

The Kidney Disease Screening and Awareness Program (KDSAP): Transforming Community Outreach and Inspiring Interest in Nephrology

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 - Research focus: CKD-related cardiovascular complications and organ fibrosis



Disclosures

- Founder of Kidney Disease Screening and Awareness Program (KDSAP)
- Women In Nephrology (WIN)
 - Senior Advisor
- Coalition of Asian American Transforming Opportunities in Nephrology (CATION+)
 - Member of Advisory board
- Medical Advisor:
 - National Kidney Foundation (NKF)
 - Past IgA Nephropathy Foundation
- Advisor/Consultant:
 - Co-founder, Cal-X Stars Business Accelerator Inc.
 - Instant NanoSensor, Co.Ltd.
 - CorrGene Biotechnology Co., Ltd
 - KlothoBios LTP
- International Society of Nephrology (ISN):
 - Chair, World Kidney Day Joint Steering Committee (ISN & IFKF-WKA (International Federal Kidney Foundation-World Kidney Alliance))
 - Member, World Kidney Day Steering Committee, representing North America and Caribbean
 - Member of International Society of Nephrology (ISN) Board representing North America and Caribbean
 - Past Inaugural Editor-in-Chief, ISN Academy
 - Past Member, Education Working Group (EWG)



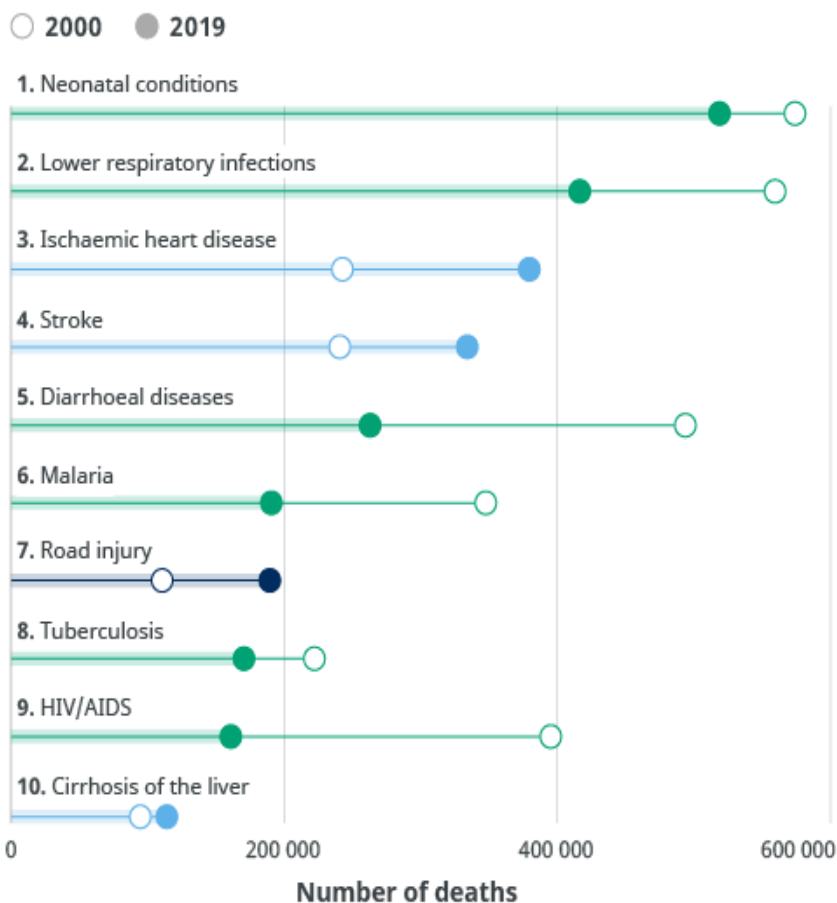
Overview

- Epidemiology of CKD
 - Inequality & Inequity exist in kidney health
- Introduction of Kidney Disease Screening and Awareness Program (KDSAP)
 - What are the overall structure & its uniqueness
 - How KDSAP addresses CKD at the community level
 - How KDSAP leverage resources effectively at the community level
 - KDSAP's in campus activities focusing on student career development
- Why & How KDSAP can be a model addressing workforce shortage in nephrology and beyond...

