



ISPD Asian Chapter Newsletter

International Society for Peritoneal Dialysis (ISPD)

www.ISPD.org

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Asian PD Perspective

An Update on PD in the Indian Subcontinent



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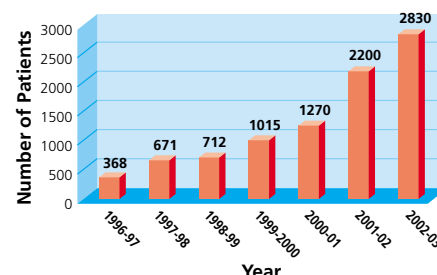
Chronic peritoneal dialysis was introduced to the Indian subcontinent in 1990 for patients with end-stage renal failure. Over the years, both CAPD and APD have emerged as accepted forms of renal replacement therapy in India. As of December 2003, there were 2800 patients on PD, 72 of whom were on APD. The growth rate was 28% and 32% in 2002 and 2003, respectively (Figure). Currently there are 250 PD centers with 82 clinical co-ordinators.

At its inception, 78% of PD patients in India were diabetics who had multiple comorbid illnesses. They were mostly dropouts from the hemodialysis program and were deemed unfit for transplantation. The unpopularity of PD could largely be attributed to the government's restriction on the import of dialysis fluid. Upon repeated appeals from patients and the nephrology community, the restriction was eventually lifted in 1993. The advent of locally manufactured fluid in collapsible bags in 1996 further facilitated the expansion of the program, including to the far corners of India and its neighboring countries.

In Bangladesh and Nepal, there are 25 PD patients each. In Lahore, Pakistan, 30 patients have been commenced on CAPD, including both adults and children.

In India, the majority of patients are using 2Lx3 exchanges, with <10% of patients on four exchanges daily. Overall for India, the dropout rate in the first year has dropped to 30%. The peritonitis rate in the major centers is one episode in 22-26 patient-months. The federal government and quasi-governmental organizations completely reimburse PD treatment including APD. The current challenges facing PD in India are adequacy, malnutrition, cardiovascular deaths, peritonitis and transport status.

CAPD Growth in India



International Symposium of Clinical Care and Nursing in PD held in Guangzhou, China, 17-19 December 2003



Professor XQ Yu, Chairman of the Organizing Committee, speaking at the Symposium.

Renal nurses play an important role in the daily practice of PD training and patient care. To enhance the understanding of patient care in PD, the Department of Nephrology of the First Affiliated Hospital of the Medical College of Sun Yat-Sen University in Guangzhou organized the International Symposium of Clinical Care and Nursing in PD on 17-19 December 2003 in Guangzhou, China. There were more than 300 nurses and some doctors from various parts of China attending.

The symposium focused on major topics in PD, ranging from basic theory to clinical practice, with emphasis from a nursing perspective. Nurse specialists and experts from Guangzhou, Beijing, Shanghai, Hong Kong and Singapore shared their experiences in different areas of PD, including PD center administration, training of PD nurses, follow-up of PD patients, health education, care of peritonitis and exit site, detection of PD complications and the proper practice of PD procedures.

As PD is still developing slowly in China, the meeting could play an important role in promoting PD and expanding the exchange of knowledge between the Chinese and international community.

To our industry partners:

The editorial office welcomes your assistance in distributing this newsletter in electronic or printed form to the dialysis community. If you are interested in sending scientific messages through the newsletter, please contact the editor at: fkli@hku.hk

News from ISPD

ISPD North American Chapter Launched

Following the success of the ISPD Asian Chapter, a North American Chapter was established in 2003. It is the second regional chapter of the ISPD and, hopefully, more regional chapters will be formed within ISPD to address PD issues that are of special interest or concern to specific regions. The first North American Chapter Meeting will be held in Chicago on April 29 – May 1 2005.

Nomination for Officers and Council is now Open

The ISPD nomination committee has nominated a new President (R Krediet), President-Elect (WK Lo) and council members (Asia: G Abraham; America: J Bargman, R Pecoits-Filho; Europe: N Topley) for election at the upcoming ISPD Congress in Amsterdam, August 2004. If you would like to suggest other nominations, please contact Professor Ram Gokal at: ram.gokal@cmmc.nhs.uk.

Institutional Membership

Specially designed for **developing countries**, "Institutional Membership" allows 10 members from the same institute to join at the cost of a single member, and all can enjoy ISPD member's benefits including cheaper ISPD meeting registration rates. **Join now!**

By-laws Amendment

An amendment of the ISPD by-laws to accommodate the institutional membership into the by-laws will be proposed at the Business Meeting during the upcoming ISPD Congress. Do come to the Business Meeting to support the amendment.

Guidelines

ISPD has set up two working groups to update guidelines on 'Adequacy of Peritoneal Dialysis' and 'Peritonitis Treatment'. These guidelines will be released in the upcoming ISPD Congress.

