide education on the benefit of physical activity in maintaining the function, for example, climbing stairs. The PD care team (nephrologist, dialysis nurse, social worker, dietitian) will determine the appropriate assessment lead given the varying resources from centre to centre and country to country. (2D)

3.5. Fatigue: Physical activity and exercise may reduce fatigue symptoms and should be encouraged. (2D) A walking program (outdoor or treadmill) employing a graded approach (i.e., incremental over time) is well tolerated and may decrease fatigue experience and increase an individual's ability to perform daily activities (2D)

3.6. Mental health: Regular, moderate-intensity exercise 20–30 minutes, 3-5 times per week is likely to improve or maintain mental health. (2B)

4. Nutrition and fitness (Practice points 4.1–4.3)

4.1. Dietary practice points. Where resources allow, dietitians are valuable members of the PD team to advise on nutrition and exercise. (1C) Eat a small meal or snack containing carbohydrates before exercise. (2C) If exercise duration is longer than 60 minutes, additional carbohydrate intake may be required during exercise. (2C) To support protein synthesis, it is reasonable to consume 20 grams of high-quality protein immediately after resistance exercise. (2C) Fluid intake during exercise should match but not exceed sweat losses and be individualized in context with usual urine output and fluid allowance. (2C) Sports nutrition supplements, such as protein supplements and sports drinks, should be used under clinical supervision. (2C)

4.2 Low baseline fitness levels: Any increase in daily physical activity and decrease in sedentary time are likely to have health benefits for PD patients. (1C). Individuals should start exercising slowly and at a low intensity to understand their baseline fitness level and minimize the risk of injuries. (1D) Older adults should include activity that focuses on balance and strength training to improve functional capacity and reduce fall risk. (2C) Track exercise performance to increase the frequency, intensity, and time spent exercising steadily. (2D) Incorporate both aerobic (e.g., walking, dancing, seated marching, seated cycling) and resistance (e.g., sit-to stands, seated row, seated leg curl with resistance bands) activities in a stepwise manner. (2C)

In line with World Health Organization guidelines, individuals with shallow activity levels should gradually work towards achieving over time: 150–300 minutes of moderate-intensity aerobic physical activity (e.g. walking, swimming, dancing) per week OR 75–150 minutes of vigorous-intensity aerobic physical activity (e.g., jogging, competitive sports) per week OR an equivalent combination of moderate-intensity and vigorous-intensity aerobic activity AND 2 or more days per week of muscle-strengthening activities (e.g., push-ups, squats) (2C)

In summary, these recommendations are a baseline for future research and work to be undertaken to improve physical activity and the subsequent physical function of people on PD. Exercise and physical activity do not have to be expensive and apply to people receiving PD in our Asia-Pacific region and for example, walking or jogging for aerobic exercise and elastic fitness bands for resistance exercise. A group activity can also be encouraged by PD providers. Adopting these recommendations will keep our patients physically functional and independent to maintain quality and quantity of life.

Acknowledgements

The following leaflet sets out an overview of this ISPD and GREX Guidelines Summary: Physical Activity and Exercise in Peritoneal Dialysis and is copyrighted for academic and educational purposes only. Somkanya Tungsanga, M.D. (Peritoneal Dialysis Excellent Center, King Chulalongkorn Memorial Hospital, BKK, Thailand) and Professor Paul N Bennett (Clinical Health Sciences, University of South Australia, Adelaide, Australia) acknowledge ownership of the leaflet and all legal rights associated therewith.

Reference

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ACTIVITY AFTER CATHETER SURGERY

- Walking is safe and should be encouraged as soon as possible following surgery.
- Activities that increase intra-abdominal pressure (e.g., lifting over 5-10 kg, chopping wood, shoveling snow, vacuuming, sit-ups) should be delayed for ≥ 4-6 weeks after open surgery or until complete healing.



Older adults should include activity that focuses on balance and strength training to improve functional capacity and reduce falls risk.



EXERCISE INTENSITY & DURATION

Moderate-intensity aerobic exercise

- e.g., walking, swimming, dancing
- at least 150-300 minutes/week

High-intensity aerobic exercise

- e.g., jogging, competitive sports
- at least 75-150 minutes/week

Core muscle strengthening exercise

- e.g., pushups, squats at least 2 days/week



Reference: ISPD and GREX practice recommendations for Physical activity and exercise in PD 2022

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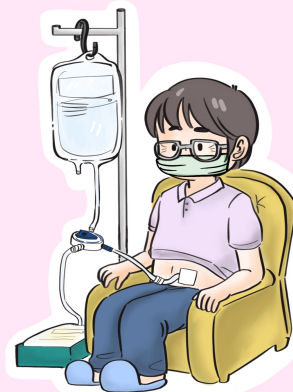
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Professor Paul N Bennett, Clinical Health Sciences, University of South Australia, Adelaide, Australia



GREX
Global Renal Exercise



Recommendations for Physical Activity and Exercise in People Undergoing Peritoneal Dialysis (PD)



The International Society for Peritoneal Dialysis and The Global Renal Exercise Network



PD FILL VOLUME DURING PHYSICAL ACTIVITY

- For activities that are not associated with higher intra-abdominal pressure (IAP) such as walking, hiking, and jogging, PD fluid does not need to be drained prior to exercise unless contributing to patient discomfort.
- For activities such as weightlifting, snow shoveling, and jumping, which are associated with higher IAP, drain PD fluid prior to exercise.

