

ISN-GKHA: Structures, organization and services for the management of kidney failure in North and East Asia

Supplementary Tables, Figures, and Appendix

Table S1: Burden and risk factors of chronic kidney disease in North and East Asia.

Figure S1: Shortage of kidney failure care providers.

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Appendix: Reference list for annual cost of kidney replacement therapy (for Table 3).

Table S1: Burden and risk factors of chronic kidney disease in North and East Asia*^{S1 - S5}

Country	CKD prevalence % (95% CI)	Death attributed to CKD % (95% CI)	DALYs attributed to CKD % (95% CI)	Obesity % (95% CI)	High BP % (95% CI)	Smoking % (95% CI)
China	9.76 (8.98 - 10.60)	1.68 (1.54 - 1.72)	1.32 (1.21 - 1.41)	6.6 (5.1 - 8.4) 29.9	19.2 (14.9 - 24.0) 15.9	22.0 (21.6 - 22.4) 14.8
Hong Kong (China)	-	-	-	-	-	-
Japan	17.62 (16.43 - 19.08)	2.60 (2.48 - 2.79)	1.92 (1.74 - 2.08)	4.4 (3.3 - 5.7)	17.6 (14.1 - 21.5)	17.2 (16.8 - 17.6)
South Korea	10.85 (10.01 - 11.71)	2.03 (1.91 - 2.16)	1.40 (1.26 - 1.53)	7.1 (4.2 - 10.6)	18.2 (12.7 - 24.9)	22.1 (20.5 - 23.7)
Macao (China)	-	-	-	-	-	-
Mongolia	8.68 (8.00 - 9.39)	1.55 (1.43 - 1.84)	1.25 (1.14 - 1.50)	19.6 (15.6 - 23.9)	29.0 (22.5 - 35.9)	21.7 (19.1 - 24.5)
Taiwan (China)	12.20 (11.32 - 13.12)	3.75 (3.57 - 3.93)	2.53 (2.30 - 2.72)	-	-	11.5 (9.8 - 13.4)

Abbreviations: CKD: chronic kidney disease; DALYs: disability-adjusted life years; BP: blood pressure; CI: confidence interval

“-“ Data not reported/unavailable

* Results are expressed as percentage (%) of the population

Figure S1: Shortage of kidney failure care providers.

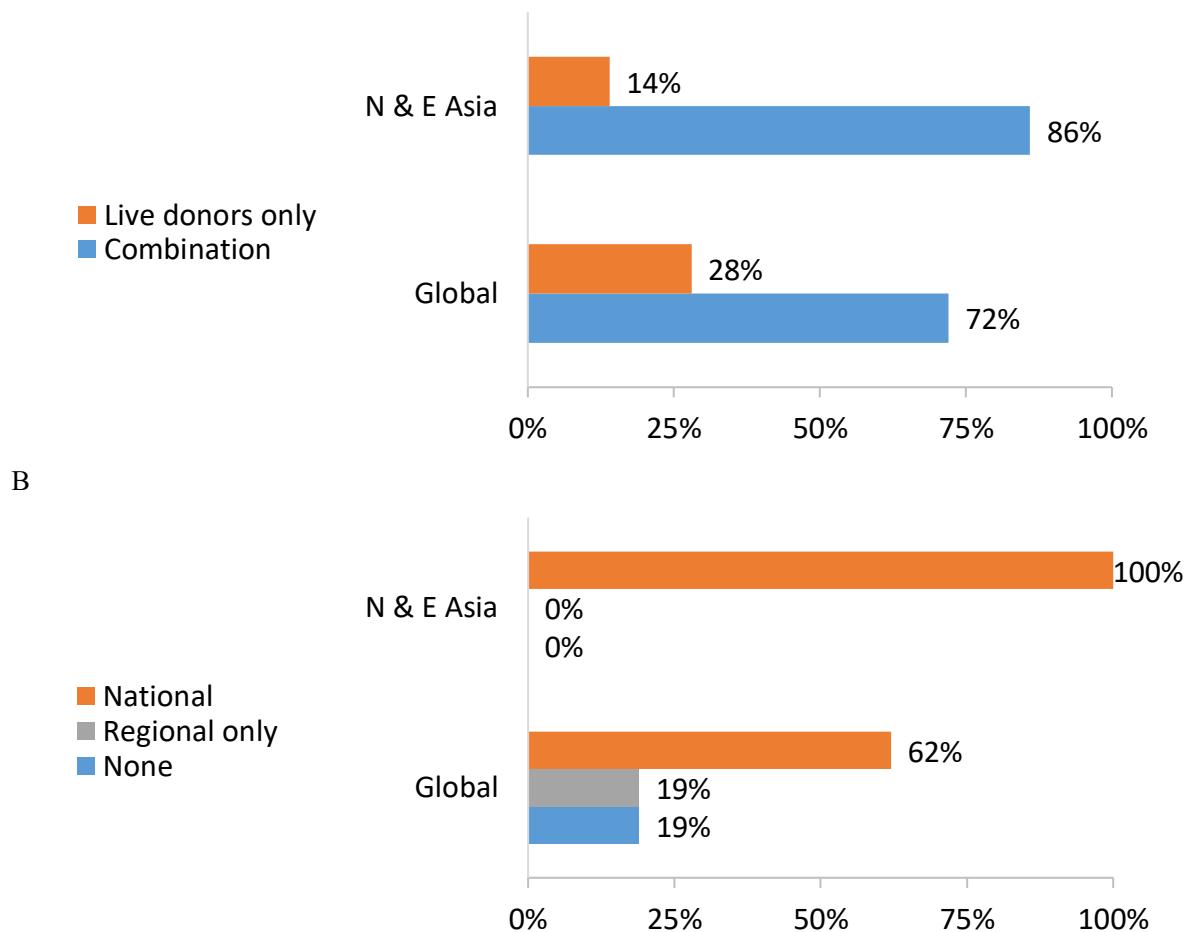
	Nephrologists	Transplant surgeons	Surgeons (HD access)	Surgeons (PD access)	Interventional radiologists (HD access)	Interventional radiologists (PD access)	Laboratory technicians	Dietitians	Radiologists (ultrasound)	Vascular access coordinators	Counsellors/psychologists	Transplant coordinators	Dialysis nurses	Dialysis technicians	TOTAL SHORTAGE
Total shortage →	4	2	3	4	2	5	3	5	4	4	4	4	4	5	0
China															0
Hong Kong (China)															6
Japan															12
South Korea															11
Macao (China)															7
Mongolia															10
Taiwan (China)															13

