Community-Based Peritoneal Dialysis Support to Sustain Home Therapy and Reduce Hospital and Haemodialysis Burden

Chan H.S.
Ward A52
Khoo Teck Puat Hospital

Aim / Objectives

This poster proposes a feasible, community-based PD support model within the KTPH@Home framework with the following objectives:

1. To enhance patient and caregiver competency in home dialysis self-management (Chan et al., 2019)
2. To enable early identification and timely intervention for PD-related complications
3. To reduce preventable hospitalisations and emergency department attendances (Mehrotra et al., 2011)
4. To prolong PD technique survival and delay conversion to haemodialysis (Htay et al., 2020)

Background

Approximately six new patients are diagnosed with kidney failure daily in Singapore, contributing to increasing demand for dialysis services (National Kidney Foundation Singapore, 2025). Singapore continues to experience a growing burden of kidney failure requiring dialysis support, highlighting the need for sustainable home-based dialysis models (National Registry of Diseases Office, 2026).

Hong Kong's "PD First" policy demonstrates that structured community support can achieve over 80% PD uptake with superior outcomes (Li et al., 2017), offering a proven framework for local adaptation.

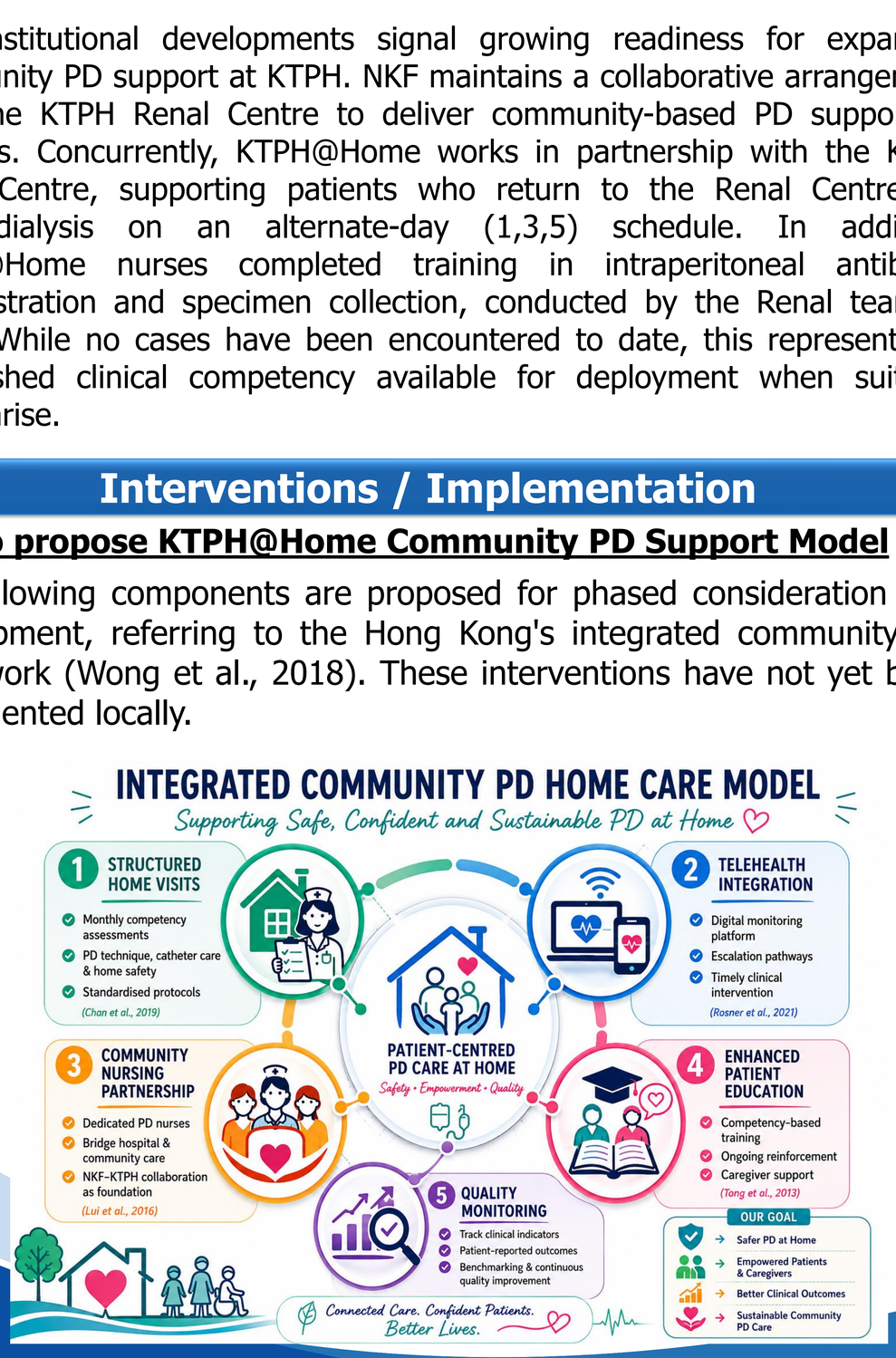
Current Landscape at KTPH: PD patients and their caregivers are expected to perform daily dialysis independently at home. Where self-management is not feasible, patients attend the PD centre on a Same Day Admission (SDA) or outpatient basis. Existing community support provided by the National Kidney Foundation (NKF) and PD vendors encompasses structured home visits, home-based clinical procedures and 24-hour on-call services. PD training is predominantly delivered via the SDA modality to facilitate CPF claim eligibility, though inpatient and outpatient training pathways remain available. Full home-based PD training is not currently operationally sustainable given existing manpower constraints.

