



**Westmead  
Hospital**



**University of Sydney**

# **A Global Perspective of CKD Surveillance Endeavours**

**David Harris  
23/08/17**



**International  
Society  
of Nephrology**

(A number of slides from Adeera Levin)

# CKD – achievements & gaps

## Achievements

- Definitions & classification system
- Increasing awareness of CKD as public global health problem
- Growing number of consortia & collaborations for basic & clinical science
- New therapies for some specific causes of CKD
- Genetic & molecular mechanisms more carefully studied & understood

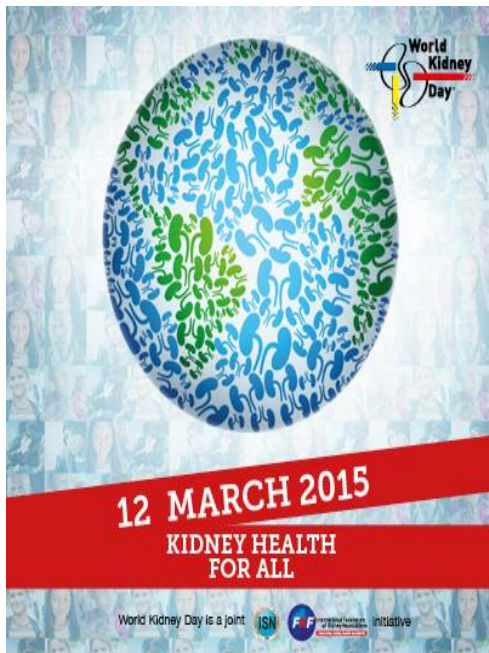
## Gaps in knowledge

- Mechanisms of disease(s); responders & non responders
- Epidemiology & burden in different locations
- Genetic & environmental interactions

## Shortcomings described by the community

- Limited possibilities to influence the course of the disease
- Failure of trials (study design, populations, size, duration...)
- Few mechanistic targets identified
- Absent culture for clinical trials & inquiry

# CKD increasingly recognized in multiple countries as a public health problem



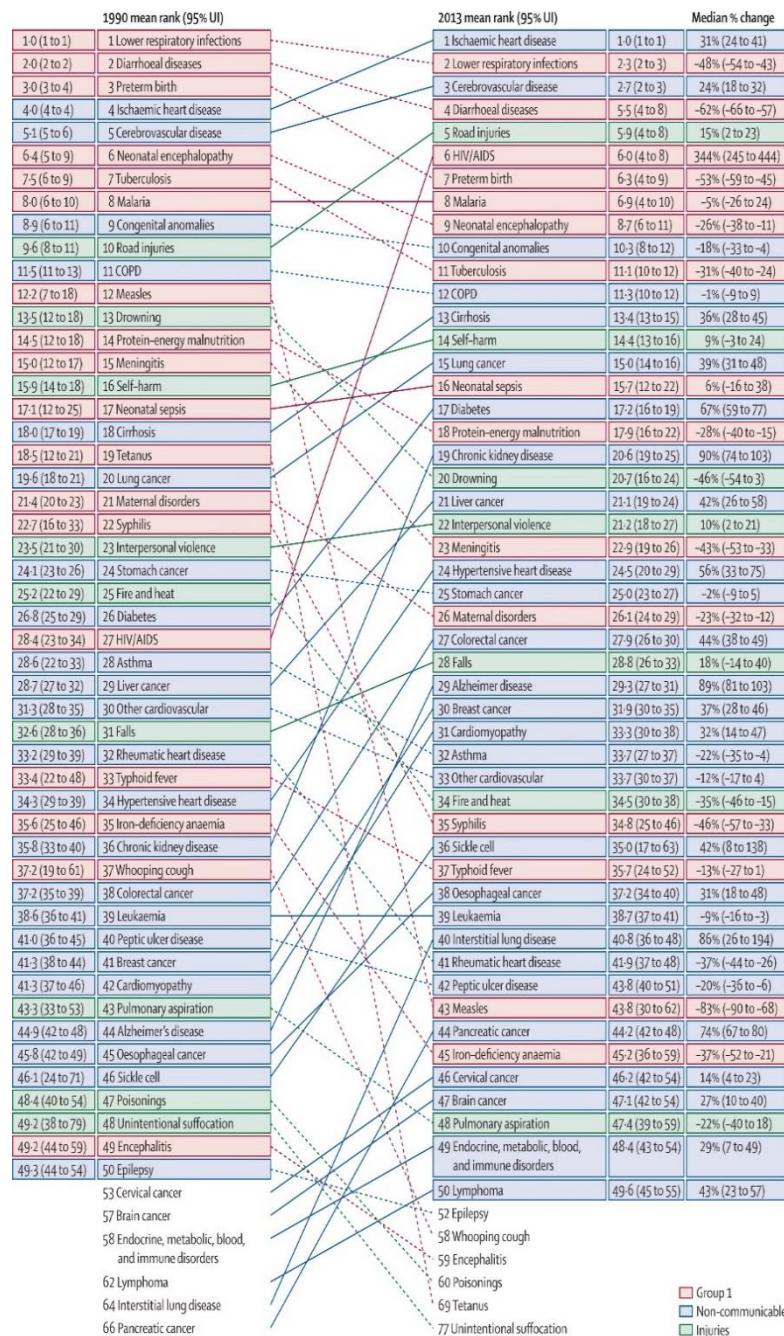
YOU COULD HAVE KIDNEY DISEASE AND NOT EVEN KNOW IT.



