



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

### EASTERN AND CENTRAL EUROPE

#### SLIDE 1-2:

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<Opening slides>

#### SLIDE 3:

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Overview of presentation

- Aim
- Methods
- Key results

#### SLIDE 4:

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##### **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:

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Timelines of the ISN-GKHA

## SLIDE 6:

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### 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:

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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.

## SLIDE 8:

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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:

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- 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.

### SLIDE 10:

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- This talk focuses on the ISN Eastern and Central Europe region.
- There are 20 countries in Eastern and Central Europe, 9 (45%) are upper-middle-income countries (UMICs; Albania, Bosnia and Herzegovina, Bulgaria, Kosovo, Moldova, Montenegro, North Macedonia, Serbia, and Turkey), and 11 (55%) are high income countries (HICs; Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia).

### SLIDE 11 – 12:

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- Responses were received from 16 of the 20 countries (80%) representing 96.2% of the region's population.
- At the time of the survey, there were 207,319,834 people living in all the countries in the region. Turkey had the highest population (83.1 million) and Montenegro had the lowest population (604,966).
- GDP (PPP) in the region ranges from US\$ 14.4 billion (Montenegro) to US\$ 1.43 trillion (Poland).
- Total health spending as a percentage of GDP ranged from 4.3% in Turkey to 9.1% in Bosnia and Herzegovina.
- Total health spending per capita ranged from US\$ 235 (Moldova) to US\$ 2218 (Slovenia). However, government health spending per capita ranged from US\$ 142 (Moldova) to US\$ 1,672 (Czech Republic).

### SLIDE 13:

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- The median CKD prevalence in Eastern and Central Europe was 12.8% (global median was 9.5%) and ranged from 9.3% in Cyprus to 16.8% in Estonia.
- Median disability adjusted life years (DALYs) attributed to CKD was 1.3%; lowest in Moldova (0.63%) and highest in Turkey (2.45%).



- Median deaths attributable to CKD was 1.5% and was lowest in Moldova (0.6%) and highest in Turkey (4.2%).
- The prevalence of other risk factors (hypertension, obesity, and smoking) varied across countries in the region.

### SLIDE 14 – 15:

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- Incidence and prevalence data on treated kidney failure (dialysis and kidney transplantation) were readily available for most countries in Eastern and Central Europe. Overall, the median incidence and prevalence of treated kidney failure were 138.7 per million population (pmp) and 873.5 pmp, respectively.
- The incidence of treated kidney failure ranged from 74.0 pmp in Estonia to 284 pmp in Cyprus. Prevalence of treated kidney failure ranged from 556 pmp in Poland to 1,248 pmp in Croatia.
- Overall, the median incidence of chronic dialysis (HD + PD) was 110.8 pmp and was highest in Romania (189.2 pmp) while the overall incidence of chronic HD and PD were 104.2 pmp and 8.8 pmp, respectively.
- The overall prevalence of chronic dialysis, HD, and PD was 604.5 pmp, 532.1 pmp, and 32.4 pmp, respectively.
- Overall incidence of KT was 20.2 pmp and ranged from 0.57 pmp in Serbia to 42.6 pmp in Czech Republic. Prevalence of KT in the region was 280 pmp and ranged from 80 pmp in Albania to 490 pmp in Estonia.
- The overall median incidence of deceased donor KT, living donor KT, and pre-emptive KT were 15.2 pmp, 2.2 pmp, and 0.2 pmp, respectively.
- Incidence of deceased donor KT was highest in Czech Republic (38.7 pmp), living donor KT was highest in Turkey (26.7 pmp), and pre-emptive KT was highest in Slovenia (1.9 pmp)

### SLIDE 16:

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- The median annual cost of in-centre HD, PD, and first year KT were US\$ 19,028.3, US\$ 21,765.2, and US\$ 30,368.1, respectively.
- Turkey has the lowest annual cost of HD (US\$ 10,057) and PD (US\$ 2,593) while Bosnia and Herzegovina had the lowest first year cost of KT (US\$ 15,000)
- Annual cost of HD was higher than annual cost of PD in seven countries – Albania, Estonia, Latvia, Moldova, Romania, Slovenia, and Turkey all of which have a HD:PD ratio greater than 1.