Two institutional developments signal growing readiness for expanded community PD support at KTPH. NKF maintains a collaborative arrangement with the KTPH Renal Centre to deliver community-based PD support to patients. Concurrently, KTPH@Home works in partnership with the KTPH Renal Centre, supporting patients who return to the Renal Centre for haemodialysis on an alternate-day (1,3,5) schedule. In addition, KTPH@Home nurses completed training in intraperitoneal antibiotic administration and specimen collection, conducted by the Renal team in 2025. While no cases have been encountered to date, this represents an established clinical competency available for deployment when suitable cases arise.

Interventions / Implementation

To propose KTPH@Home Community PD Support Model

The following components are proposed for phased consideration and development, referring to the Hong Kong's integrated community PD framework (Wong et al., 2018). These interventions have not yet been implemented locally.



Results & Outcomes/ Discussion

Anticipated Outcomes

- Earlier identification of PD complications
- Improved patient and caregiver confidence
- Reduced avoidable hospital utilisation
- Improved PD technique sustainability
- Reduced haemodialysis burden
- Enhanced patient-centred home dialysis care

Note: Outcomes are projected based on international literature and comparable community-supported PD programmes. Local outcomes will require evaluation following implementation.

Conclusion

This poster proposes a community-based peritoneal dialysis support model within the KTPH@Home framework to strengthen home dialysis sustainability and optimise patient-centred renal care. Existing collaborations between KTPH Renal Centre, National Kidney Foundation Singapore and KTPH@Home provide a strong foundation for future development of this service model. The established competency of KTPH@Home nurses in intraperitoneal specimen collection and antibiotic administration further supports operational readiness.

International experience suggests that structured community support may improve patient self-management, facilitate earlier recognition of complications, enhance patient experience and support long-term maintenance of home dialysis therapies. If successfully implemented and evaluated locally, the proposed model has the potential to reduce avoidable healthcare utilisation, improve continuity of care and serve as a scalable framework for community-based chronic disease management aligned with Singapore's Healthier SG and care-beyond-hospital strategies.

References

Chan, C. T., Blankestijn, P. J., Dember, L. M., Gallieni, M., Harris, D. C., Lok, C. E., Mehta, R. L., Stevens, P. E., Wang, A. Y., Cheung, M., Wheeler, D. C., Winkelmayer, W. C., & Pollock, C. A. (2019). Dialysis initiation, modality choice, access, and prescription: Conclusions from a KDIGO Controversies Conference. Kidney International, 96(1), 37–47. https://doi.org/10.1016/j.kint.2019.01.017

Htay, H., Cho, Y., Pascoe, E. M., Darssan, D., Nadeau-Fredette, A. C., Hawley, C., Clayton, P. A., Borlace, M., Badve, S. V., Sud, K., Boudville, N., McDonald, S. P., & Johnson, D. W. (2020). Multicenter registry analysis of center characteristics associated with technique failure in patients on incident peritoneal dialysis. Clinical Journal of the American Society of Nephrology, 15(8), 1195–1204. https://doi.org/10.2215/CJN.01340220

Li, P. K., Chow, K. M., Van de Luijtgaarden, M. W., Johnson, D. W., Jager, K. J., Mehrotra, R., Naicker, S., Pecoits-Filho, R., Yu, X. Q., & Lameire, N. (2017). Changes in the worldwide epidemiology of peritoneal dialysis. Nature Reviews Nephrology, 13(2), 90–103. https://doi.org/10.1038/nrneph.2016.181

Lui, S. L., Chow, K. M., Lok, C. E., Cheng, S. W., Kwong, V. W., Li, P. K., & Szeto, C. C. (2016). Peritoneal dialysis for patients with end-stage renal disease. Kidney International, 90(5), 1048–1056. https://doi.org/10.1016/j.kint.2016.07.019

Mehrotra, R., Chiu, Y. W., Kalantar-Zadeh, K., Bargman, J., & Vonesh, E. (2011). Similar outcomes with hemodialysis and peritoneal dialysis in patients with end-stage renal disease. Archives of Internal Medicine, 171(2), 110–118. https://doi.org/10.1001/archinternmed.2010.352

National Kidney Foundation Singapore. (2025). NKF Annual Report 2025. Singapore: National Kidney Foundation Singapore

National Registry of Diseases Office. (2026). Singapore Renal Registry Annual Report 2024. Ministry of Health, Singapore

Rosner, M. H., Ronco, C., & Okusa, M. D. (2021). The role of artificial intelligence and machine learning in intensive care unit patient management. Kidney International, 100(6), 1160–1166. https://doi.org/10.1016/j.kint.2021.09.017

Tong, A., Lesmana, B., Johnson, D. W., Wong, G., Campbell, D., & Craig, J. C. (2013). The perspectives of adults living with peritoneal dialysis: Thematic synthesis of qualitative studies. American Journal of Kidney Diseases, 61(6), 873–888. https://doi.org/10.1053/j.ajkd.2012.08.045

Wong, B., Ravani, P., Oliver, M. J., Holroyd-Leduc, J. M., Venturato, L., Garg, A. X., & Quinn, R. R. (2018). Comparison of patient survival between hemodialysis and peritoneal dialysis among patients eligible for both modalities. American Journal of Kidney Diseases, 71(3), 344–351. https://doi.org/10.1053/j.ajkd.2017.08.028