



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

NORTH AMERICA AND THE CARIBBEAN

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.



SLIDE 7:

- 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 America and Caribbean (NAC) region.

SLIDE 11 – 12:

- Responses were received from 12 of the 14 countries (85.7%) representing 99% of the region's population.
- Of the 12 countries, 3 (25%; Jamaica, St. Lucia, and St. Vincent and the Grenadines) are UMICs, all others (Antigua and Barbuda, Aruba, The Bahamas, Barbados, Canada, St. Kitts and Nevis, Trinidad and Tobago, Turks and Caicos Islands, and The United States of America [USA]) are HICs.
- At the time of the survey, there were 380,898,155 people living in all the countries that participated in the study. USA had the highest population (337.3 million) while St. Kitts and Nevis had the lowest population (54,488).
- GDP (PPP) in the region ranges from US\$ 0.8 billion (St. Turks and Caicos Islands) to US\$ 23 trillion (USA).
- Total health spending as a percentage of GDP ranged from 4.3% in St. Lucia to 16.8% in USA.
- Total health spending per capita ranged from US\$ 7.2 (Barbados) to US\$ 11,705 (USA). However, government health spending per capita ranged from US\$ 211 (Jamaica) to US\$ 6,578 (USA).

SLIDE 13:

- The median CKD prevalence in the NAC region was 11.4% (global median was 9.5%) and ranged from 9.8% in Jamaica to 13.3% in Barbados.
- Median disability adjusted life years (DALYs) attributed to CKD was 3.6%; lowest in Canada (1.4%) and highest in St. Kitts and Nevis (4.6%).
- Median deaths attributable to CKD was 4.8%; lowest in Canada (2.6%) and highest in St. Kitts and Nevis (6.3%).



- The prevalence of other risk factors (hypertension, obesity, and smoking) varied across countries in the NAC region.

SLIDE 14 – 15:

- Incidence data on treated kidney failure (dialysis and kidney transplantation) was available for Canada and USA while prevalence data was available six of the 12 countries including Canada and USA.
- Overall, the median incidence and prevalence of treated kidney failure were 309.1 per million population (pmp) and 666.8 pmp, respectively.
- Incidence of treated kidney failure ranged from 208.1 pmp in Canada to 410 pmp in USA. Prevalence of treated kidney failure ranged from 137.4 pmp in Jamaica to 2,465 pmp in USA.
- Data on the incidence of chronic dialysis (HD + PD) was also only available from Canada and USA with a median of 288.6 pmp while median prevalence of chronic dialysis was 620.3 pmp and was highest in Turks and Caicos Islands (1,882.4 pmp) and lowest in Jamaica (131.5 pmp).
- The overall median incidence and prevalence of HD in the region was 245.8 pmp and 515.4 pmp, respectively while incidence and prevalence of PD was 42.8 pmp and 11.5 pmp, respectively.
- Overall incidence of KT was 40.3 pmp and ranged from 2.1 pmp in Trinidad and Tobago to 76.6 pmp in USA. Median prevalence of KT in the region was 6.8 pmp and ranged from 3.1 pmp in The Bahamas to 729 pmp in USA.
- The overall median incidence of deceased donor KT and living donor KT were 29.8 pmp and 10.5 pmp, respectively. Across all regions, incidence of deceased donor KT was highest from this region. Incidence of pre-emptive KT was highest in this region (32 pmp).
- Incidence of deceased donor KT (58.6 pmp), living donor KT (17.9 pmp), and pre-emptive KT (59 pmp) were highest from this region.

SLIDE 16:

- The median annual cost of in-centre HD, PD, and first year KT were US\$ 39,825.9, US\$ 39,825.9, and US\$ 265,045.3, respectively.
- Jamaica had the lowest annual cost of HD (US\$ 17,622) while Canada had the highest (US\$ 42,147). Canada also had the lowest annual cost of PD (US\$ 25,224) while USA had the highest (US\$ 39,826). Canada also had the lowest annual cost of first-year KT (US\$ 78393) while USA had the highest (US\$ 451,698).



- Annual cost of HD and PD are the same in USA while HD to PD cost ratio in Canada was 1.67.

