



2023 ISN-GKHA (GLOBAL KIDNEY HEALTH ATLAS) REGIONAL SLIDES PRESENTATIONS

NORTH AND EAST ASIA

SLIDE 1-2:

<Opening slides>

SLIDE 3:

Overview of presentation

- Aim
- Methods
- Key results

SLIDE 4:

Aim of the ISN-GKHA:

- The incentive for the ISN-GKHA initiative arose from unavailability of consolidated reliable data on the status of kidney care either globally or major world regions, especially in low-resource countries that have a higher burden of kidney disease. Previous iterations of the ISN-GKHA have identified gaps in availability and access to care. Hence, in order to improve kidney care worldwide, there is need to document and update the status of kidney care globally to allow monitoring and implementation of necessary change.
- The vision of the ISN-GKHA is to achieve optimal and equitable kidney care worldwide by identifying gaps and processes to close gaps related to the capacity or equity of kidney care. Hence, the ISN-GKHA serves to collect data using standardized indicators that measure kidney care delivery to provide evidence-based recommendations to relevant stakeholders.
- Overall, the goal of the ISN-GKHA is to improve the understanding of inter- and intranational variability across the globe with respect to capacity for kidney care delivery. Through assessing and documenting capacity for kidney care across all world regions, we can work toward improving the quality and equity of kidney care worldwide.



- Key focus on availability, accessibility, affordability, and quality of kidney failure care.
- To achieve this mission, the strategy of the ISN-GKHA is to collect data using standardized indicators that measure kidney care delivery to provide evidence-based recommendations to relevant stakeholders.
- Previous iterations (2017 and 2019) documented capacity of kidney care and identified major gaps across countries. Both iterations allowed for the establishment of overall benchmarks, within ISN regions, and across World Bank income groups.
- The current iteration was conducted in 2022 and published in 2023 and will be repeated every 4 years to monitor progress and optimally measure and address new gaps.
- Today's discussion will focus on the 2022 results, which were published in the 2023 Atlas.

SLIDE 5:

Timelines of the ISN-GKHA

SLIDE 6:

Design and scope:

- **Desk research (across countries and regions)**
 - Published and grey literature review
 - Systematic review of kidney failure burden and outcomes
 - Data extraction from major kidney registries (USRDS, ERA-EDTA) and relevant national registries where available
 - Scoping review of KRT cost estimates
- **Online questionnaire-based survey July – September 2022**
 - 3 languages (English, French, Spanish)
 - 191 countries were contacted.
 - ≥3 stakeholders per country
 - ✓ National nephrology society leadership
 - ✓ Healthcare policymakers
 - ✓ Patients / patient advocacy groups
 - Discrepancies were resolved by follow-up conferences with regional board chairs and country nephrology leaders.



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- The survey followed a framework developed by the World Health Organization (WHO) on health systems evaluation.
- This framework was released in 2010, which was a handbook of indicators and measurement strategies to monitor the building blocks of a health system. The WHO recognized that information is needed to track how health systems respond to increased inputs and improved processes, and the impact they have on improved health indicators. Therefore, a set of core indicators of health system performance was established, along with sustainable measurement strategies, to generate the required data.
- The framework considers health systems in terms of six core components or “building blocks”:
 - Service delivery.
 - Health workforce.
 - Health information systems.
 - Access to essential medicines.
 - Financing; and
 - Leadership/governance
- Through addressing each of these domains, the overall goals of the WHO strategy are to improve health (level and equity), health system responsiveness, protect social and financial risk, and improve efficiency.
- The ISN-GKHA models this framework to similarly aim to achieve these objectives, specific to kidney care.

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- Of the 191 countries we invited, 167 (92%) countries participated in the 2022 survey representing 97% of the world’s population.
- Individual response was obtained from 329 individuals representing a 63% response rate.
- There was a median response of 2 respondents/country (IQR 2-3).
- 108 countries participated in the 2017, 2019, and 2023 GKHA surveys.

SLIDE 9:

- The ISN-GKHA reports overall global results for each indicator and separates the data by ISN region and income group.



- The ISN-GKHA is therefore able to examine the level of variability across income levels and geographical regions.
- Knowing if there is variation between countries, either within a common ISN region or income group, is helpful when trying to promote equity of care.

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- This talk focuses on the ISN North and East Asia region.