CORE MUSCLE STRENGTHENING EXERCISE

- Stronger transverse abdominal muscles can support IAP secondary to PD fluid, potentially reducing hernia risk.
- Core strengthening exercises are suggested for PD patients, at least 2 days/week.

EXERCISE IN PATIENTS RECEIVING PD

PD patients should regularly exercise to improve muscle strength and cardiac functional capacity

Swimming and Watersport

- Swimming should take place in either seawater or private pools. If swimming in open water, avoid swimming directly after storms.
- Routine exit-site care should be performed after swimming.
- Pre-swim: Wash your hands. Remove PD dressing and check exit site for signs of infection. Make sure the transfer set connection and catheter are tight. Cleanse the skin around the exit site/catheter. Apply ostomy pouch around the exit site encasing the catheter and transfer set. Apply waterproof adhesive strips around all edges of the ostomy bag. Allow 20-30 minutes to adhere before going into water.
- Post-Swim: Shower using antibacterial soap. Use adhesive removal wipe to loosen the adhesive strips and ostomy pouch edges. Carefully remove and discard. Clean the skin around the exit site/catheter. Apply regular



Contact Sports and Sports Requiring Vigorous Activity

- Contact sports with risk of trauma to the catheter site are not recommended.
- In sports requiring frequent bending, squatting, or lifting, PD fluid should be drained prior to exercise.
- Patients may prefer the peritoneum to be empty for greater comfort when participating in sports.
- The use of a PD belt during sports may provide enhanced protection and comfort to the catheter and catheter site.
- Patients may need to temporarily modify or cease their sporting activities if their PD fluid becomes pink or red-tinged, suggesting intra-peritoneal bleeding. After resolution, activity may resume when approved by a relevant

Sexual Activity

- Sexual activity should be delayed for ≥ 4 weeks post catheter insertion to reduce the risk of PD fluid leak or catheter dislodgment.

Research News from Asia-Pacific Region

Risk factors and management of catheter malfunction during urgent-start peritoneal dialysis

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Photo: Guoshuang Xu

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The success of peritoneal dialysis (PD) mainly depends on a well-functioning peritoneal catheter [1]. Catheter-related complications frequently cause PD failure, requiring session delays or even permanent procedure changes. Catheter-related complications are responsible for up to 20% of all permanent transfers to hemodialysis [2,3]. Compared to standard PD, urgent-start PD after catheterization has not been associated with further catheter malfunction or other complications in some regional studies with small sample size. [5-7]. There have been some reports on the investigation of risk factors for catheter malfunction [8-10], but due to the small sample size, lack of treatment and efficacy, there is still no convincing evidence for the investigation and management of risk factors for catheter malfunction, especially in urgent-start PD.

To investigate the risk factors and management of catheter malfunction, we conducted a retrospective study that included all patients experienced urgent catheter insertion and immediate PD initiation in our center from 2013 to 2019. Patients who underwent urgent-start PD were divided into catheter malfunction and control groups. Baseline demographic and laboratory data of the two groups were compared, and the risk factors for catheter malfunction were analyzed. Primary outcome measure was catheter survival, and the secondary outcomes were surgical complications and malfunction treatment.

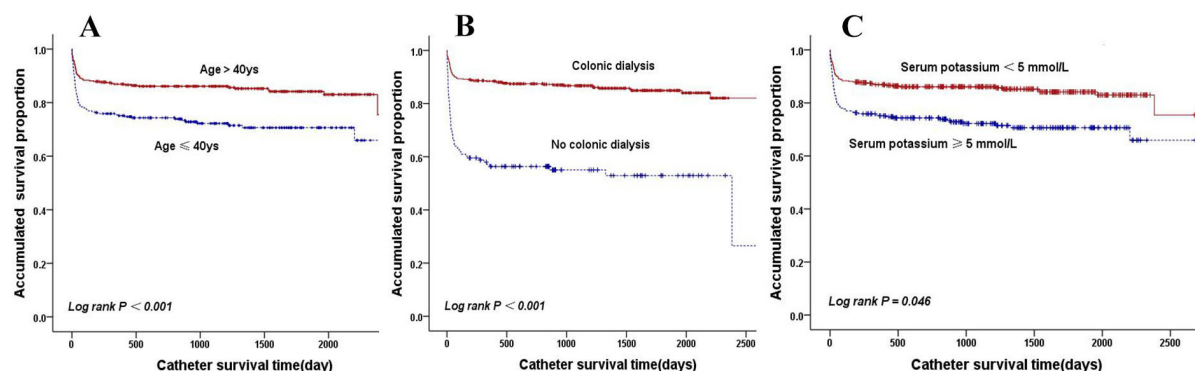
A total of 700 patients with new PD were enrolled, including 143 (20.4%) with catheter malfunction (malfunction group) and 557 (79.6%) without catheter dysfunction (control group). The types of catheter malfunction included catheter migration (96, 67.1%), omental wrapping (36, 25.2%), and migration plus omental wrapping (11, 7.7%). The mean follow-up time was 1449.87 days (182–4374 days). The catheter survival time in malfunction group (202.5 ± 479.4 days) was significantly shorter than that in control group (1295.3 ± 637.0 days) ($P < 0.001$).