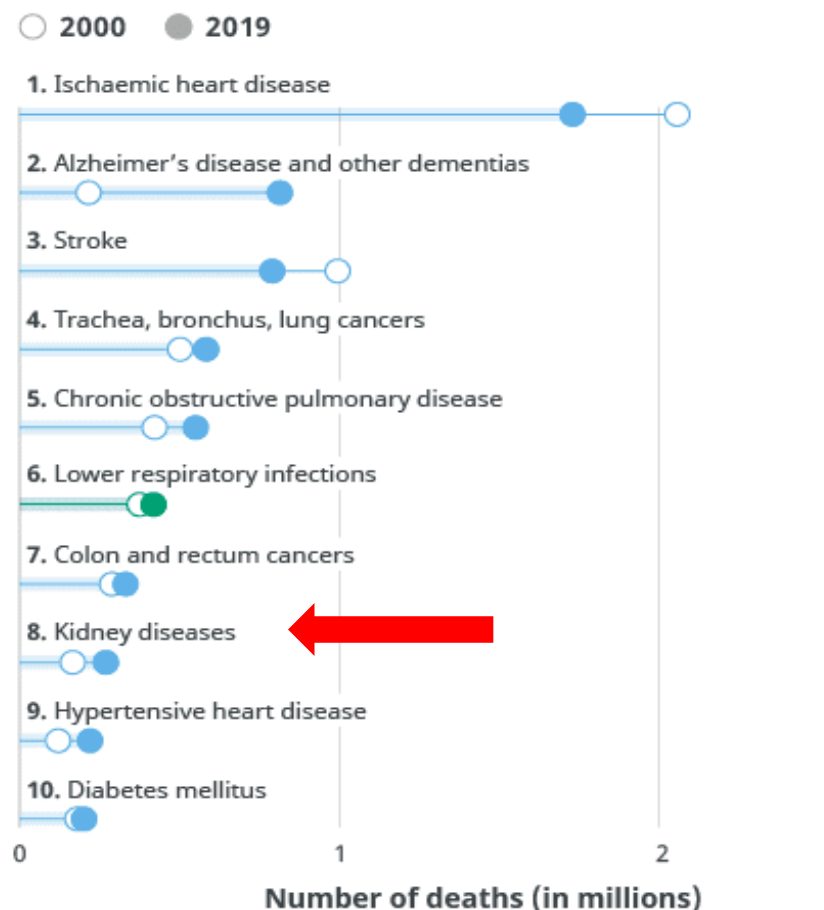


Top 10 global causes of death, 2019

Low income countries, 2019

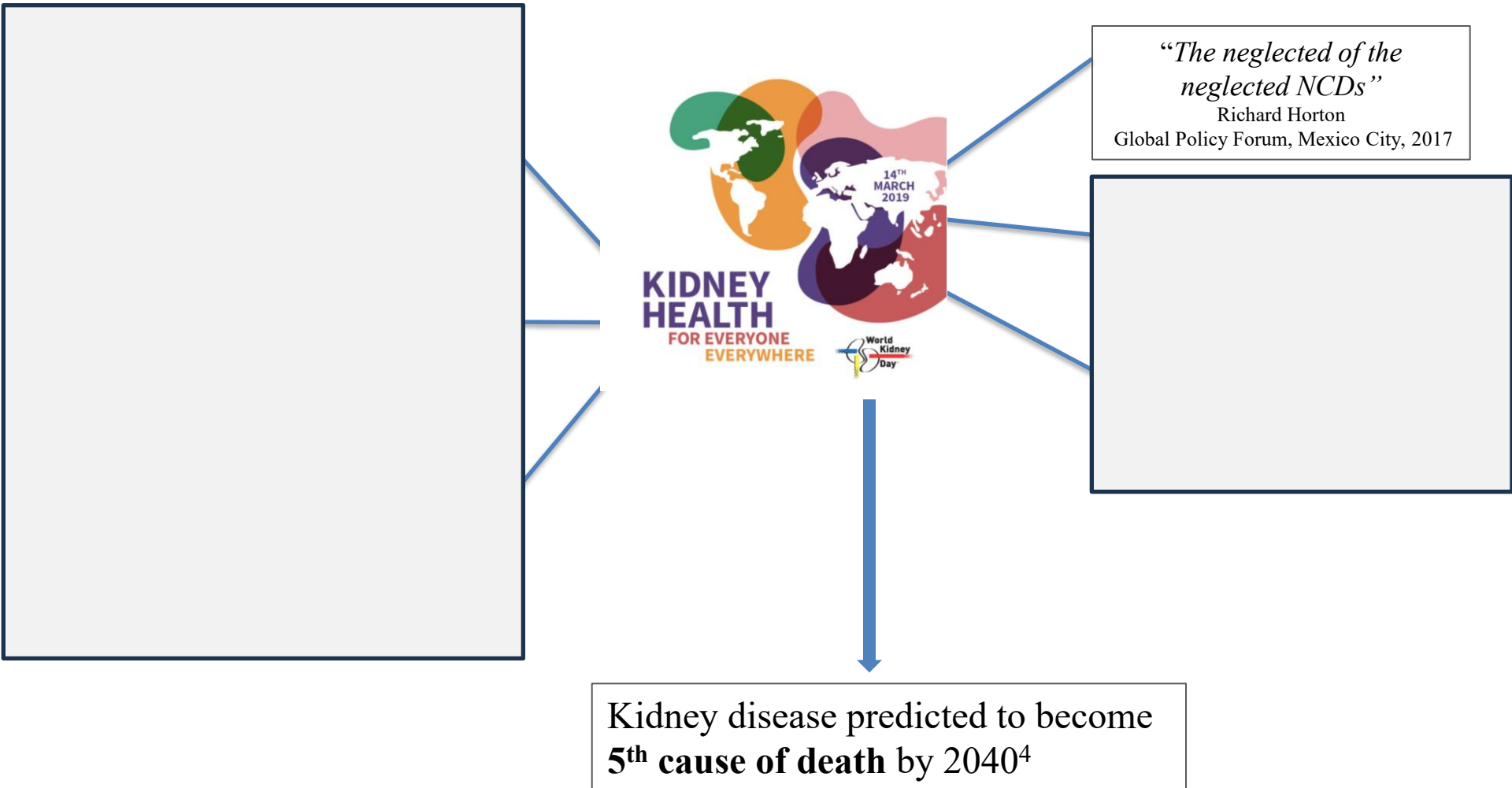