Burden of CKD has moved from 35<sup>th</sup> to 19<sup>th</sup> place over in less than 25y

*Global, regional, and national age–sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013*

*Lancet 2015;385:117-171*



# International estimates of CKD prevalence are consistent ~ 10-16% of adults

CKD prevalence 13.4% (11.7-15.1%)

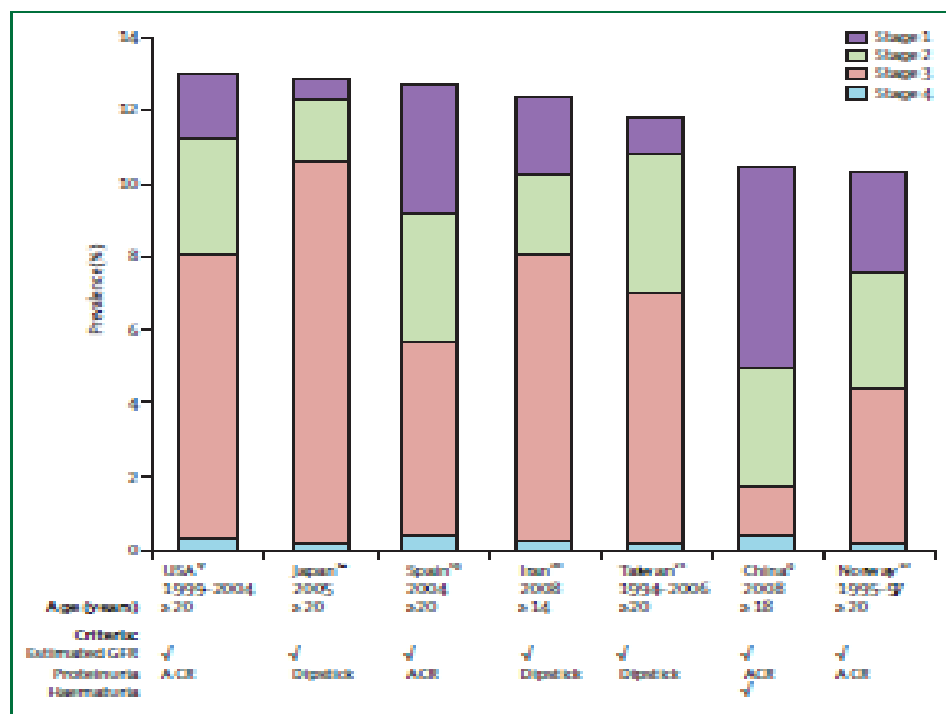
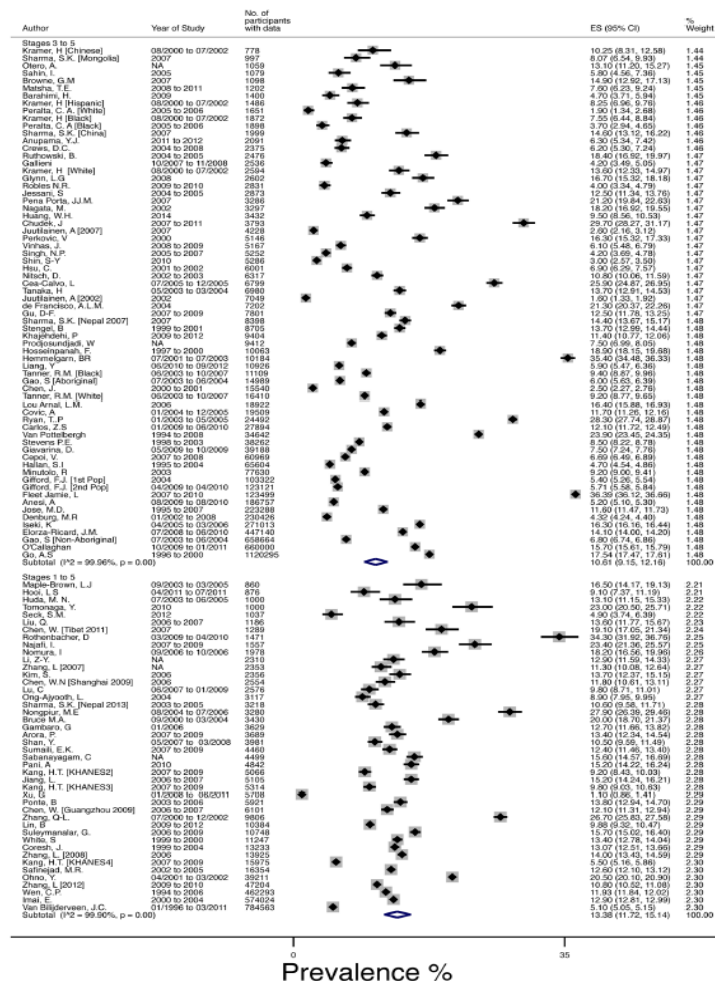


Figure 1: Population-based estimates of prevalence of chronic kidney disease  
 A/CB - albumin-to-creatinine ratio, GFR - glomerular filtration rate.