The baseline characteristics of the two groups showed significant differences in age ($p < 0.001$), body mass index ($p = 0.028$), diastolic blood pressure ($p = 0.002$), primary kidney disease ($p = 0.002$), preoperative colonic dialysis ($p < 0.001$), and surgeon ($p < 0.001$). In addition, there were significant differences between the two groups in serum uric acid ($P = 0.030$) and serum potassium ($P = 0.011$) before catheterization. The risk factors for PD catheter malfunction were analyzed using univariate and multivariate Cox regression analyses. In the univariate analysis, age ($p < 0.001$), occupation ($p = 0.030$), body mass index ($p = 0.028$), diastolic pressure ($p = 0.004$), primary kidney disease ($p = 0.024$), preoperative colonic dialysis ($p < 0.001$), surgeon ($p = 0.008$), and serum potassium level ($p = 0.008$) were significantly associated with catheter malfunction (Table 1). Multivariate analysis revealed that higher body mass index (hazard ratio [HR], 1.061; 95% confidence interval [CI], 1.010–1.115; $P = 0.018$), Inexperience of the surgeon (HR, 1.083; 95% CI, 1.032–1.136; $P = 0.001$), and higher serum potassium level (HR, 1.231; 95% CI, 1.014–1.494; $P = 0.036$) were independent risk factors for catheter malfunction, while older age (HR, 0.976; 95% CI, 0.962–0.991; $P = 0.002$) and colonic dialysis (HR, 0.384; 95% CI, 0.254–0.581; $P < 0.001$) were protective factors (Table 1).

Table 1. Univariate and multivariable Cox regression analyses of the risk factors of PD catheter malfunction

Variables	Univariate analysis			Multivariate analysis		
	HR	95%CI	P value	HR	95%CI	P value
Age	0.957	0.945-0.970	<0.001	0.976	0.962-0.991	0.002
Occupation	1.397	1.034-1.888	0.030			
Body mass index (kg/m ²)	1.059	1.006-1.115	0.028	1.061	1.010-1.115	0.018
Diastolic pressure	1.017	1.005-1.028	0.004			
Preoperative colonic dialysis	0.241	0.173-0.336	<0.001	0.384	0.254-0.581	<0.001
Primary kidney disease	0.749	0.583-0.963	0.024			
Surgeon	1.067	1.017-1.120	0.008	1.083	1.032-1.136	0.001
Serum potassium	1.286	1.067-1.551	0.008	1.231	1.014-1.494	0.036

Further subgroup analyses were conducted based on age, history of preoperative colonic dialysis, and preoperative serum potassium level. The mean PD catheter survival time in patients aged > 40 years was estimated at 2382.5 days (95% CI, 2266.9–2498.1 days), which was significantly longer than that in patients aged ≤ 40 years (1955.7 days; 95% CI, 1808.1–2103.3) ($P < 0.001$, Figure 1A). The estimated mean catheter survival time was significantly different between the colonic dialysis (2431.8 days; 95% CI, 2347.2–2516.4) and no colonic dialysis (1408.8 days; 95% CI, 1165.7–1651.9) subgroups ($P < 0.001$, Figure 1B). Moreover, the estimated mean catheter survival time was lower in those with preoperative serum potassium ≥ 5 mmol/L (2382 days, 95% CI; 1761.6–2190.9) than those with preoperative serum potassium < 5 mmol/L (2840 days; 95% CI, 2205.0–2400.9) ($P = 0.046$, Figure 1C).

**Figure 1.** Kaplan–Meier survival curves showing the accumulated age-adjusted catheter survival time (A), colonic dialysis (B), and serum potassium level (C).

Conservative treatment (96, 67.1%), second operation (42, 29.4%), and extubation withdrawal (5, 3.5%) were used to manage catheter malfunction. Conservative treatment include moderate physical activity (walking on stairs and jumping slightly), intestinal and bowel relaxation and manual reduction. Second operations were open surgeries under local anesthesia. A longitudinal incision was made lateral or medial to the original incision. After lidocaine infiltration, layer-by-layer dissection into the rectus abdominis was performed. After the peritoneal incision, the abdominal segment of the peritoneal dialysis tube was removed. If there was omental wrapping, the omentum was separated and ligated, and the redundant omentum was removed. Then, the PD tube was placed again into the pelvis with oval forceps (Figure 2).