High income countries, 2019



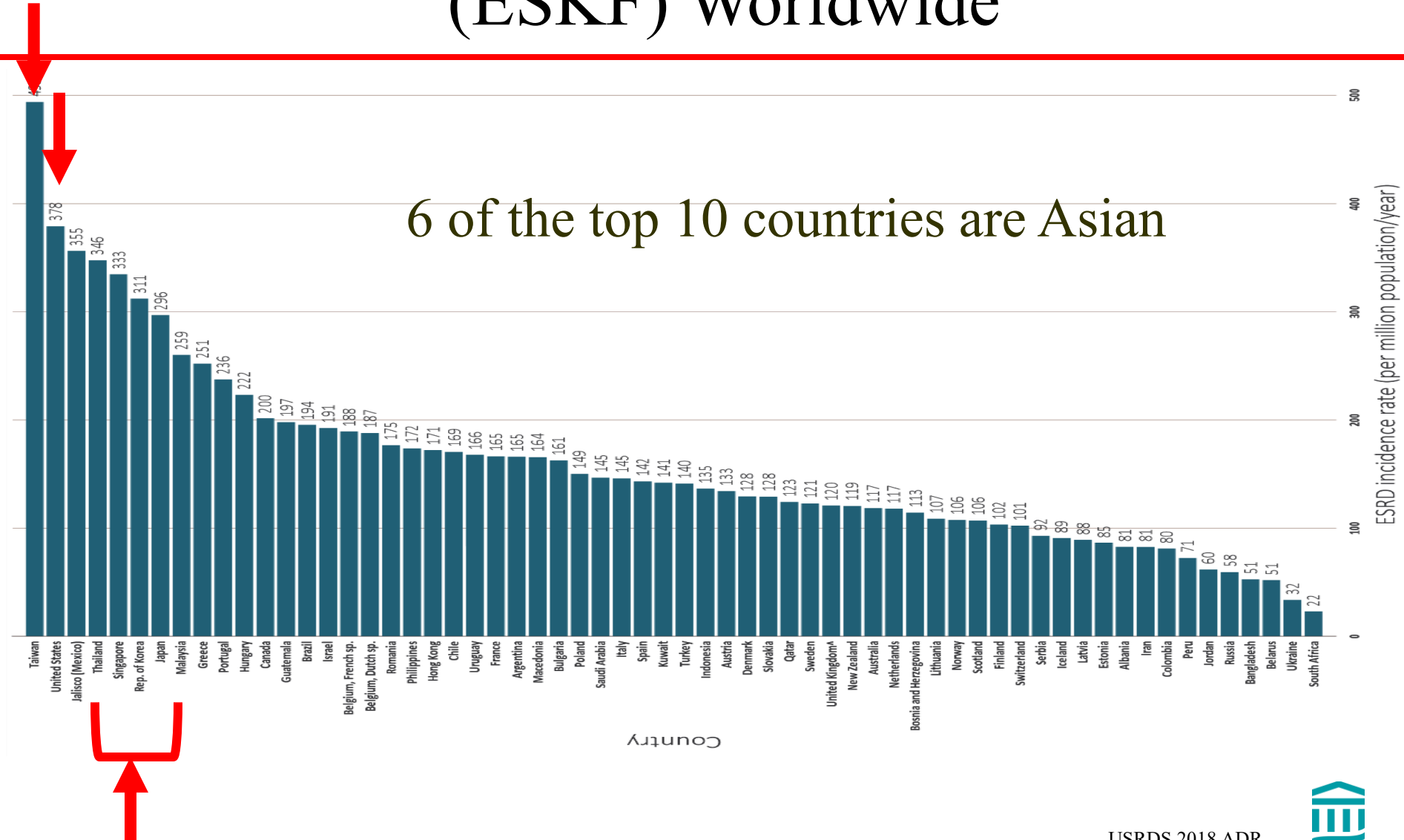
Source: WHO Global Health Estimates. Note: World Bank 2020 Income classification