SLIDE 11 – 12:

- Responses were received from 6 of the 8 countries (75%) representing 98% of the region's population.
- One country (Mongolia) is LMIC, one (China) is UMIC, and others are HICs (Hong Kong SAR [China] {Hong Kong}, Japan, Korea Republic, Macao SAR [China] {Macao}, and Taiwan [China] {Taiwan}).
- At the time of the survey, there were 1,618,091,951 people living in all the countries in the region. China had the highest population (1.41 billion) while Macao had the lowest population (635,293).
- GDP (PPP) in the region ranges from US\$ 42.9 billion (Mongolia) to US\$ 27.3 trillion (China).
- Total health spending as a percentage of GDP ranged from 3.8% in Mongolia to 10.7% in Japan.
- Total health spending per capita ranged from US\$ 223 (Mongolia) to US\$ 5,105 (Japan). However, government health spending per capita ranged from US\$ 111 (Mongolia) to US\$ 4,449 (Japan).

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- The median CKD prevalence in the North and East Asia region was 11.0% (global median was 9.5%) and ranged from 8.8% in Mongolia to 20.2% in Japan.
- Median disability adjusted life years (DALYs) attributed to CKD was 1.5%; lowest in Korea Republic (1.4%) and highest in Taiwan (3.5%).
- Median deaths attributable to CKD was 2.5%; lowest in Mongolia (1.6%) and highest in Taiwan (4.5%).
- The prevalence of other risk factors (hypertension, obesity, and smoking) varied across countries in the North East Asia region.



SLIDE 14 – 15:

- Incidence data on treated kidney failure (dialysis and kidney transplantation) was available for five countries (China, Hong Kong, Japan, Korea Republic, and Taiwan).
- Overall, the median incidence and prevalence of treated kidney failure were 306 per million population (pmp) and 2,100 pmp, respectively. The North and East Asia region had the highest prevalence of treated kidney failure across all regions.
- Incidence of treated kidney failure ranged from 109 pmp in China to 529 pmp in Taiwan. Prevalence of treated kidney failure ranged from 526 pmp in China to 3,679 pmp in Taiwan.
- Data on the incidence of chronic dialysis (HD + PD) was only available for Hong Kong and Korea Republic with a regional median of 202.3 pmp while median prevalence of chronic dialysis was 1,692 pmp and was highest in Taiwan (3,510 pmp) and lowest in China (526 pmp).
- The overall median incidence and prevalence of HD in the region was 58.3 pmp and 1,575 pmp, respectively while incidence and prevalence of PD was 132.6 pmp and 126 pmp, respectively. The incidence and prevalence of PD in this region was higher than recorded for any other region.
- Overall incidence of KT was 10.9 pmp and ranged from 6.7 pmp in Mongolia to 44.4 pmp in Korea Republic. Median prevalence of KT in the region was 289 pmp and ranged from 57 pmp in Japan to 503 pmp in Hong Kong.
- The overall median incidence of deceased donor KT and living donor KT were 4.5 pmp and 8.3 pmp, respectively. Incidence of pre-emptive KT was unavailable in this region.

SLIDE 16:

- The median annual cost of in-centre HD, PD, and first year KT were US\$ 20,172.6, US\$ 16,942.2, and US\$ 69,899.5, respectively.
- China had the lowest annual cost of HD (US\$ 15,980) while Japan had the highest (US\$ 40,067). Japan also had the highest annual cost of PD (US\$ 58,914) while Hong Kong had the lowest (US\$ 11,295). Korea Republic had the highest annual cost of first-year KT (US\$ 70,228) while China had the lowest (US\$ 22,302).
- HD to PD cost ratio was lower than one only in Japan highlighting the higher cost of PD than HD in Japan. Other countries had ratios higher than unity.



SLIDE 17:

- Scorecards were created for each country to allow comparison of results with other countries in the same region as well as between the previous (2019) survey and current (2023) survey.
- Green represents availability, red represents not available and grey represents unknown or not applicable if they didn't complete a survey that year.
- All countries in the region have all modalities of KRT i.e., HD, PD, and KT.
- CKM is not readily available in many countries in the region.
- Use of public funding for medications is also not readily available in the region. Only Taiwan still uses public funds to cover cost of medications for dialysis and KT patients in 2023.
- Dialysis and KT registries are available in all countries in the region in 2023.
- Advocacy groups for CKD, kidney failure and KRT are available in many countries in the region.