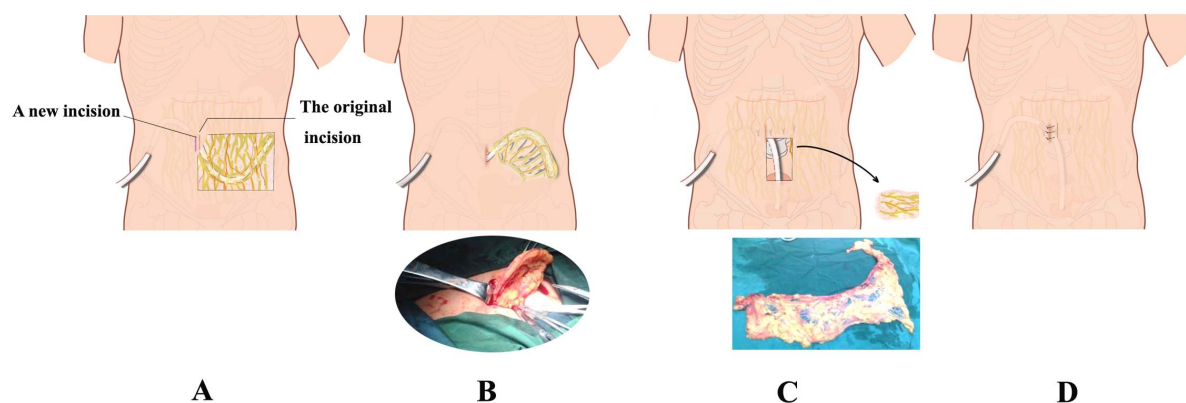


Figure 2. Schematic diagram of the second operation with preservation of peritoneal dialysis catheter and subcutaneous tunnel. (A). A second incision was selected lateral to or medial to the original abdominal incision in the omentum wrapping patient. (B). The internal peritoneal segment of the peritoneal dialysis catheter and part of the omentum were pulled out from the surgical incision. (C). After partial excision of omentum around the catheter, the catheter was re-inserted into the pelvic cavity. (D). The peritoneum, anterior sheath of rectus abdominis, subcutaneous tissue and skin were sutured layer by layer.

Among the 96 cases of catheter migration alone, 92 (95.8%) received conservative treatment, three (3.1%) underwent extubation by repeated displacement, and one (1.0%) received a second operation. Among the 36 cases of omental wrapping, one (2.8%) received urokinase sealing, one (2.8%) received extubation withdrawal, and 34 (94.4%) underwent a second operation. Among the 11 cases of catheter migration plus omental wrapping, three (27.3%) received conservative treatment, one (9.1%) underwent extubation, and seven (63.6%) received a second operation, of which two underwent three operations. All patients returned to normal after the intervention.

Overall, our study revealed that urgent-start PD is a safe and efficacious therapy for patients with unplanned PD. For young people who are prone to catheter malfunction, adequate preoperative colonic dialysis and serum potassium level control are conducive to preventing catheter malfunction. Moreover, standardized training for surgeons is necessary to reduce the incidence of catheter malfunction. Conservative treatment is effective in managing catheter migration alone, and preservation of the PD tube and subcutaneous tunnel as a second operation is effective for omental wrapping. To our knowledge, this is the largest study on the risk factors and management of PD-related catheter malfunction. This study provides a clinical basis for the prevention and treatment of PD catheter malfunction.

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Caregiver burden of elderly peritoneal dialysis patients

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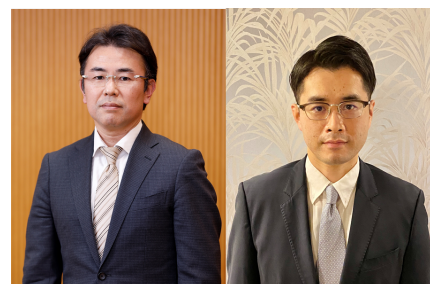


Photo: Tsutomu Sakurada (left) and Masaru Murasawa (right)

In Japan, it is estimated that 13.3 million people, constituting 13% of the adult population, have chronic kidney disease (CKD) [1]. In addition, the number of dialysis patients reached 340,000 at the end of 2019, and is increasing year by year [2]. The numbers of elderly prevalent and elderly incident dialysis patients have both increased. Peritoneal dialysis (PD) is widely known as a suitable renal replacement therapy for the elderly, the frail, and those with end-stage kidney disease and severe cardiovascular disease, because it does not require extracorporeal circulation or frequent visits, and has little effect on hemodynamic status. However, elderly PD patients often have difficulties with self-care and require assistance from caregivers. A recent meta-analysis of the quality of life (QOL) and care burden on caregivers of dialysis patients including PD patients, has shown that their QOL is lower than that in the general population and that the caregiver burden is severe [3]. Although there have been several cross-sectional studies on the caregiver burden of prevalent PD patients, few previous longitudinal studies have been performed after PD initiation. Therefore, we performed a prospective, observational study to investigate the caregiver burden of elderly incident PD patients between October 2015 and March 2018 [4].