Kidney disease is a global burden of health



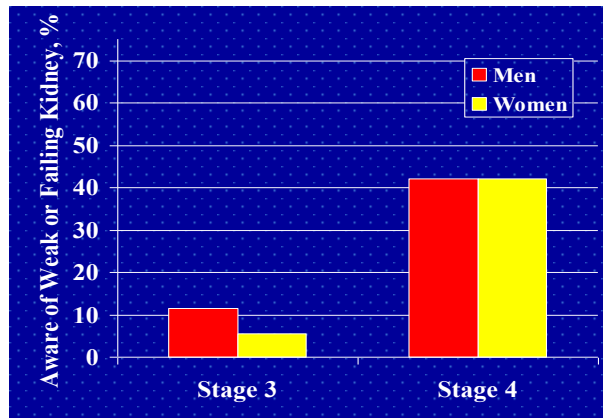
¹Mehta et al., Lancet 2015; ²Bikbov et al., Nephron, 2018; ³Liyanage et al., Lancet 2015; ⁴Foreman et al., Lancet 2018

Incidence of End Stage Kidney Failure (ESKF) Worldwide

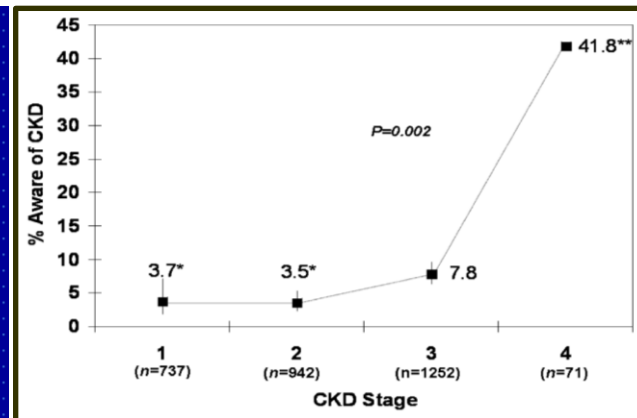


Awareness of CKD in USA

- The awareness has been alarmingly low in USA
- Better awareness among people with advanced CKD



Coresh, et al., 2007



Plantiga *et al. Arch Intern Med* 2008

- Estimate 9 in 10 adults with CKD do not know they have CKD
- About 1 in 3 adults with severe CKD do not know they have CKD



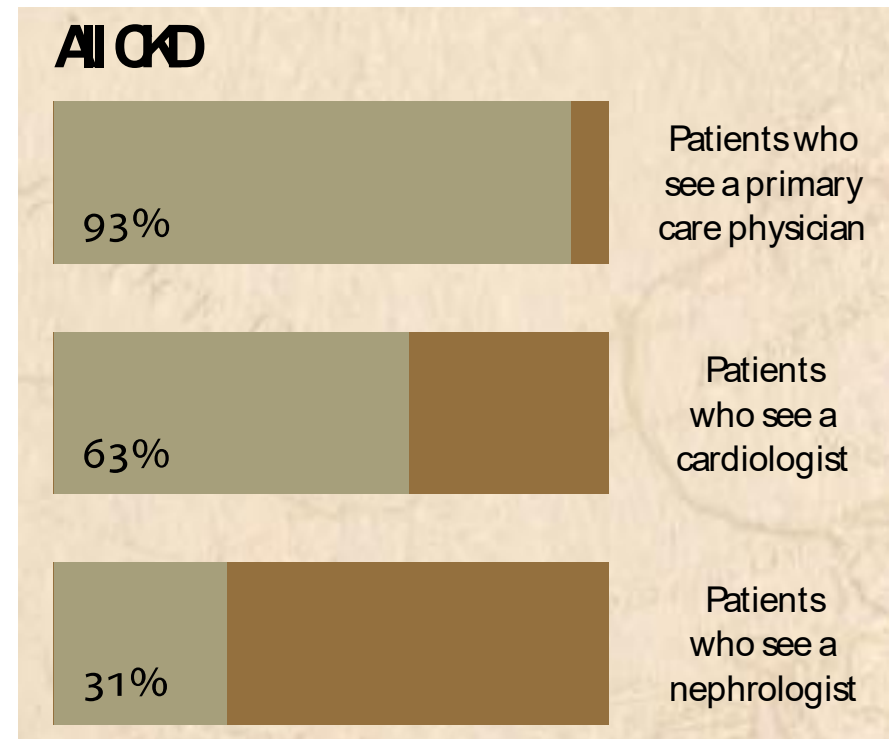
U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

CKD in USA 2023



Awareness of CKD among practitioners is equally low

- By all types of primary care physicians (PCPs): exceptionally low
- Knowledge of CKD management: very poor
 - particularly among family practitioners
- Seeing Nephrologist:
 - CKD stage 3: < 6%
 - CKD stage 4: ~ 30%