SLIDE 18 – 19:

- Different reimbursement methods are used to cover the cost of non-dialysis CKD (ND-CKD) services. Overall, only one country (17%) (Taiwan) reimbursed ND-CKD services through public funds (and free), 50% (Japan, Korea Republic, and Macao) through public funds (with some fees), and 33% (China and Hong Kong) through a mix of public and private funding systems.
- Public government funding that is free for acute dialysis, chronic HD, chronic PD, and KT medications were available in 1 (16.7%), 1 (16.7%), 1 (16.7%), and 0% of countries respectively. Korea Republic and Macao reimbursed these services through public funding with some fees, in Hong Kong they are reimbursed through a mix of public and private funds. Solely private, and out-of-pocket payment systems is not used in this region to fund any of these services.

SLIDE 20:

- Nephrologists bear primary responsibility for kidney failure care in most countries (83%) in the region (global median was 87%). Multidisciplinary care is used in 2 (17%) countries (Macao).



SLIDE 21 – 22:

- Across most domains or healthcare workers, there were high levels of shortages reported in the region.
- Fewer than half of countries in the region reported shortage of different cadres of healthcare workers. Paediatric nephrologists are the only cadres of workers with shortages in more than half of countries in the region (67%).

SLIDE 23:

- The median prevalence of nephrologists in the North and East region was 28.7 pmp (higher than global median of 11.75 pmp and higher than the prevalence across any other region). Japan had the highest density of nephrologists (88.6 pmp) while China had the lowest (5.7 pmp).
- Macao had the highest density of nephrology trainees (12.6 pmp) while China had the lowest (0.04 pmp).

SLIDE 24 – 26:

- Estimates of the number of centres providing KRT was assessed across all countries.
- Median prevalence of HD centres in the region was 12.0 pmp. China had the lowest density of HD centres (4.5 pmp) while Taiwan had the highest density of HD centres (93.3 pmp).
- Median prevalence of PD centres in the region was 1.27 pmp (compared to 1.57 pmp globally). Taiwan had the highest density of PD centres (4.8 pmp) while China had the lowest (0.77 pmp).
- KT centres are available in all (100%) countries in the region; median prevalence of KT centres was 1.13 pmp (highest across all regions) and was highest in Macao (1.57 pmp) and lowest in Korea Republic (0.39 pmp).

SLIDE 27:

- All countries in the region (100%) use a combined donor KT program.
- Four (67%) countries (Hong Kong, Japan, Korea Republic, and Taiwan) have a national KT waitlist; 1 (17%) (China) uses a regional waitlist, while 1 (17%) (Macao) have none.



SLIDE 28:

- Capacity to provide adequate frequency of HD i.e., three times weekly for 3 – 4 hours per session, was available in 83% of countries in the region (compared to 81% globally).
- Capacity to provide adequate PD exchanges i.e., three to four exchanges per day was available in all (100%) countries (compared to 61% globally).

SLIDE 29:

- Home HD was only available in China.

SLIDE 30 – 31:

- Conservative kidney management (CKM) established through shared-decision making was available in 3 (50%) countries (China, Macao, and Taiwan) (compared to 53% global median)
- Choice restricted CKM (where resource constraints prevent or limit access) was only available in 1 (17%) country (Macao) (compared to 39% global median).
- Choice restricted CKM (where no resource constraints prevent or limit access) was available in all (100%) of countries (compared to 40% global median).

SLIDE 32 – 34:

- Multiple methods are used for funding cost of kidney care medications in this region.
- Medications for ND-CKD are not available for free in any country; however, they are available through public funds with some fees in 5 (83%) countries (China, Japan, Korea Republic, Macao, and Taiwan), and through a mix of public and private funds in 1 (17%) country (Hong Kong).
- However, medications for dialysis patients (HD or PD) are free in only 1 (17%) country (Taiwan), while publicly funded with some fees was used in 4 (67%) countries (China, Japan, Korea Republic, and Macao). Medications for dialysis patients is funded through a mix of private and public funds in Hong Kong. No country in the region uses solely private and out of pocket methods for funding dialysis medications.
- Similarly, only 1 (17%) country (Taiwan) funds KT medications from public funds for free at delivery, while publicly funded with some fees was used in 4 (67%) countries (China, Japan, Korea Republic, and Macao). Medications for KT patients are funded through a mix



of private and public funds in Hong Kong. No country in the region uses solely private and out of pocket methods for funding KT medications.

SLIDE 35:

- Availability of official kidney registries varied across countries.
- ND-CKD registry was available only in 2 (33.3%) of countries (China and Japan); while dialysis and KT registries are available in all (100%) countries in the region Acute dialysis and CKM registries are not available in the region.