## SLIDE 17 – 18:

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- 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, PD, and KT were available in all countries (100%) that participated in the survey from the region in 2023. PD was unavailable in Moldova in 2019, however, no data was available for them in 2023. Similarly, KT was unavailable in Kosovo in 2019, but no data was available for them in 2023.
- In 2019, public government funds were available to cover cost of medications for dialysis and KT patients in Cyprus, Lithuania, Poland, Slovak Republic, and Turkey. However, these were unavailable in 2023 in these countries.
- Most countries that had dialysis and KT registries in 2019 still had them in 2023. However, Lithuania reported loss of dialysis and KT registries in 2023 even though they had these in 2019. Also, Romania, reported having a KT registry in 2023 even though this was not available in 2019.
- Advocacy groups for CKD, kidney failure and KRT remains low in the region.

## SLIDE 19 – 20:

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- Overall, reimbursement for non-dialysis CKD (ND-CKD) treatment mostly utilized public funding (free at point of delivery) (44%) and a mixture of public and private funding systems (31%). No country in the region utilized private and solely out-of-pocket payment systems for funding ND-CKD treatment.
- Public government funding that is free for acute dialysis, chronic HD, chronic PD, and KT medications were available in 12 (75%), 11 (69%), 14 (88%), and 12 (75%) of countries respectively. Solely private, and out-of-pocket payment systems for these services are not in use in any of the countries in this region.

## SLIDE 21:

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- Nephrologists bear primary responsibility for kidney failure care in all countries (100%) of countries in Eastern and Central Europe (global median was 87%).



## SLIDE 22 – 23:

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- Across most domains or healthcare workers, there were fewer countries with shortages compared to global median or shortages from other regions.
- Less than half of countries reported shortages of nephrologists (44%), transplant surgeons (31%), surgeons for PD access (44%), laboratory technicians (6%), radiologists (6%), transplant coordinators (31%), and dialysis technicians (31%).

## SLIDE 24:

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- Eastern and Central Europe had the third largest prevalence of nephrologists (24.8 pmp) after North East Asia (28.7 pmp) and Western Europe (25 pmp). Lithuania had the highest density of nephrologists (52.2 pmp) while Turkey had the lowest (9.6 pmp).
- Prevalence of nephrology trainees in the region was 4.8 pmp and was highest in Croatia (11.9 pmp) and lowest in Turkey (0.6 pmp).

## SLIDE 25 – 27:

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- Estimates of the number of centres providing KRT was assessed across all countries.
- HD centres are available in all countries in Eastern and Central Europe with a median density of 10.5 pmp. Lithuania has the highest density of HD centres (25.3 pmp) while Albania has the lowest (4.9 pmp).
- Similarly, PD centres are available in all countries in the region with a median density of 2.0 pmp (compared to 1.57 pmp globally). Croatia had the highest density of PD centres (4.8 pmp) while Albania had the lowest (0.32 pmp).
- KT centres are available in all countries with a median density of 0.7 pmp and was highest in Turkey (1.11 pmp) and lowest in Romania (0.27 pmp).

## SLIDE 28:

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- Only Albania utilizes live donor KT only for transplantation while all other countries in the region use a combination of deceased and live KT donor program.
- Also, 87% of countries use a national KT waitlist while two (13%) countries (Bosnia and Herzegovina and Romania) use only a regional KT waitlist.



### SLIDE 29:

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- Capacity to provide adequate frequency of HD i.e., three times weekly for 3 – 4 hours per session, was available in all (100%) Eastern and Central European countries.
- Capacity to provide adequate PD exchanges i.e., three to four exchanges per day was available in 11 (68.8%) countries. This was “generally not available” in Bulgaria, Lithuania, Macedonia, Slovak Republic and Turkey.

### SLIDE 30:

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- Home HD was only available in 2 (13%) of countries (Serbia and Turkey), was “generally not available” in 3 (19%) of countries (Czech Republic, Macedonia, and Poland) and was never available in other countries.