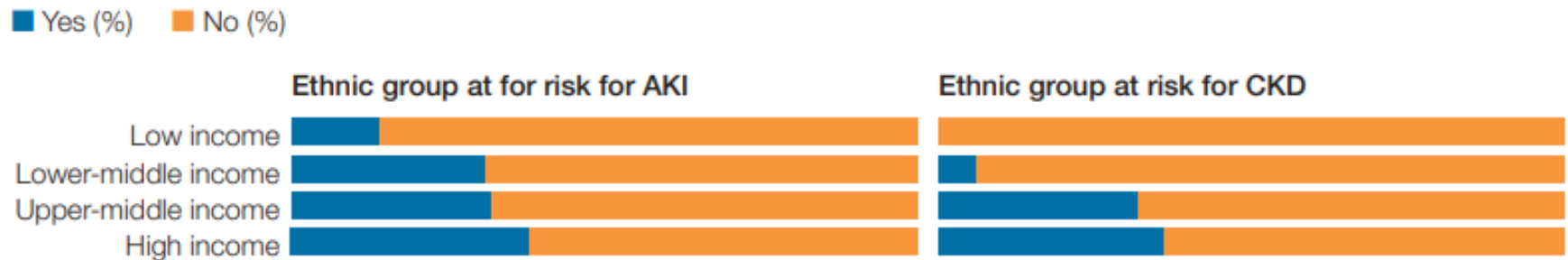


Less than 1/3rd of CKD patients see a kidney doctor



Kidney Health Inequality exists

Figure 7.10 | Proportion of countries that report an ethnic group at a higher risk for kidney disease than the general population, by World Bank income group

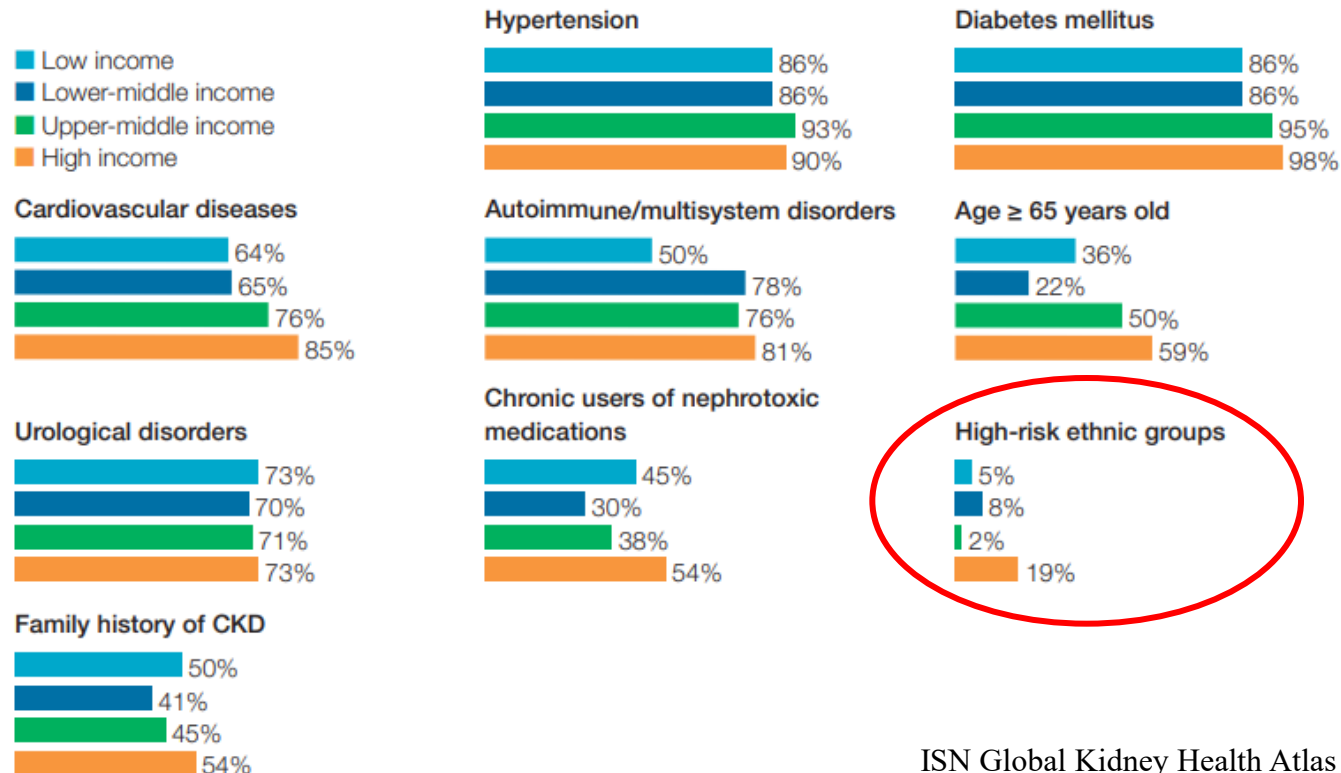


- *Ethnic group is less likely to be reported as high-risk population for kidney disease especially in low-income countries and populations*



Kidney Health Inequality exists

Fail to address CKD among the high-risk ethnic groups



ISN Global Kidney Health Atlas | 2019

Adoption of practices to identify CKD in high-risk groups by World Bank Income Group



How did I start the KDSAP?