SLIDE 17 – 18:

- 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.
- In-centre HD was available in all countries in the region. However, PD services remain unavailable in Antigua and Barbuda and St. Lucia in 2023. In 2023, KT services in the NAC region are only available in Antigua and Barbuda, Barbados, Canada, Jamaica, Trinidad and Tobago, and USA.
- Use of public funds for kidney care varied widely in the region. Only Barbados uses public funds for funding medications cost for ND-CKD, dialysis, and KT.
- Most countries that had dialysis and KT registries in 2019 still had them in 2023.
- Advocacy groups for CKD, kidney failure and KRT remains very low in the region.

SLIDE 19 – 20:

- Different reimbursement methods are used to cover the cost of non-dialysis CKD (ND-CKD) services. Overall, 25% of countries (Barbados, Canada, and Turks and Caicos) reimbursed ND-CKD services through public funds (and free), 25% (Aruba, Bermuda, and St. Vincent and the Grenadines) through public funds (with some fees), and 50% (Antigua and Barbuda, The Bahamas, Jamaica, St. Lucia, Trinidad and Tobago, and USA) 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 6 (50%), 4 (33.3%), 6 (50%), and 3 (25%) of countries respectively. Bermuda and USA use public funding with some fees for all categories of care (AKI, HD, PD, and KT). Solely private, and out-of-pocket payment systems is not used in this region to fund any of these services.

SLIDE 21:

- 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 (The Bahamas and Trinidad and Tobago).



SLIDE 22 – 23:

- Across most domains or healthcare workers, there were high levels of shortages reported in the region.
- More than half of countries in the region reported shortages of paediatric nephrologists (58%), transplant surgeons (58%), surgeons or interventional radiologists for AVF/AVG creation (67%) and for PD catheter insertion (58%), dietitians (58%), vascular access coordinators (58%), transplant coordinators (58%), dialysis nurses (83%), dialysis technicians (58%), and palliative care physicians (58%).

SLIDE 24:

- The median prevalence of nephrologists in the NAC region was 18.8 pmp (higher than global median of 11.75 pmp). Bermuda had the highest density of nephrologists (41.5 pmp) while Jamaica had the lowest (4.5 pmp).
- Aruba had the highest density of nephrology trainees (40.9 pmp) while Jamaica had the lowest (0.35 pmp). Seven countries (Antigua and Barbuda, The Bahamas, Barbados, St. Lucia, and St, Vincent and the Grenadines Trinidad and Tobago, and Turks and Caicos Islands) do not have any trainees in nephrology.

SLIDE 25 – 27:

- Estimates of the number of centres providing KRT was assessed across all countries.
- Median prevalence of HD centres in the region was 18.4 pmp. Jamaica had the lowest density of HD centres (7.8 pmp) while Bermuda had the highest density of HD centres (41.5 pmp).
- Median prevalence of PD centres in the region was 9.9 pmp (compared to 1.57 pmp globally). Bermuda had the highest density of PD centres (41.5 pmp) while Jamaica had the lowest (1.4 pmp).
- KT centres are available in 6 (50%) countries in the region; median prevalence of KT centres was 0.71 pmp and was highest in Antigua and Barbuda (9.97 pmp) and lowest in Canada (0.42 pmp).



SLIDE 28:

- Three (50%) countries (Antigua and Barbuda, Barbados, and Jamaica) rely on a live only KT program while 3 (50%) other countries (Canada, Trinidad and Tobago, and USA) use a combined donor KT program.
- Two (33%) countries (Antigua and Barbuda and Trinidad and Tobago) have a national KT waitlist; 2 (33%) countries (Canada and USA) use a regional waitlist, while 2 (33%) of countries (Barbados and Jamaica) do not have a KT waitlist.

SLIDE 29:

- Capacity to provide adequate frequency of HD i.e., three times weekly for 3 – 4 hours per session, was available in 92% of countries in NAC region (compared to 81% globally).
- Capacity to provide adequate PD exchanges i.e., three to four exchanges per day was available in 10 (83%) countries (Aruba, The Bahamas, Barbados, Bermuda, Canada, Jamaica, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, and USA) (compared to 61% globally).

SLIDE 30:

- Home HD was only available in Canada and USA.