### SLIDE 31 – 32:

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- Conservative kidney management (CKM) established through shared-decision making was available in 8 (50%) countries (Albania, Bulgaria, Estonia, Latvia, Macedonia, Poland, Romania, and Slovak Republic)
- Choice restricted CKM (where resource constraints prevent or limit access) was available in 6 (38%) of countries (Albania, Bosnia and Herzegovina, Bulgaria, Estonia, Macedonia, and Poland).
- Choice restricted CKM (where no resource constraints prevent or limit access) was also available in 6 (38%) of countries (Albania, Bosnia and Herzegovina, Bulgaria, Estonia, Macedonia, and Poland)

### SLIDE 33 – 35:

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- Only publicly funded by government (whether free at point of delivery or with some fee at the point of delivery) methods are used for funding the cost of kidney care medications in Eastern and Central Europe.
- Medications for ND-CKD are free at point of delivery in 7 (44%) countries while some fees are included in 9 (56%) countries.
- However, medications for dialysis patients (HD or PD) are free in 10 (63%) countries and available with some fees in 6 (38%) countries.





- Finally, KT medications are free in 9 (56%) countries and available with some fees in 7 (44%) countries in the region.

### SLIDE 36:

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- Availability of official kidney registries varied across countries.
- ND-CKD registries are available in 5 (31.3%) countries; dialysis and KT registries are available in 15 (93.8%) countries in the region (except Lithuania); 2 (12.5%) countries had acute dialysis registry; and only one country (Albania) had a CKM registry.

### SLIDE 37-38: SUMMARY OF FINDINGS

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In summary, the 2023 ISN-GKHA highlights several important findings for Eastern and Central Europe.

#### ***KRT availability, access, and quality is high.***

- HD and PD services are available in all countries in Eastern and Central Europe.
- Quality of dialysis delivery was high in the region. Center-based service that involves treatment 3x week for 3-4 hours was generally available in all countries in the region for HD. However, capacity to provide adequate PD was generally not available in five countries (Bulgaria, Lithuania, Macedonia, Slovak Republic and Turkey).
- Home HD was only available in 2 (13%) of countries (Serbia and Turkey)
- KT centres are available in all countries in the region.

#### ***CKM is available and predominately chosen or medically advised.***

- Established CKM through shared decision making was available in 8 (50%) of countries.
- 6 (38%) of countries stated that CKM is choice-restricted, meaning that patients are not choosing to receive CKM because it is better for them but because they cannot receive KRT due to limitations in resources.
- Also, 6 countries (38%) reported that CKM is chosen or medically-advised, meaning that the decision to not receive KRT wasn't due to resource limitations.

#### ***Government funding for kidney care services and medication is high.***

- All countries in the region use public funding for cost of medications for patients receiving kidney care, however, reimbursement for KRT services utilizes other funding models.



- Reimbursement for medications that is free at point of delivery for ND-CKD, dialysis, and KT are available in 7 (44%), 10 (63%), and in 9 (56%) countries, respectively.
- Reimbursement that is free for acute dialysis, chronic HD, and chronic PD were available in 12 (75%), 11 (69%), and 14 (88%) countries, respectively.

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

- Most countries in E&C Europe have a registry for dialysis and KT.
- Dialysis and KT registries are available in 15 (93.8%) countries in the region (except Lithuania); 2 (12.5%) countries had acute dialysis registry; and only one country (Albania) had a CKM registry.

***Many workforce limitations, especially nephrologists***

- Eastern and Central Europe had the third largest prevalence of nephrologists (24.8 pmp) after North East Asia (28.7 pmp) and Western Europe (25 pmp). Lithuania had the highest density of nephrologists (52.2 pmp) while Turkey had the lowest (9.6 pmp).
- Prevalence of nephrology trainees in the region was 4.8 pmp and was highest in Croatia (11.9 pmp) and lowest in Turkey (0.6 pmp).
- Less than half of countries reported shortages of nephrologists (44%), transplant surgeons (31%), surgeons for PD access (44%), laboratory technicians (6%), radiologists (6%), transplant coordinators (31%), and dialysis technicians (31%).

***Moderate advocacy for kidney disease in Eastern and Central Europe***

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

## SLIDE 39-40: IMPLICATIONS

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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.).