James, Hemmelgarn & Tonelli, Lancet 2010

Hill et al PLoS One 2016;11: e0158765



# Chronic kidney disease and cardiovascular risk in six regions of the world (ISN-KDDC): a cross-sectional study



*Bogdan Ene-Iordache, Norberto Perico\*, Boris Bikbov\*, Sergio Carminati, Andrea Remuzzi, Annalisa Perna, Nazmul Islam, Rodolfo Flores Bravo, Mirna Aleckovic-Halilovic, Hequn Zou, Luxia Zhang, Zaghloul Gouda, Irma Tchokhonelidze, Georgi Abraham, Mitra Mahdavi-Mazdeh, Maurizio Gallieni, Igor Codreanu, Ariunaa Togtokh, Sanjib Kumar Sharma, Puru Koirala, Samyog Uprety, Ifeoma Ulasi, Giuseppe Remuzzi*



**Cross-sectional study in 12 countries from six world regions: (Bangladesh, Bolivia, Bosnia & Herzegovina, China, Egypt, Georgia, India, Iran, Moldova, Mongolia, Nepal, and Nigeria)**

**Volunteers in screening programs & high risk clinics**

**CKD prevalence (N=75,058)**

**14·3%** (95% CI 14·0–14·5) in general populations

**36·1%** (34·7–37·6) in high-risk populations

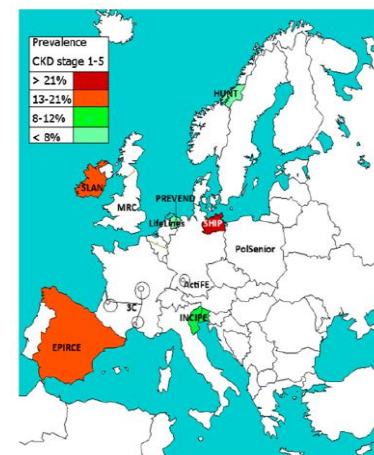
**Awareness very low:**

**CKD 6% in general populations; 10% in high-risk populations**

**Awareness also low for HTN 56% and DM 69%**

## CKD Prevalence Varies across the European General Population

Katharina Brück,<sup>\*</sup> Vianda S. Stel,<sup>\*</sup> Giovanni Gambaro,<sup>†</sup> Stein Hallan,<sup>‡</sup> Henry Völzke,<sup>§</sup> Johan Ärnlöv,<sup>||</sup> Mika Kastarinen,<sup>¶</sup> Idris Guessous,<sup>\*\*</sup> José Vinhas,<sup>††</sup> Bénédicte Stengel,<sup>‡‡</sup> Hermann Brenner,<sup>§§</sup> Jerzy Chudek,<sup>||||</sup> Solfrid Romundstad,<sup>¶¶</sup> Charles Tomson,<sup>\*\*\*</sup> Alfonso Otero Gonzalez,<sup>†††</sup> Aminu K. Bello,<sup>‡‡‡</sup> Jean Ferrieres,<sup>§§§</sup> Luigi Palmieri,<sup>|||||</sup> Gemma Browne,<sup>¶¶¶</sup> Vincenzo Capuano,<sup>\*\*\*\*</sup> Wim Van Biesen,<sup>††††</sup> Carmine Zoccali,<sup>‡‡‡‡</sup> Ron Gansevoort,<sup>§§§§</sup> Gerjan Navis,<sup>||||||</sup> Dietrich Rothenbacher,<sup>¶¶¶¶</sup> Pietro Manuel Ferraro,<sup>†</sup> Dorothea Nitsch,<sup>\*\*\*\*\*</sup> Christoph Wanner,<sup>†††††</sup> Kitty J. Jager,<sup>\*</sup> and on behalf of the European CKD Burden Consortium



Individual data pooled from 19 general-population studies from 13 European countries  
 KDIGO stages; CKD-Epi eGFR; ACR 30-299, 300+; age- and sex-standardized