Creating a community outreach program

- Factors preventing Asian population to seek medical care:
 - ✓ Lack of health insurance
 - ✓ Language barrier



The barriers are found beyond Asian populations

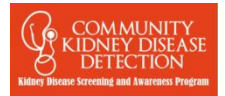


Serving the underserved, meet them where they are





Kidney Disease Screening and Awareness Program (KDSAP)



Kidney Disease Screening and Awareness Program (KDSAP)

- Created in 2008 by Dr. Li-Li Hsiao, Asian Renal Clinic at Brigham & Women's Hospital, Harvard Medical School (www.kdsap.org)
- First chapter registered at Harvard college
- Target volunteers are college students ←
- Student-run organization ←



KDSAP

Student Career Development: Cultivate interest in Nephrology

**COMMUNITY
KIDNEY DISEASE
DETECTION**

Community Outreach:

Community Kidney Disease Detection Program (CKDD)

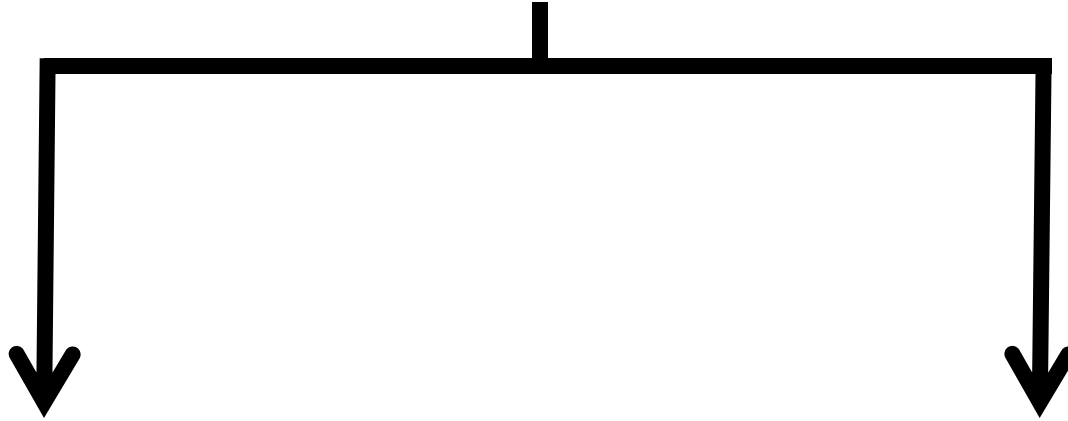
- **Health Screenings**
- **Health Education**

In Campus Activities:

- **Leadership**
- **Mentorship and Career Exposure**
 - **Seminar Series**
 - **Discussion Panels**
 - **Clinical Shadowing**
 - **Hierarchical Mentoring**

KDSAP

Student Career Development: Cultivate interest in Nephrology



Community Outreach:

**Community Kidney
Disease Detection
Program (CKDD)**

- **Health Screenings**
- **Health Education**

KDSAP Community Branch: Community Kidney Disease Detection (CKDD)

- To “serve” the community
 - Needs assessment
- “Mobility”
 - The CKDD enters the community and meets participants where they are
- “Provision”
 - Provide *free* kidney health screening for early detection of CKD risk factors
- “Raising awareness”
 - To increase community awareness of CKD by providing education of the condition using specific dialects for designated communities;
- “Partnership”
 - by working closely with community leaders and local physicians.



Needs Assessment: *Be Educated by the community*



Chinatown Autumn Festival, Boston, MA.
August 14, 2009



Free Community Kidney Health Screening



1. Registration



2. Questionnaire



3. Health Education



5. Blood Pressure



4. BMI + Waist Circ.



6. Urinalysis



7. Blood Glucose



8. Consultation



Chinese Elder Home



Harvard Medical School volunteer measures blood pressure of a community member at Lexington Chinese School screening event. *November 2008 Lexington, MA*



KDSAP member records body weight of a senior citizen at Framingham Senior Apartment screening event. *December 2007 Framingham, MA*



KDSAP volunteer translates medical history questionnaire to community member at registration of Framingham Senior Apartment screening event. *December 2007 Framingham, MA*



KDSAP members check over physical measurements at Framingham Senior Apartment screening event. *December 2007 Framingham, MA*



KEEP staff trains volunteers on how to use the urine analysis machines at Framingham Senior Apartment screening event. *December 2007 Framingham, MA*



Community members and volunteers enjoy delicious home recipes at potluck after screening at Framingham Senior Apartment screening event. *December 2007 Framingham, MA*



KDSAP in Chinatown Boston



CCBA
90 Tyler Street
October 3, 2009



Korean Church



Lecture on Kidney Disease prevention and awareness



Free kidney health screening



African-American Community



Kidney Health Screening in the African-American Community in YMCA, Roxbury, MA.