Asian Chapter Scholarship

A scholarship is now available to provide financial support for training in a PD center of excellence within Asia or Australia. Deadline for application: 30 June 2004. **Don't miss the chance!**

ISPD-Second Asian Chapter Meeting

The ISPD-Second Asian Chapter Meeting will be held in Hyderabad, India, on 21-23 January 2005. Founded in 1591 AD, Hyderabad is India's fourth largest city with a population of 7 million. Located almost at the geographic center of India, with excellent restaurants and hotels and easy national and international access, Hyderabad is the ideal tourist hub to explore India. Weather during that period is a pleasant 16°-28°C. The meeting venue is the state-of-the-art Hitex center.

The theme of the meeting, **'Redefining and Expanding PD horizons in Asia'**, will, hopefully, help to attract participation from countries within and outside of Asia, such as countries in western Asia, the Middle East, and North and East Africa, which are facing similar issues in PD. We also expect all our Chinese, Southeast Asian and Far Eastern colleagues and friends, as well as delegates from Australia and New Zealand to attend in large numbers. For further details, please visit the meeting Web site www.2ndacm.ispd.org



Upcoming Meetings

International Society of Nephrology-2004 Conference on Prevention of Progression of Renal Disease

29 June – 1 July 2004, Hong Kong, China
Web site: www.isn2004hkconference.org

ISPD-EuroPD 2004

28-31 August 2004, Amsterdam, The Netherlands
President: Professor Raymond T Krediet
Web site: www.ispd-europd2004.org

ISPD-Second Asian Chapter Meeting

ISPD-Second Asian Chapter Meeting
21-23 January 2005, Hyderabad, India
Web site: www.2ndacm.ispd.org
Abstract Submission Deadline: 31 August 2004

Third World Congress of Nephrology

26-30 June 2005, Singapore
Web site: www.WCN2005.org

From the Editorial Office

If you want to communicate PD news or PD data through the newsletter to other Asian colleagues, or have comments or suggestions regarding the newsletter, please send your message to the Newsletter Editor.

You are most welcome to distribute this newsletter electronically or in printed form to your colleagues or other people interested. If you or your colleagues want to receive this newsletter directly from our editorial office, please send your e-mail address to: meeting@medimedia.com.hk

To our industry partners:

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Dr. Fu-Keung Li

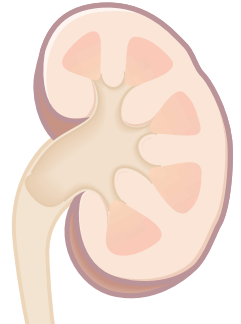
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Research Update in PD



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A randomized controlled study: the minimal Kt/Vurea for CAPD patients might be 1.7

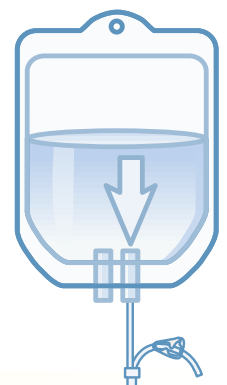
The K/DOQI guideline recommended that for CAPD patients, the weekly Kt/Vurea should be higher than 2.0. However, the ADEMEX study revealed that CAPD patients who meet the K/DOQI guideline may not necessarily have a better clinical outcome. A recent study by Lo et al from Hong Kong provided further information on the adequacy of peritoneal dialysis treatment. In this randomized, prospective study, a total of 320 new CAPD patients with baseline renal Kt/V <1.0 were randomized into three Kt/V targets: 1.5 to 1.7; 1.7 to 2.0; and >2.0. The results showed that total Kt/V did not have significant impact on patient survival. However, patients with total Kt/V of 1.5 to 1.7 seemed to have more clinical problems. A minimal target of total Kt/V 1.7 is therefore recommended.

Comments: Similar to the ADEMEX study, this study from Hong Kong indicated that increasing Kt/V up to a certain level may not necessarily be beneficial to patients' clinical outcomes and suggested that volume control may be as important or even more important than Kt/V. On the other hand, the proposed minimal Kt/V target of 1.7 warrants further confirmation. It is known that the concept of CAPD is based on nitrogen balance and the dialysate drainage volume should be determined to a large extent by dietary protein intake that varies between different patients. It follows that the adequate Kt/V value depends on patient's protein intake. Evaluating patients' diets may thus be very important and mandatory in assessing dialysis adequacy.

- Lo WK, et al. Effect of Kt/V on survival and clinical outcome in CAPD patients in a randomized prospective study. *Kidney Int* 2003;64:649-656.