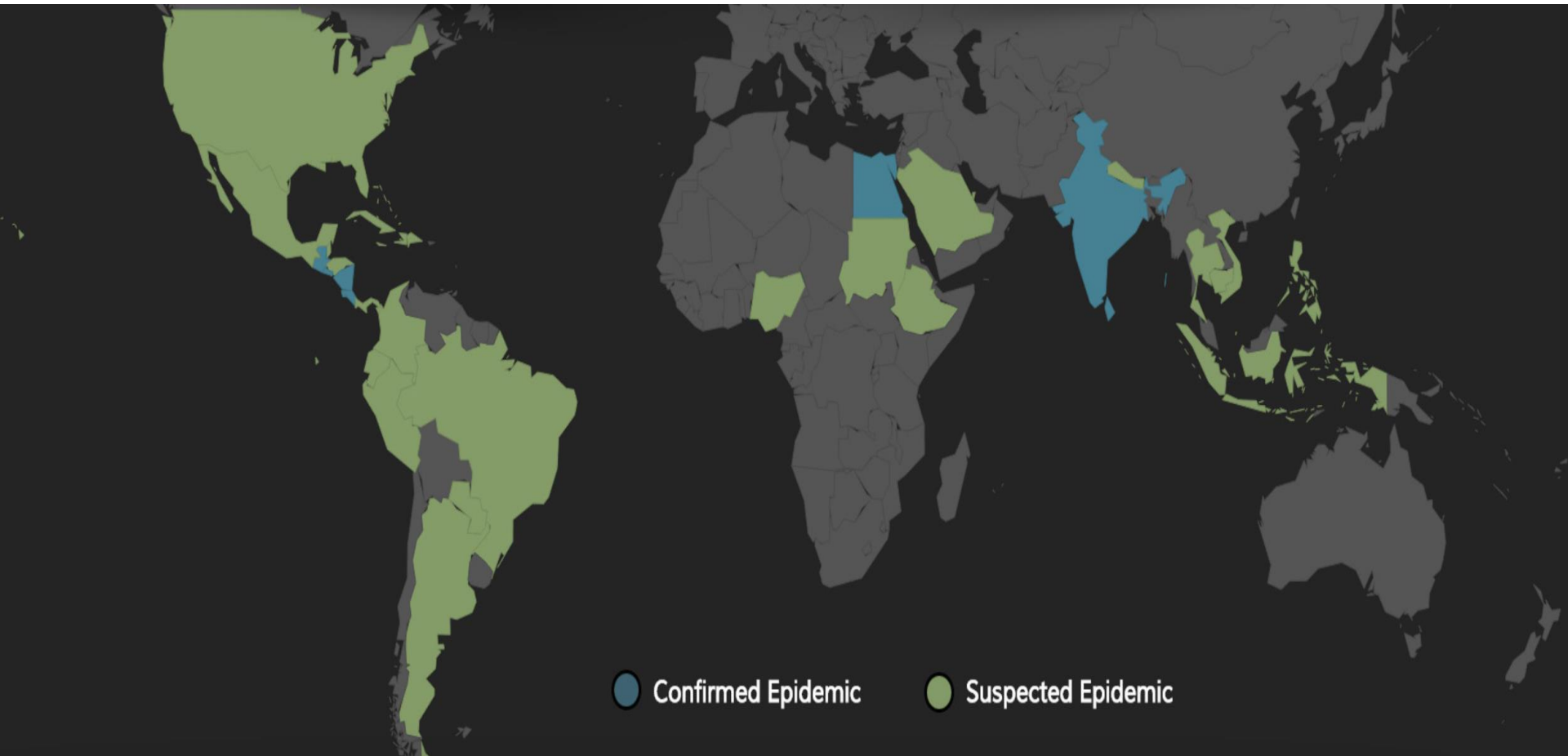
### Adjusted CKD prevalence

Stages 1-5: 3.3%(3.3%-3.3%) in Norway to 17.3% (16.5%-18.1%) in N-E Germany

Stages 3–5: 1.0% (0.7%-1.3%) in central Italy to 5.9% (5.2%-6.6%) in N-E Germany

Substantial variation in CKD prevalence independent prevalence of diabetes, hypertension, and obesity

## CKD of unknown aetiology (CKDu)

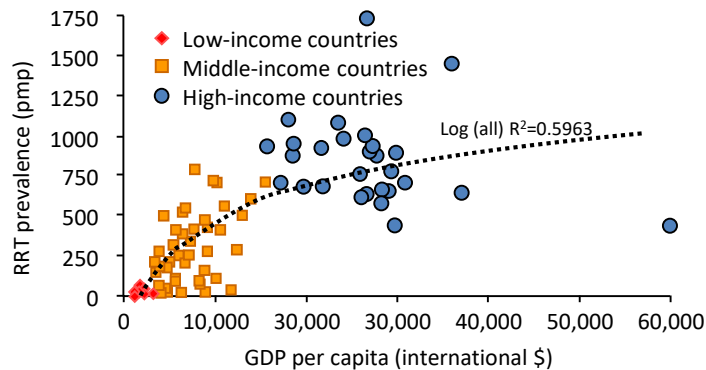
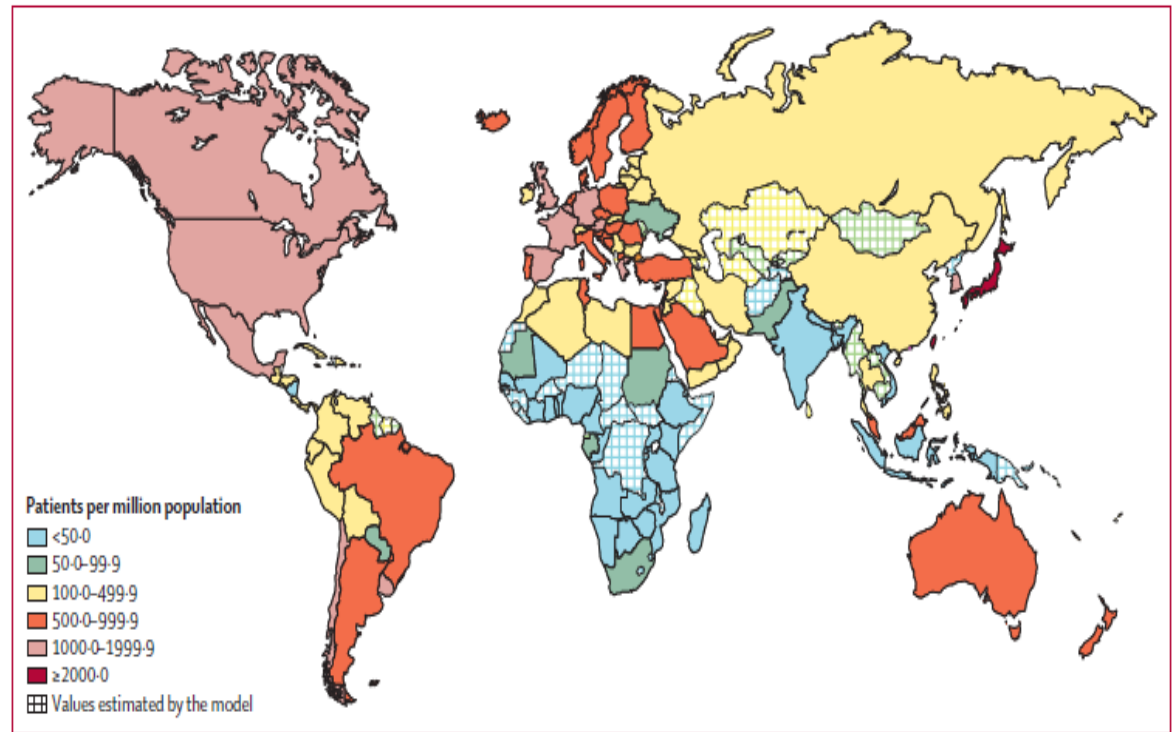