The present study included only caregivers of patients aged 65 years or older in whom PD was initiated. The Zarit Burden Interview (ZBI) is one of the oldest and most commonly used instruments for assessing caregiving burden at the international level [5]. The ZBI is a multidimensional care burden scale comprising 22 items examining health, psychological wellbeing, finances, social life, and relationship with the patient (score < 21: no burden; 21–40: mild; 41–60: moderate; 61–88: severe) and has been used extensively to determine caregiver burden on caregivers of various ethnicities for different chronic diseases. It has also been applied to Japanese caregivers. Fourteen caregivers were enrolled, eight of whom were evaluated both at baseline and 1 year after PD initiation (six were excluded, due to caregiver change for one, incomplete answers for three, and loss to follow-up for two). Mean patient age was 75.1 ± 9.3 years; 6/8 were on continuous ambulatory peritoneal dialysis, 2/8 were on automated peritoneal dialysis, and 3/8 required care in their daily lives. Mean caregiver age was 64.9 ± 13.4 years. The caregivers comprised five males; two of whom were unemployed, one of whom had chronic disease, and five of whom assisted with PD. The caregiver was the patient's spouse in five cases, and the patient's child in three.

The ZBI score was 18.1 ± 9.4 (range, 5–30) at the initiation of PD and 15.5 ± 14.7 (range, 3–47) at 1 year after PD initiation (Table 1) (no significant change, $p = 0.67$). Most caregivers (87.5%) had no or mild caregiving burden. Moderate caregiver burden was observed in case 6, who was employed, had chronic disease, and provided PD assistance to a patient with worsening dementia.

Table 1. Characteristics of caregivers

Case	Age (years)	Male (n)	Patient age (years)	Employed (n)	Chronic disease (n)	Assisted PD (n)	PD modality	ADL	ZBI score at initiation	ZBI score at 1 year after
1	45	0	67	1	0	0	APD	Independent	9	5
2	85	1	90	0	0	1	CAPD	Support required	22	19
3	48	1	76	1	0	0	CAPD	Independent	5	7
4	70	0	74	0	0	1	CAPD	Support required	23	25
5	64	0	65	1	0	0	APD	Independent	30	3
6	61	1	88	1	1	1	CAPD	Support required	19	47
7	72	1	71	1	0	1	CAPD	Independent	9	10
8	74	1	70	1	0	1	CAPD	Independent	28	8

PD peritoneal dialysis, APD automated peritoneal dialysis, CAPD continuous ambulatory peritoneal dialysis, ADL activities of daily living, ZBI zarit burden interview

Several studies have compared the caregiver burden experienced by caregivers of patients undergoing various renal replacement therapies. According to a report from Mexico, primary caregivers of patients undergoing PD had the same ZBI score as those of patients undergoing hemodialysis (HD) (HD; 23.6 ± 17.4 vs. PD; 22.8 ± 14.2 , $p = 0.77$), but workload levels, anxiety, and depression were lower in primary caregivers of patients undergoing PD [6]. However, Avsar et al. reported that caregivers of PD patients had significantly higher rates of anxiety and depression compared with those of kidney transplantation patients, and that the caregiver burden risk was 2.61 times higher in caregivers of PD patients than in those of kidney transplantation patients [7].

The first clinical study using ZBI to assess caregiver burden of PD patients in Japan was published in 2003 by Shimoyama et al., who reported a mean ZBI of 14.1 in 34 caregivers (mean age, 46.6 years) [7]. However, their patients were young (mean age, 48.2 years) and no changes in caregiver burden over time were reported. A longitudinal study of 44 caregivers in Singapore showed that burden increased from moderate to severe, from 13% at baseline to 28% after 12 months [8]. In addition, Zhang et al. reported that 18.2% of caregivers had moderate to severe burden, and showed that caregiver burden increased with the progression of patient frailty [9]. In contrast, the present study found no significant change in caregiver burden over 12 months, and only one caregiver had moderate burden. The present results may have been influenced by the initiation of incremental PD, the fact that the caregivers were mostly healthy and young, and the cultural importance of devotion to family care in Japan. We believe that the short observation period may also have affected the results. However, worsening dementia in the patient may contribute to an increase in caregiver burden. Long-term follow-up studies with more cases are needed in the future. Early understanding of caregiver burden may be important for prevention of burnout. It is clear that issues related to caregiver burden of PD patients are important in a rapidly aging society, and international research is required to build solid evidence.