Icodextrin facilitates volume control in peritoneal dialysis patients

Icodextrin-based dialysis fluid is known to enhance ultrafiltration in high transporters and in long dwell. In a multicenter, randomized, double-blind, controlled trial, fluid status was compared in patients using icodextrin solution with those on 2.27% glucose solution. Fifty patients were randomized to either icodextrin or to continue with dextrose solution. The results showed that, compared with the glucose-based solution, patients using icodextrin had improved fluid status. The better control of volume status in the icodextrin group was not associated with faster loss of residual renal function.



Comments: This study generates several interesting findings that need to be further studied. 1. Better volume control in the icodextrin group was not associated with better blood pressure control. The authors suggested this might be due to the lack of difference in sodium removal between the two groups. How does icodextrin solution affect sodium balance? Was there any difference in dietary sodium and fluid intake between the two groups? 2. Better volume control was not associated with faster decline in residual renal function. 3. The study indicated that the change in patients' extracellular fluid volume measured by bioimpedance assessment may be quite sensitive for monitoring their volume status.

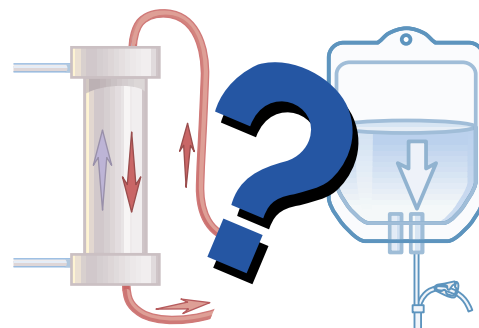
- Davies SJ, et al. Icodextrin improves the fluid status of peritoneal dialysis patients: results of a double-blind randomized controlled trial. *J Am Soc Nephrol* 2003;14:2338-2344.

Research Update in PD



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Hemodialysis versus peritoneal dialysis – more evidence, more controversies

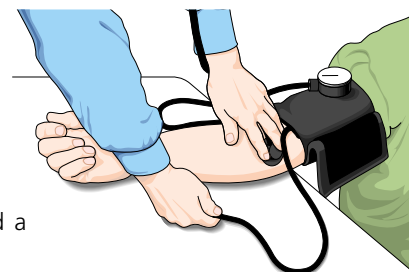
Is hemodialysis (HD) or peritoneal dialysis (PD) better? Three recent papers give us further insight. Termorshuizen et al report a multi-center, observational study in over 1200 new dialysis patients. There was no significant difference in adjusted mortality rates between HD and PD patients during the first 2 years of dialysis, but an increase in mortality rates for PD patients in the subsequent years. Similarly, Stack et al analyzed over 100,000 new dialysis patients from an American database. They found that the mortality risk was similar between HD and PD patients without diabetes and heart failure. However, the mortality risk was 30% higher for patients with heart failure and 11% higher for patients with diabetes treated with PD than HD. Korevaar et al performed a small randomized, controlled trial of 38 patients comparing HD and PD in new dialysis patients. Contrary to the previous two papers, HD patients had a higher mortality risk after 5 years (hazard ratio 3.6, after adjustment for age and comorbidity).

Comments: Once again the results of large cohort studies are different from those of randomized, controlled trials. At this moment, both modalities should be considered equivalent. From the two cohort studies, the suboptimal outcomes of PD patients with diabetes, heart failure, or 2 years after dialysis remind us to pay particular attention to their fluid status and residual renal function.

- Termorshuizen F, et al. Hemodialysis and peritoneal dialysis: comparison of adjusted mortality rates according to the duration of dialysis: analysis of The Netherlands Cooperative Study on the Adequacy of Dialysis 2. *J Am Soc Nephrol* 2003;14:2851-2860.
- Stack AG, et al. Impact of dialysis modality on survival of new ESRD patients with congestive heart failure in the United States. *Kidney Int* 2003;64:1071-1079.
- Korevaar JC, et al. Effect of starting with hemodialysis compared with peritoneal dialysis in patients new on dialysis treatment: a randomized controlled trial. *Kidney Int* 2003;64:2222-2228.

Therapy for the preservation of residual renal function

Residual renal function is an important determinant of mortality and morbidity in PD patients. However, there is no proven therapy for preserving residual renal function. A group from Hong Kong performed a randomized, controlled trial on the effect of angiotensin-converting enzyme (ACE) inhibitor in 60 PD patients. Over 12 months, patients receiving ramipril 5 mg daily had a slower decline in residual renal function than the group with no treatment (2.07 versus 3.00 mL/min per 1.73 m²). The treatment group also had a statistically significant 40% reduction in the risk of developing anuria after 12 months.



Comments: The result of this small study can be considered as a logical extrapolation of other studies in pre-dialysis chronic kidney diseases. One should, however, be cautious because the residual renal function declined rapidly in a small proportion of treated patients in this study, possibly reflecting unsuspected renal vascular disease. The effect on cardiovascular disease has also not been tested.