Homeless Shelter



Harvard KDSAP members serving people in homeless shelter, Worcester MA



Lectures on Kidney Disease Prevention and Awareness



Chinese Church



Cultural Center



Restaurant Workers

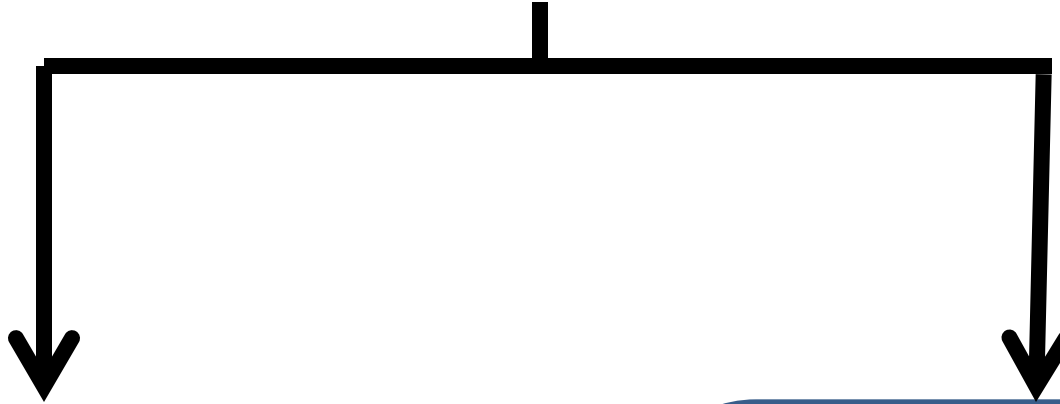


Elder weekly meeting



KDSAP

Student Career Development: Cultivate interest in Nephrology



In Campus Activities:

- **Leadership**
- **Mentorship and Career Exposure**
 - **Seminar Series**
 - **Discussion Panels**
 - **Clinical Shadowing**
 - **Hierarchical Mentoring**

KDSAP In Campus Activities: Student Career Development

- **“Meet the Professor/Doctor” colloquium**
 - Allow students to meet nephrologists over informal settings
- **“Meet the Patient” speaker series**
 - Students can meet patients face-to-face and learn about their kidney diseases and about the doctor-patient relationship
- **Universal Precaution and Professionalism (UPP) Training**
 - This is a mandatory session, which train volunteers to exercise professionalism
- **Blood Pressure Training Workshops**
 - Students can learn how to take accurate BP



Student Career Development: Hierarchical Mentorship

The unique feature of KDSAP:

- It provides the scaffold for hierarchical mentoring between nephrologists, medical students, undergraduates, and high school students.

:



Medical student teaching college student on urinalysis.



A student taking blood pressure for participants at one of the Boston Chinatown festivals.



Kidney Disease Screening and Awareness Program (KDSAP)

Chapters: 30 + chapters nationwide and going.....

- Harvard College (MA)
- Rutgers University (NJ)
- University of Pittsburgh (PA)
- Amherst College (MA)
- University of California, Berkeley (CA)
- Boston University (MA)
- University of Connecticut (CT)
- University of Michigan (MI)
- Johns Hopkins University (MD)
- Cornell University (NY)
- University of Pennsylvania (PA)
- University of Southern California (CA)
- Emory University (GA)
- Augustana University (SD)
- Brown University (RI)
- University of Alabama (AL)
- University of Oklahoma (OK)
- University of Virginia (VA)
- University of California, LA (UCLA) (CA)
- University of Minnesota, Twin Cities (MN)

- Princeton University
- University of Maryland College Park (UMCP) (MD)
- Virginia Tech (VA)
- Tufts University (MA)
- Taipei Medical University (Taipei, Taiwan)
- Mackay Medical College (Taipei, Taiwan)
- Purdue University (IN)
- UT Dallas (TX)
- Carnegie Mellon University (PA)
- Dartmouth University (NH)
- University of North Carolina (NC)
- Massachusetts Institute of Technology (MA)

Approved by school, Await for KDSAP induction:

- Georgia Tech (GA)
- Columbia University (NY)

In Progress:

- U Mass (MA)
- Stanford University (CA)
- Duke University (NC)

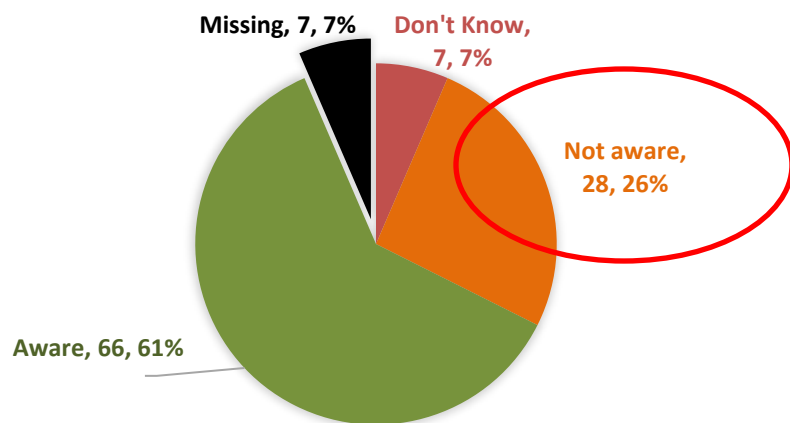
What have we learned from
community-based CKD prevention ?