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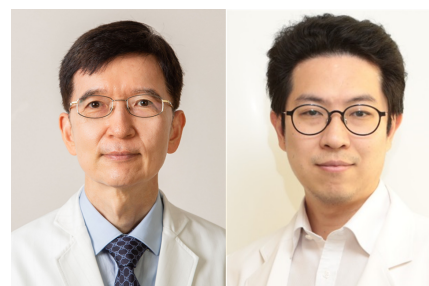
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Comparisons of physical activity and understanding of the importance of exercise according to dialysis modality in maintenance dialysis patients

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Photo: Jun Young Do (left) and Seok Hui Kang (right)

It is well known that the prevalence of physical disability in dialysis patients is higher than that in the general population [1]. Therefore, knowledge about the importance of exercise to attenuate this problem has been addressed. Previous studies have evaluated knowledge about the importance of exercise in dialysis patients. A recent meta-analysis evaluated 21 randomized trials, and merged data showed that exercise improved the muscle mass and/or muscle strength [2]. However, all studies showed inconsistent results. Data regarding the current status of physical activity or understanding of the importance of exercise, such as barriers of exercise or enablers of exercise, in dialysis patients were insufficient. This study aimed to evaluate the status of physical activity and the understanding of the importance of exercise in Korean dialysis patients.

The study participants were recruited from 27 hospitals or dialysis centers in Daegu/Kyungsangpook-do between July and December 2012 [3]. In total, 2,737 participants who received dialysis were included. Finally, 1,611 participants were ultimately included. Demographic and laboratory data collected upon enrollment.

Physical activity was evaluated using the International Physical Activity Questionnaire-Short Form [4]. Physical activity was evaluated regardless if it was leisure or working. Total physical activity was calculated by metabolic equivalent of task (MET) values using the intensity and time of the physical activity. Total MET values were calculated as the sum of MET values × time of physical activity (minutes/week). High physical activity was defined as ≥600 MET regardless of intensity or time of physical activity.

All participants were provided with the following questions: "Has the participant ever heard the importance of exercise?" The answer was either "yes" or "no." If the participant answered "yes," the next question was "Who told you of the importance of exercise?" The answers were physician, nurse, other dialysis patients, social or mass media, family, friend, nutritionist, social worker, or others. For all participants, the next question was "What is the enabler for regular exercise?" The answers were encouragement from physician; encouragement from nurse; encouragement from family, relatives, or friends; participation in a specialized exercise program; encouragement from other dialysis patients; or presence of an exercise facility.

Further questions were evaluated according to the performance of exercise. If the participant exercised, the question was "What are the benefits of exercise?" The answers were mood, strength, overall vitality, sleeping, confidence, blood pressure, doing the things that the patient wants for himself/herself, muscle cramping, intradialytic hypotension, or others. If the participant did not exercise, the question was "What is the barrier to exercise?" The answers were poor motivation, fatigue, lack of time to exercise, pain, uncertain on how to exercise, depressive mood, fear of injury, lack of equipment or place to exercise, or unsure about the importance of exercise. The answers were in multiple choices.

The number of participants in the hemodialysis (HD) and peritoneal dialysis (PD) groups was 1,247 and 364, respectively. The mean age in the HD and PD groups was 56.4 ± 13.2 and 54.1 ± 11.9 years, respectively. HD patients were older than PD patients. The number of patients with no, low-, moderate-, or vigorous-intensity physical activity was 567 (45.5%), 427 (34.2%), 219 (17.6%), and 34 (2.7%) in HD patients and 161 (44.2%), 135 (37.1%), 63 (17.3%), and 5 (1.4%) in PD patients, respectively ($P = 0.409$). Multivariate analysis-adjusted covariates showed that MET values in HD and PD patients were 325.1 ± 1.1 and 241.8 ± 1.1 , respectively ($P = 0.002$). The number of HD or PD patients with high physical activity was 140 (11.2%) and 20 (5.5%), respectively ($P = 0.001$).

Logistic regression analysis showed that the odds ratio for high physical activity in HD patients was 2.18 (1.34–3.53) compared to that in PD patients ($P = 0.002$). The odds ratio for high physical activity in HD patients was 3.01 (1.64–5.54) compared to that in PD patients on multivariate analysis ($P < 0.001$). The numbers of PD patients who had undergone CAPD or APD were 196 (53.8%) and 89 (24.5%), respectively. There were no data for PD modality in 79 patients (21.7%). There was no significant difference in the proportion of high physical activity and MET values between CAPD and APD.

There were 762 (61.1%) HD patients and 281 (77.2%) PD patients who heard of the importance of exercise ($P < 0.001$). In both HD and PD patients, dialysis staff (physician and/or nurse) played the most significant role as educators on the importance of exercise and enablers of exercise (Table 1). The most commonly selected benefits from exercise were mood, strength, and overall vitality in both HD and PD patients. Poor motivation and fatigue were the most common barriers to exercise in both HD and PD patients.