SLIDE 36-37: SUMMARY OF FINDINGS

In summary, the 2023 ISN-GKHA highlights several important findings for the North and East Asia region.

KRT availability, access, and quality is high.

- All countries in the region have capacity for KRT (HD, PD, and KT).
- Capacity to provide adequate frequency of HD i.e., three times weekly for 3 – 4 hours per session, was available in 83% of countries in the region.
- Capacity to provide adequate PD exchanges i.e., three to four exchanges per day was available in all (100%) countries.
- Home HD was only available in China.

CKM is available and predominately chosen or medically advised.

- Conservative kidney management (CKM) established through shared-decision making was available in 3 (50%) countries.
- Choice restricted CKM (where resource constraints prevent or limit access) was only available in 1 (17%) country (Macao).
- Choice restricted CKM (where no resource constraints prevent or limit access) was available in all (100%) countries.

Government funding for kidney care services and medication is low.

- Reimbursement for medications that is free at point of delivery for ND-CKD are unavailable in the region.
- Medications for dialysis and KT patients are free only in Taiwan.



- Reimbursement that is free for acute dialysis, chronic HD, and chronic PD were available in 1 (16.7%), 1 (16.7%), and 1 (16.7%) countries, respectively.

Most have registries for advanced kidney disease, few for CKD or AKI

- Availability of kidney registries varied across countries in the region.
- ND-CKD registry was available only in 2 (33.3%) of countries (China and Japan); while dialysis and KT registries are available in all (100%) countries in the region Acute dialysis and CKM registries are not available in the region.

Some workforce limitations are present.

- The median prevalence of nephrologists in North and East Asia was 28.7 pmp (and was higher than in any world region); Japan had the highest density of nephrologists (88.6 pmp) while China had the lowest (5.7 pmp).
- Macao had the highest density of nephrology trainees (12.6 pmp) while China had the lowest (0.04 pmp).
- Fewer than half of countries in the region reported shortage of different cadres of healthcare workers. Paediatric nephrologists are the only cadres of workers with shortages in more than half of countries in the region (67%).

Moderate advocacy for kidney disease in the NIS and Russia.

- Advocacy groups for CKD, kidney failure and KRT remains low in the region.

SLIDE 38-39: IMPLICATIONS

There are important implications to consider. Based on these survey findings, key recommendations to drive future activities for optimizing kidney care globally are proposed:

Increase health care financing for kidney failure prevention and management.

- While resource limitations are an obvious barrier, focusing on preventing kidney failure through appropriate hypertension and diabetes management may be more cost-effective overall. Government funding to cover medication costs may allow more patients to treat earlier stage CKD, thereby preventing the need for more costly kidney failure treatment and the obvious burden this has on patients wellbeing.



Address workforce shortages through multidisciplinary teams and telemedicine

- Shortages of nephrologists, surgeons, dialysis nurses, and other key allied health professionals were noted across most countries. Similarly, simply producing more nephrologists may not be feasible or appropriate, and sharing the workload across multiple providers will not only promote the use of multidisciplinary teams but further, allow for more and better care delivery across more patients. Telemedicine may help particularly in addressing gaps in care among rural patients, and enhancing capacity through training programs such as ISN Fellowship, visiting ambassador programs, etc.

Incorporate the collection and reporting of quality indicators in kidney failure care.

- Measuring and reporting on key quality indicators is an important driver in healthcare improvement. Ensuring facilities are supported with information systems that allow for the systematic measurement and reporting of indicators is a first key step to increasing the rate of monitoring among countries. Further, understanding if or how the collection and reporting of indicators are being used to improve care is needed.

Expand health information systems to prevent and manage kidney failure.

- Similarly, good quality HIS are vital for kidney disease management within a country. A lack of data on disease prevalence, incidence, resource use, and quality of care limits government and provider ability to monitor and evaluate the care provided as well as predicts appropriate resource allocation so that sufficient facilities, medicines, and healthcare professionals are trained and available.

Promote kidney failure prevention and treatment by implementing policies, strategies, and advocacy, and mitigating barriers.

- Lastly, policies and strategies are important for consistent approaches within a country for optimal care delivery, as well as for accountability, leadership, and knowledge exchange. Advocacy may help promote the increase of government prioritization and further, public awareness of how to prevent and manage kidney disease. Without acknowledging and mitigating barriers, it would be a challenge to achieve of successes out of these recommendations. Competing priorities and needs (for example, clean water supply and basic sanitation, maternal and child health, malnutrition, etc.).