# RRT

2.6m in 2010

2.3-7.1m dying without



Liyanage et al Lancet 2015;385:1975-82

White et al, WHO Bull 2008; Nugent et al, NCP 2011

# CKD – Global perspective

Common, harmful, treatable

Linked to other NCDs (DM, HTN, CVD)

Variability in approaches, resources, policies  
Between and within countries and regions

Role of health care systems  
in prevention and control of CKD  
in integrating with national and international NCD management strategies

Need for better understanding and unified advocacy approach to CKD

# ISN CKD - *Closing The Gaps*

All individuals with CKD who can benefit from prevention or treatment should have access to those strategies and therapies

*To improve access to identification, prevention and treatment options for all individuals with kidney disease, irrespective of geographical location*

# Strategic Objectives

Develop a systematic, international inventory of health systems, health status, care gaps & inequalities for kidney patients

Provide recommendations to address these gaps & inequalities, to improve standards of care

Describe essential components of CKD care

human & financial resources

health policies, structures, processes & infrastructure

Leverage lessons from country level data for regional & international dissemination

Collaborate at country level to

- provide technical assistance & advice
- stimulate & support national strategic initiatives

# ISN CKD - *Closing the Gaps*

Global Kidney Health Atlas ( JAMA)

Global Kidney Health Summit (The Lancet)

ISN Global Policy Forums: Regional focus

Lancet Campaign ( online awareness campaign)

# ISN Global Kidney Atlas



Survey of current capacity for kidney health care delivery in each country & region

6 dimensions of Universal Health Coverage (WHO)

1. Health Finance
2. Health Policy
3. Service Delivery and Safety
4. Essential Medications and Health Products
5. Health Information and Statistics
6. Health Workforce

Global, regional & national data

Biannual



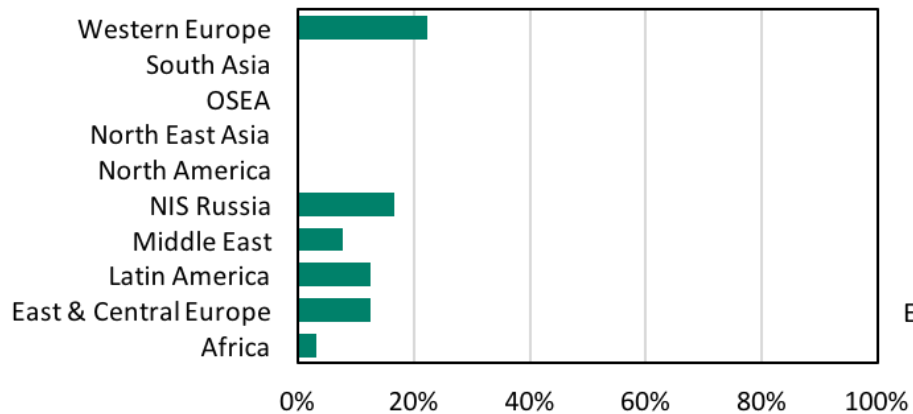
# Survey of 125 UN Member States

## ~93% of the world's population

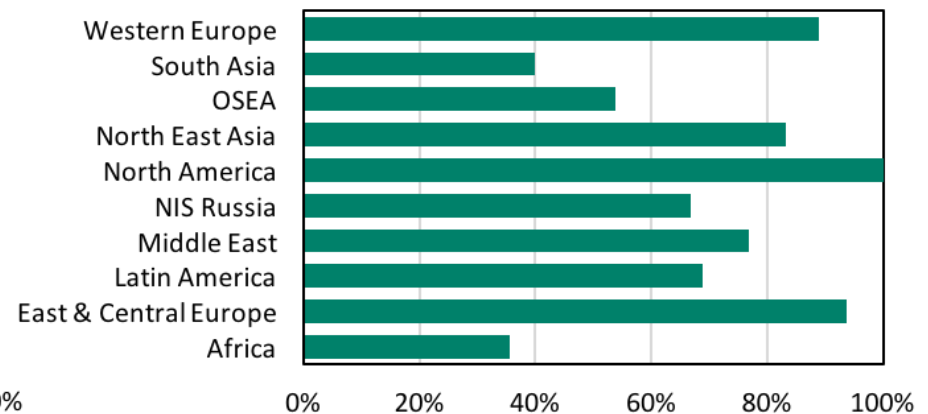
	N of countries	Total population (millions)	N of countries that completed the survey	Population for countries that completed the survey (millions)
Overall	202	7242	125	6734
ISN regions:				
Africa	55	1160	35	964
Middle East	14	225	13	223
Latin America	24	608	16	560
North & East Asia	7	1580	6	1560
South Asia	9	1710	6	1670
OSEA	26	678	13	661
East & Central Europe	20	209	17	199
NIS Russia	11	281	6	223
Western Europe	22	429	11	318
North America	14	362	2	356