With regard to individuals providing education on the importance of exercise, the proportion of nurses was greater in PD patients than in HD patients. The proportion of other dialysis patients was greater in HD patients than in PD patients. For benefits from exercise, the proportion of sleep was greater in PD patients than in HD patients. There were no significant differences in the number of enablers of exercise or barriers to exercise between the two dialysis modalities.

Our study showed that the barrier to exercise and the enablers of exercise were poor motivation/fatigue and encouragement from dialysis staff, respectively. The frequent contact with medical staff in a HD facility may be associated with a greater amount of high physical activity in HD patients than in PD patients.

Table 1. Comparison of exercise-related questionnaires according to dialysis modality

	Total	HD	PD	P-value
Education for the importance of exercise				<0.001
Physician	519 (24.7%)	346 (24.2%)	173 (25.7%)	
Nurse	559 (26.6%)	349 (24.4%)	210 (31.3%)	
Other dialysis patient	296 (14.1%)	237 (16.6%)	59 (8.8%)	
Social or mass media	296 (14.1%)	212 (14.8%)	84 (12.5%)	
Family	259 (12.3%)	173 (12.1%)	86 (12.8%)	
Friend	136 (6.5%)	90 (6.3%)	46 (6.8%)	
Nutritionist	16 (0.8%)	6 (0.4%)	10 (1.5%)	
Social worker	8 (0.4%)	4 (0.3%)	4 (0.6%)	
Others	14 (0.7%)	14 (1.0%)	0	
Enablers of exercise				0.214
Encouragement from physician	1279 (19.8%)	964 (19.5%)	315 (20.6%)	
Encouragement from nurse	1284 (19.9%)	974 (19.7%)	310 (20.3%)	
Encouragement from family, relatives, or friends	1170 (18.1%)	888 (18.0%)	282 (18.5%)	
Participation to specialized exercise program	974 (15.1%)	765 (15.5%)	209 (13.7%)	
Encouragement from other dialysis patients	912 (14.1%)	682 (13.8%)	230 (15.1%)	
Exercise facility	844 (13.1%)	663 (13.4%)	181 (11.9%)	
Benefits from the exercise				<0.001
Mood	600 (17.3%)	468 (17.3%)	132 (17.2%)	
Strength	595 (17.1%)	460 (17.0%)	135 (17.6%)	
Overall vitality	531 (15.3%)	403 (14.9%)	128 (16.7%)	
Sleeping	459 (13.2%)	345 (12.7%)	114 (14.8%)	
Confidence	397 (11.4%)	312 (11.5%)	85 (11.1%)	
Blood pressure	321 (9.2%)	243 (9.0%)	78 (10.2%)	
Do things what the patient want for yourself	296 (8.5%)	233 (8.6%)	63 (8.2%)	
Muscle cramping	152 (4.4%)	124 (4.6%)	28 (3.6%)	
Intradialytic hypotension	103 (3.0%)	102 (3.8%)	—	
Others	24 (0.7%)	20 (0.7%)	4 (0.5%)	
Barriers to exercise				0.170
Poor motivation	301 (25.0%)	236 (24.4%)	65 (27.2%)	
Fatigue	287 (23.8%)	218 (22.6%)	69 (28.9%)	
Lack of time to exercise	186 (15.4%)	150 (15.5%)	36 (15.1%)	
Pain	183 (15.2%)	151 (15.6%)	32 (13.4%)	
Uncertain on how to exercise	72 (6.0%)	66 (6.8%)	6 (2.5%)	
Depressive mood	62 (5.1%)	50 (5.2%)	12 (5.0%)	
Fear of injury	49 (4.1%)	42 (4.3%)	7 (2.9%)	
Lack of equipment or place to exercise	41 (3.4%)	34 (3.5%)	7 (2.9%)	
Unsure about the importance of exercise	24 (2.0%)	19 (2.0%)	5 (2.1%)	

Data are expressed as numbers (%). P-values were tested using Pearson's χ^2 or Fisher's exact test

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Thailand Top Peritoneal Dialysis Idol 2021

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On 25th December 2021, Joint NST (Nephrology Society of Thailand)-KFT (Kidney Foundation of Thailand)-NNAT (Nephrology Nurses Association of Thailand)-KFAT (Kidney Friends Association of Thailand)-ODGT (Oral Diseases Group of Thailand)-DMS (Department of Medical Services, Ministry of Public Health)-NHSO (National Health Society Organization) held the first season contest, the Thailand Top Peritoneal Dialysis Idol 2021, at the Bangkok Marriott Marquis Queen's Park, BKK Thailand to celebrate 15 years of the Thailand "PD First" Policy. The objectives of the contest were to 1) Promote health literacy to patients with PD and pre-dialysis CKD; 2) Motivate PD patients on self-management of PD; 3) Share experience among patients receiving PD; 4) Sustain "PD First" Policy; and 5) Empower PD nurses and allied health. The concept of the season contest involves discovering clip-VDO recording patients from contestants who have PD self-autonomy, best personality, and having kind-communicate talents. Many PD contestants from all Thailand PD centers applied for a chance to become the first Thailand Top PD Idol; only 13 contestants were selected from medical judges and Thai viewers to join the onsite finale. More than 20,000 views were received within two week-voting windows. Only 5 idols won and inspired the stage.