Abbreviations: HD: hemodialysis; PD: peritoneal dialysis

Green cells indicate no shortage. Red cells indicate shortage.



Figure S2: Capacity for kidney transplantation based on transplant donor type (A) and the existence of transplant waitlists (B).



Abbreviations: N & E: North and East

Figure S3: Barriers to optimal kidney failure care in the North and East Asia region.

Country	Geography	Physician	Patient	Nephrologists	Healthcare system	Lack of political will	Economic factors	Other	None
China									
Hong Kong (China)									
Japan									
South Korea									
Macao (China)									
Mongolia									
Taiwan (China)									

Dark gray indicates yes/present. Light gray indicates no/absent. No shading indicates unknown

Supplementary References:

- S1. Institute for Health Metrics and Evaluation. Global Burden of Disease Study 2017 (GBD 2017) Data Resources. Available at: <http://ghdx.healthdata.org/gbd-2017>. Accessed August 6, 2020
- S2. World Health Organization. The Global Health Observatory. Available at: <https://www.who.int/gho/en/>. Published 2019. Accessed: August 6, 2020.
- S3. Centre for Health Protection (CHP). Obesity. Available at: https://www.chp.gov.hk/files/pdf/chapter_9_eng.pdf. Accessed: 15th August 2020.
- S4. Centre for Health Protection (CHP). High Blood Pressure. Available at: https://www.chp.gov.hk/files/pdf/chapter_9_eng.pdf. Accessed: 15th August 2020.
- S5. Centre for Health Protection (CHP). Smoking. Available at: https://www.chp.gov.hk/files/pdf/output_pamphlet_eng_4.pdf. Accessed: 15th August 2020.

Appendix: Reference list for annual cost of kidney replacement therapy (for Table 3) (APA format).

Fukuhara, S., Yamazaki, C., Hayashino, Y., Higashi, T., Eichleay, M. A., Akiba, T., ... & Kurokawa, K. (2007). The organization and financing of end-stage renal disease treatment in Japan. International journal of health care finance and economics, 7(2-3), 217-231.

Hu, R. H., Lee, P. H., Tsai, M. K., & Lee, C. Y. (1998). Medical cost difference between renal transplantation and hemodialysis. In Transplantation proceedings (Vol. 30, No. 7, pp. 3617-3620).

Kwon, C. H. D., Lee, S. K., & Ha, J. (2011). Trend and outcome of Korean patients receiving overseas solid organ transplantation between 1999 and 2005. Journal of Korean medical science, 26(1), 17-21.

- Lee, J., Lee, J. P., Park, J. I., Hwang, J. H., Jang, H. M., Choi, J. Y., ... & Kim, Y. S. (2014). Early nephrology referral reduces the economic costs among patients who start renal replacement therapy: a prospective cohort study in Korea. *PLoS One*, 9(6), e99460.
- Li, P. K., & Chow, K. M. (2001). The cost barrier to peritoneal dialysis in the developing world—an Asian perspective. *Peritoneal Dialysis International*, 21(3_suppl), 307-313.
- Neil, N., Walker, D. R., Sesso, R., Blackburn, J. C., Tschosik, E. A., Sciaraffia, V., ... & Bhattacharyya, S. K. (2009). Gaining efficiencies: resources and demand for dialysis around the globe. *Value in Health*, 12(1), 73-79.
- Shimizu, U., Saito, S., Lings, Y., Iino, N., James Kazama, J., & Akazawa, K. (2012). Cost-effectiveness achieved through changing the composition of renal replacement therapy in Japan. *Journal of medical economics*, 15(3), 444-453.
- Tumurbaatar, B., Nyamsuren, D., Byambadorj, B., Bayan-Undur, D., Jambaljav, L., Byambadash, B., ... & Ganbold, L. (2012). Kidney transplantation in Mongolia using effective and economical immunosuppression-a three-year experience. *Annals of transplantation*, 17(1), 132-139.
- van der Tol, A., Lameire, N., Morton, R. L., Van Biesen, W., & Vanholder, R. (2019). An international analysis of dialysis services reimbursement. *Clinical Journal of the American Society of Nephrology*, 14(1), 84-93.
- Yu, A. W. Y., Chau, K. F., Ho, Y. W., & Li, P. K. T. (2007). Development of the “peritoneal dialysis first” model in Hong Kong. *Peritoneal dialysis international*, 27(Supplement 2), S53-S55.