# GKHA: global variability in availability of renal registries for CKD, Dialysis, Tx & AKI

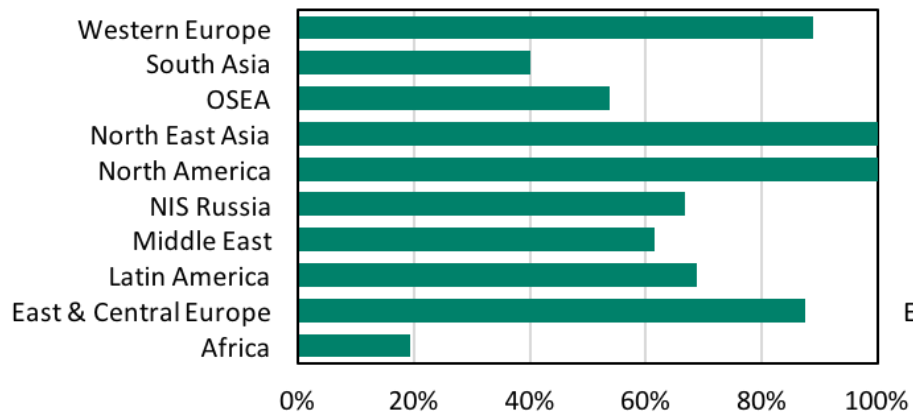
CKD



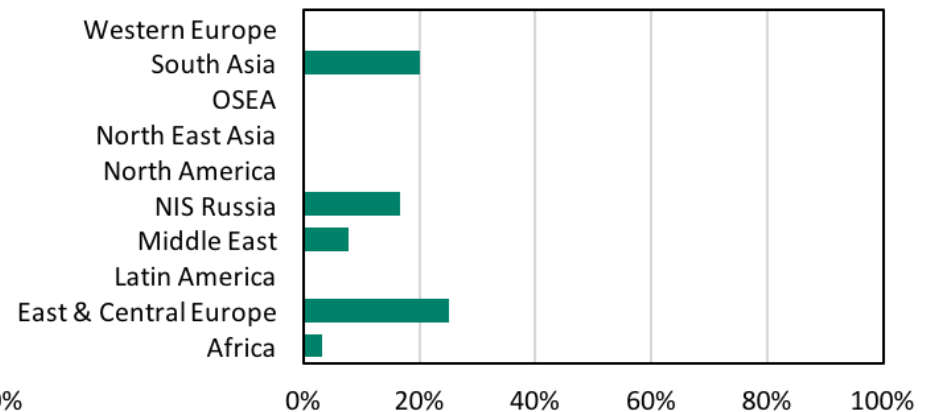
Dialysis

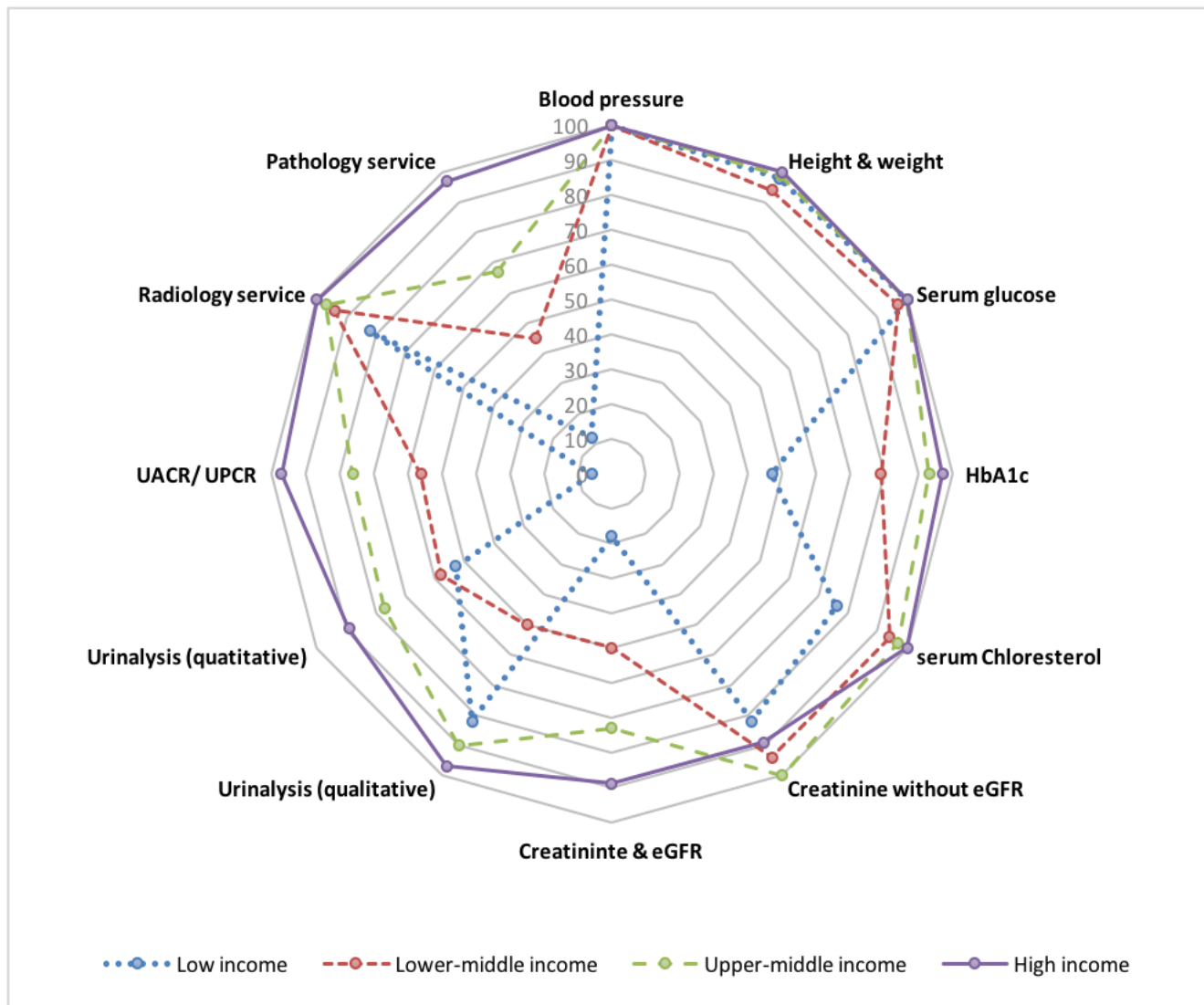


Transplantation



AKI





Healthcare services available for identification & management of CKD in secondary/tertiary care levels by World Bank income groups