Tune into the season show of the Idol via <https://www.youtube.com/watch?v=oPiYKqj9wLM>.

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Innovative Practices in PD - Smart Peritoneal Dialysis Center (SPDC)

Professor Xueqing Yu

President of International Society for Peritoneal Dialysis (ISPD)

Background

End-stage kidney disease (ESKD) has become a major global public health issue. According to the data from the Chinese Society of Nephrology, the number of chronic kidney patients reached 133 million in 2017. China boasts a vast area with a large population, among which some people living in the countryside and the rural area have relatively limited access to medical and economic resources. As one of the Renal Replacement Therapy (RRT) and home-based dialysis, Peritoneal dialysis (PD) holds obvious advantages including operation convenience, residual kidney function (RKF) protection, low risk of contagion, and lower therapy cost compared to hemodialysis (HD), bringing a better quality of life. However, The average PD penetration in China is about 15% in 2018 with 99,145 registered PD patients.

Challenge

There are challenges ahead of PD development in China. First, the current management of PD centers in most areas lacks the systemic organization of a dedicated and professional PD team. The number of specialized PD medical staff is inadequate. Renji Hospital, Shanghai Jiao Tong University School of Medicine has reported the PD's RN-to-patient ratio in their center is about 1:125 until 2015. Second, the PD-first policy is just picking up while HD remains a mainstream therapy in primary hospitals. Third, the management of PD centers is unestablished and incomprehensive in terms of the hospital PD procedures standardization, catheter insertion skills training, and the follow-up visit.

New Practice

To overcome PD challenges to benefit more ESKD patients and improve the quality of life (QOL) of PD patients, some Chinese leading PD centers, like the PD center of The First Affiliated Hospital of Sun Yat-sen University, have made great efforts to improve awareness of PD and the underlying technology in primary and remote areas by training programs. Moreover, the "Guangzhou Model" has been proved to be successful by providing standardized training for physicians and nurses in satellite hospitals and county hospitals with the objectives of increasing the use and quality of PD, reducing the incidence of peritonitis, and decreasing the drop-out rate. Now we are piloting an innovative PD model called Smart Peritoneal Dialysis Center (SPDC) in China. SPDC aims to improve the quality and accessibility of PD by building a smart management platform, from hospital to home, covering the whole process of the PD patient journey.

Progress

From 2020 till now, more than 12 SPDC centers have been launched in China under the guidance of the academic committee and Prof. Yu, the president of the International Society for Peritoneal Dialysis (ISPD). China academic committees are established to standardize training for primary hospitals and further academic exchanges with international nephrologists. Take Guangdong Provincial People's Hospital as an example, after establishing SPDC, enrollment of new PD patients and follow-up rate witnessed a big increase. On the flip side, patients' awareness of PD advantages has continuously increased. The one-stop hospital dialysis center includes pretests, dialysis, patient education, rehabilitation, and other standard PD procedures, which improves the working efficiency of faculties as well as the experience of patients' PD journeys. Furthermore, the SPDC software system has successfully assisted nurses doing long-term prognosis management for patients by Artificial Intelligence (AI) and Rehabilitation team online. PD static including dialysate volume and blood pressure can be monitored by home products linked with SPDC software to convenient patients and improve compliance. In 2021, Guangdong Province introduced the novel package payment medical insurance reform policy of PD, covering the diagnosis and long term treatment services such as "family PD caring", facilitating the acknowledgment of the value of clinical medical workers, and providing professional caring for home dialysis patients. In addition, SPDC sticks to the aim of enhancing PD academic exchange and promoting appropriate technology and products to the primary level areas and particularly for people living in rural cities in China, and other low and middle-income countries (LMIC) in order to improve the accessibility of PD, benefiting more ESKD patients. SPDC committee will publish a White paper on the current status of peritoneal dialysis management in China in June 2022.

SPDC Milestone



2020	 2020/7/17 SPDC China Academic Committee established	 2020/Jul SPDC Training guidelines	 2020/9/16 SPDC Cloud system goes online	 2020/9/18 First SPDC established in Guangzhou China National kick-off	 2020/12/12 Hu Nan Provincial SPDC mode established
2021	 2021/1/22 SPDC International Exchange Conference	 2021/3/17 HuBei Provincial mode established	 2021/4/11 Sichuan Provincial mode established	 2021/4/30 White paper kick off meeting	 2021/5/21 SPDC MOU signature among China, Singapore and Chile nephrologist representative
2022	 2022/1/7 High-quality PD Training center established in Guangzhou Bio Island	 2022/6 White paper publish			 2021/8/15 PD New medical insurance payment policy piloted in Guangdong province(7,932RMB /Month)