- Li PK, et al. Effects of an angiotensin-converting enzyme inhibitor on residual renal function in patients receiving peritoneal dialysis – a randomized, controlled study. *Ann Intern Med* 2003;139:105-112.

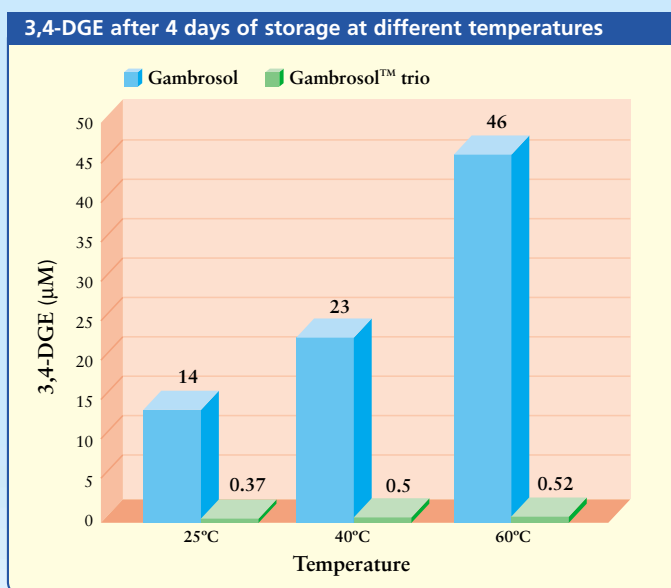
From the PD Industry

Storage above room temperature causes increase of Glucose Degradation Products (GDPs) in Conventional PD fluid but not in Gambrosol™ trio

Glucose is still the most widely used osmotic agent in PD fluid simply because it is cheap and non-toxic. However, during heat sterilization, glucose degrades into other and more toxic substances, generally referred to as glucose degradation products (GDP). GDPs have been reported to be cytotoxic in a great variety of in vitro and in vivo models [1,2]. GDPs have also been associated with chemical peritonitis in PD patients [3]. The recently identified

3,4-DGE in the PD fluid, whereas storage at lower temperatures will reduce the amount of 3,4-DGE to the initial concentration. The time to establish equilibrium is, however, much longer at lower temperatures than at higher temperatures.

PD patients should, therefore, be careful not to store their conventional PD fluids at temperatures higher than room temperature, i.e. around 20°C – 25°C. Studies have shown that an increase in temperature from room temperature to 40°C almost doubles the concentration of 3,4-DGE in conventional PD fluids within a couple of days [5]. In order to reduce the 3,4-DGE to original values, the PD fluid would have to be stored at room temperature for several weeks. The figure shows the amount of 3,4-DGE in a conventional PD bag (Gambrosol) and in a 3-compartment bag (Gambrosol™ trio) stored at 40°C for a period of 4 days. The difference in concentration between the two PD bags is striking. Independent of which storage temperature is used, the concentration of 3,4-DGE in Gambrosol™ trio is almost non-existent.



substance 3,4-dideoxyglucosone-3-ene (3,4-DGE) has been shown to be the most biologically reactive GDP in PD fluids [4]. 3,4-DGE is in a temperature-dependent equilibrium with another, but so far unidentified, substance [5]. Storage of conventional PD fluid at higher temperatures causes an increase in the amount of toxic

1. L.W. Morgan, A. Wieslander, M. Davies, T. Horiuchi, Y. Ohta, M. Janine et al., Glucose degradation products (GDP) retard remesothelialization independently of D-glucose concentration. *Kidney Int.* 2003; 64:1854-1866.
2. Mortier, S., A.S. De Vriese, J. Van de Voorde, T.P. Schaub, J. Passlick-Deetjen, and N.H. Lamiere, Hemodynamic effects of peritoneal dialysis solutions on the rat peritoneal membrane: role of acidity, buffer choice, glucose concentration, and glucose degradation products. *J Am Soc Nephrol.* 2001; 13:480-489.
3. Tuncer, M., M. Sarikaya, T. Sezer, S. Özcan, G. Süleymanlar, G. Yakupoglu, et al., Chemical peritonitis associated with high dialysate acetaldehyde concentrations. *Nephrol Dial Transplant.* 2000; 15:2037-2040.
4. Linden, T., A. Cohen, R. Deppisch, P. Kjellstrand, and A. Wieslander, 3,4-dideoxyglucosone-3-ene (3,4-DGE), a cytotoxic glucose degradation product in fluids for peritoneal dialysis. *Kidney Int.* 2002; 62:697-703.
5. Erixon, M., Lindén, T., Kjellstrand, P., Carlsson, O., Ernebrant, M., Forsbäck, G., et al., PD fluids contain high concentrations of cytotoxic GDPs directly after sterilization. *Perit Dial Int.* 2004 [In press].



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