# Conclusions of GKHA

**Substantial inter- and intra-regional variability in kidney care across the world**

**Important gaps in services, facilities and workforce in many countries**

*Frequent kidney health workforce shortages*

*Poor availability of healthcare services for identifying and treating kidney disease*

*Underutilisation of peritoneal dialysis*

*Low rate of public funding for kidney care*

*Lack of national strategies for kidney disease*

*Lack of kidney disease registries*

*Suboptimal advocacy for kidney disease*

*Less than half countries have research capacity*

## → Opportunities

*engage key governmental & non-governmental stakeholders to improve quality of kidney care*

*hold countries to account*

*devise policy implications for including CKD and AKI in the global health agenda*

# ISN Global Policy Forum

## Mexico, April 2017

Co-hosted by

Mexican Health Ministry

ISN

The Lancet

International representation

Ministers of Health, PAHO,  
WHO, UNESCO

Clinicians, Researchers &  
Scientists

Patient groups

## Goals

Improve outcomes for patients  
living with kidney disease

Increase awareness of  
magnitude of the problem

Increase awareness of changes  
required to impact the problem

Collective commitment to change  
Signed document

# Mexico Policy Forum

## *Key messages about CKD*

### **GLOBALLY**

*important contributor to NCD burden*

*affects up to 1 in 10 people*

*direct cause of 1.2 million deaths (2013)*

*7% of CV deaths associated with reduced kidney function (2013)*

*important risk multiplier of CV disease & diabetes burden*

*prevalence in many LMIC unknown*

*lack of access to diagnosis and poor awareness*

*therefore true global burden likely underestimated*

*since 1990, moved from 30th to 20th leading cause of global DALYs*

### **LATIN AMERICA**

*8th most common cause of death (among top 5 in 9 countries)*

*10th leading cause of global DALYs (among top 3 in 3 countries)*



# Mexico Policy Forum

## *Key commitments for CKD*

1. Work within current frameworks promoted by WHO & UN

*Sustainable Development Goals*

*Universal Health Coverage*

*Life Course approach*

2. Develop & implement public health policies to prevent & reduce risk

*maternal and child health and nutrition*

*diabetes, hypertension, obesity and tobacco consumption*

*safe work environment*

*infectious diseases*

3. Implement & support ongoing surveillance (national & regional registries)

4. Educate public and people at risk about kidney disease

5. Improve awareness of kidney disease among health care workers

6. Work towards universal health coverage

7. Support education for a skilled nephrology workforce

8. Implement early detection, prevention & treatment strategies for AKI

9. Integrate early evidence-based treatment for CKD, integrated with other NCDs

10. Implement transparent policies for equitable access to kidney disease care

11. Promote kidney transplantation

12. Support local, regional & transnational kidney research



## Research

ISN facilitates research activities to address some of the gaps identified

### **iNET CKD** : International Network of CKD Cohort Studies

- >20 cohorts with biosamples and individual level data in CKD patients

- Develop collaborative research projects to

  - Identify international similarities and differences

  - Validate findings across international boundaries

.....

### **ISN ACTs** : ISN - Advancing Clinical Trials

- Improve the ability of international community to conduct important clinical trials

- Collaborative capacity building:

  - Education and training

  - Vetting of protocols/ harmonization

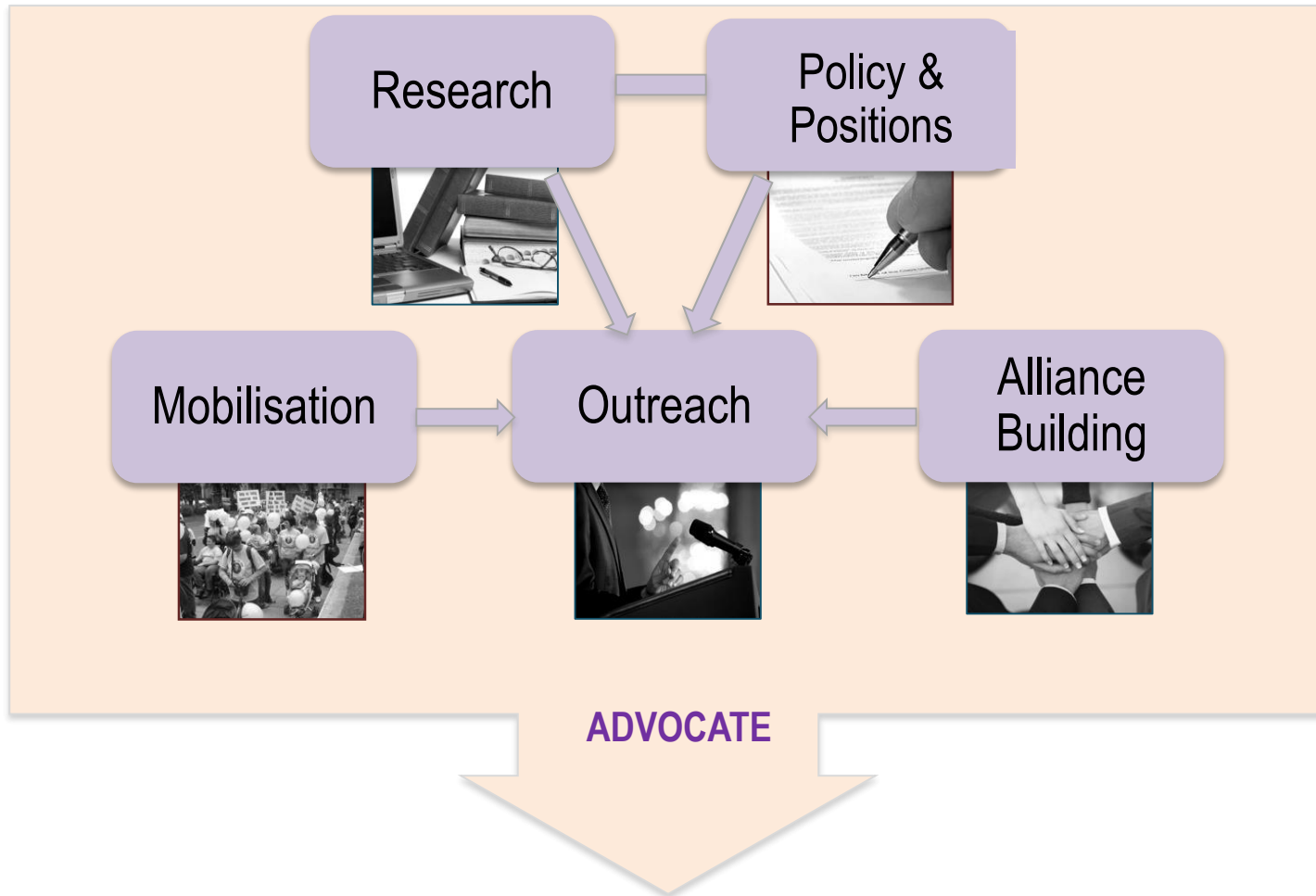
### **Clinical Research Program**

- Small seed grants to conduct research in LMIC

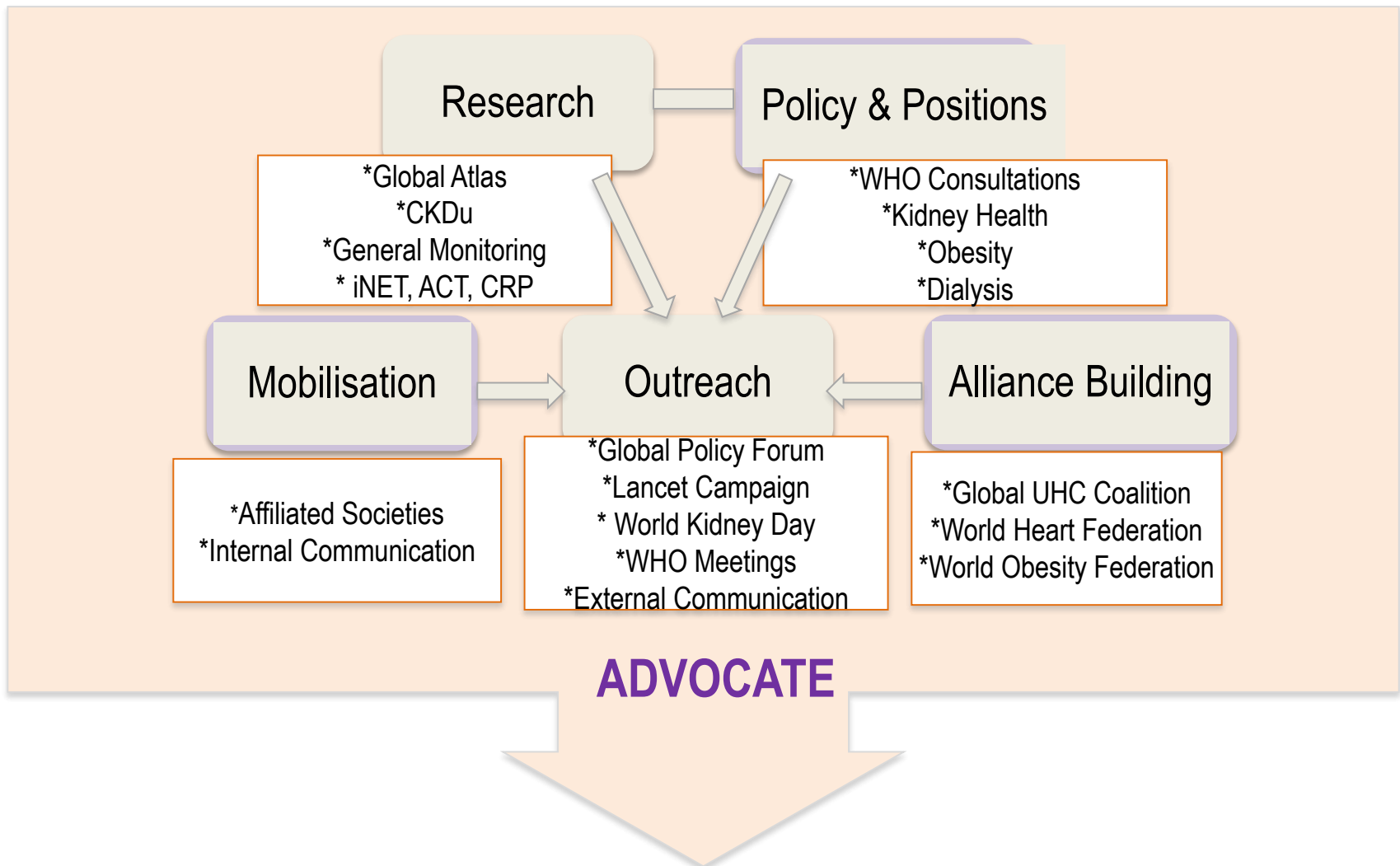
- Integrated with Oby25 and Closing the Gaps

- Mentoring and writing support

# Integrated approach to improve Kidney Health



# Current ISN activities in collaboration with partners



## Responding to a challenging global health environment