SLIDE 31 – 32:

- Conservative kidney management (CKM) established through shared-decision making was available in 10 (83%) countries (Antigua and Barbuda, Aruba, The Bahamas, Barbados, Bermuda, Canada, St. Lucia, St. Vincent and the Grenadines, Turks and Caicos Islands, and USA) (compared to 53% global median)
- Choice restricted CKM (where resource constraints prevent or limit access) was available in 9 (75%) of countries (Aruba, Barbados, Bermuda, Canada, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, and USA)).
- Choice restricted CKM (where no resource constraints prevent or limit access) was also available in 8 (67%) of countries (Aruba, The Bahamas, Bermuda, Canada, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, and USA).



SLIDE 33 – 35:

- Multiple methods are used for funding cost of kidney care medications in this region.
- Medications for ND-CKD are available through public government funds and free only in Barbados, through public funds with some fees in 3 (25%) countries (Aruba and Turks and Caicos) while funding through a mix of public and private funds is used in 7 (58%) countries (Antigua and Barbuda, The Bahamas, Canada, Jamaica, St. Vincent and the Grenadines, Trinidad and Tobago, and USA).
- However, medications for dialysis patients (HD or PD) are free in only 2 (17%) countries (Barbados and Turks and Caicos), while publicly funded with some fees was used in 2 (17%) countries (Aruba and Bermuda). Medications for dialysis patients is funded through private and solely out-of-pocket methods in St. Lucia while other countries use a mix of private and public funding methods.
- Only Barbados funds KT medications through public funds and free; most countries use a mix of private and public funding (n=7; 58%) to cover cost of medications for KT (Antigua and Barbuda, The Bahamas, Canada, Jamaica, St. Vincent and the Grenadines, Trinidad and Tobago, and USA).

SLIDE 36:

- Availability of official kidney registries varied across countries.
- ND-CKD registry was available only in St. Lucia; dialysis registries in 5 (41.7%), and KT registries are available in 4 (33.3%) countries (Aruba, Canada, Trinidad and Tobago, and USA). Acute dialysis registries were only available in St. Lucia.

SLIDE 37-38: SUMMARY OF FINDINGS

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

KRT availability, access, and quality is high.

- HD services are available in all countries in the region. However, PD services remain unavailable in Antigua and Barbuda and St. Lucia in 2023 while KT services in the NAC region are only available in Antigua and Barbuda, Barbados, Canada, Jamaica, Trinidad and Tobago, and USA.



- Capacity to provide adequate frequency of HD i.e., three times weekly for 3 – 4 hours per session, was available in 92% of countries.
- Capacity to provide adequate PD exchanges i.e., three to four exchanges per day was available in 10 (83%) countries.
- Home HD was only available in Canada and USA.
- KT centres are available in 6 (50%) countries in the region; median prevalence of KT centres was 0.71 pmp.

CKM is available and predominately chosen or medically advised.

- Conservative kidney management (CKM) established through shared-decision making was available in 10 (83%) countries.
- Choice restricted CKM (where resource constraints prevent or limit access) was available in 9 (75%) of countries.
- Choice restricted CKM (where no resource constraints prevent or limit access) was also available in 8 (67%) of countries.

Government funding for kidney care services and medication is low.

- Reimbursement for medications that is free at point of delivery for ND-CKD, dialysis, and KT are available in 3 (25%), 2 (17%), and in only one country (Barbados), respectively.
- Reimbursement that is free for acute dialysis, chronic HD, and chronic PD were available in 6 (50%), 4 (33.3%), and 6 (50%) 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 St. Lucia; dialysis registries in 5 (41.7%), and KT registries are available in 4 (33.3%) countries (Aruba, Canada, Trinidad and Tobago, and USA). Acute dialysis registries were only available in St. Lucia.

Some workforce limitations are present.

- The median prevalence of nephrologists in the NAC region was 18.8 pmp; Bermuda had the highest density of nephrologists (41.5 pmp) while Jamaica had the lowest (4.5 pmp).
- Aruba had the highest density of nephrology trainees (40.9 pmp) while Jamaica had the lowest (0.35 pmp).



- More than half of countries in the region reported shortages of paediatric nephrologists (58%), transplant surgeons (58%), surgeons or interventional radiologists for AVF/AVG creation (67%) and for PD catheter insertion (58%), dietitians (58%), vascular access coordinators (58%), transplant coordinators (58%), dialysis nurses (83%), dialysis technicians (58%), and palliative care physicians (58%).

Moderate advocacy for kidney disease in the NIS and Russia.

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

SLIDE 39-40: 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.).