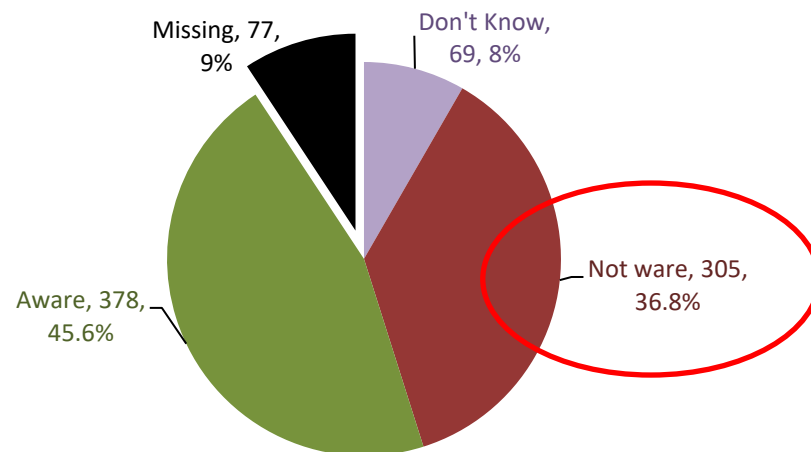
KDSAP experiences

High unawareness of DM & HTN among the KDSAP screening participants

Among 2,300 participants:



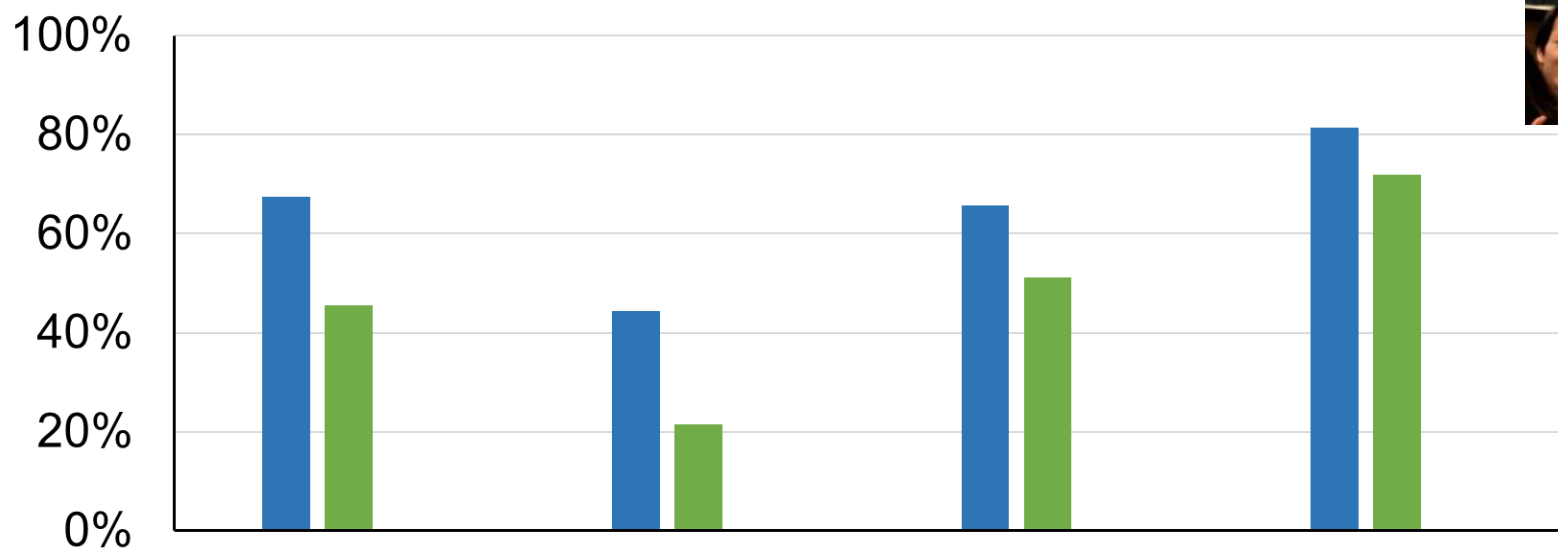
Diabetes unawareness: 26%



HTN unawareness: 36.8%

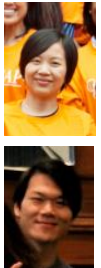
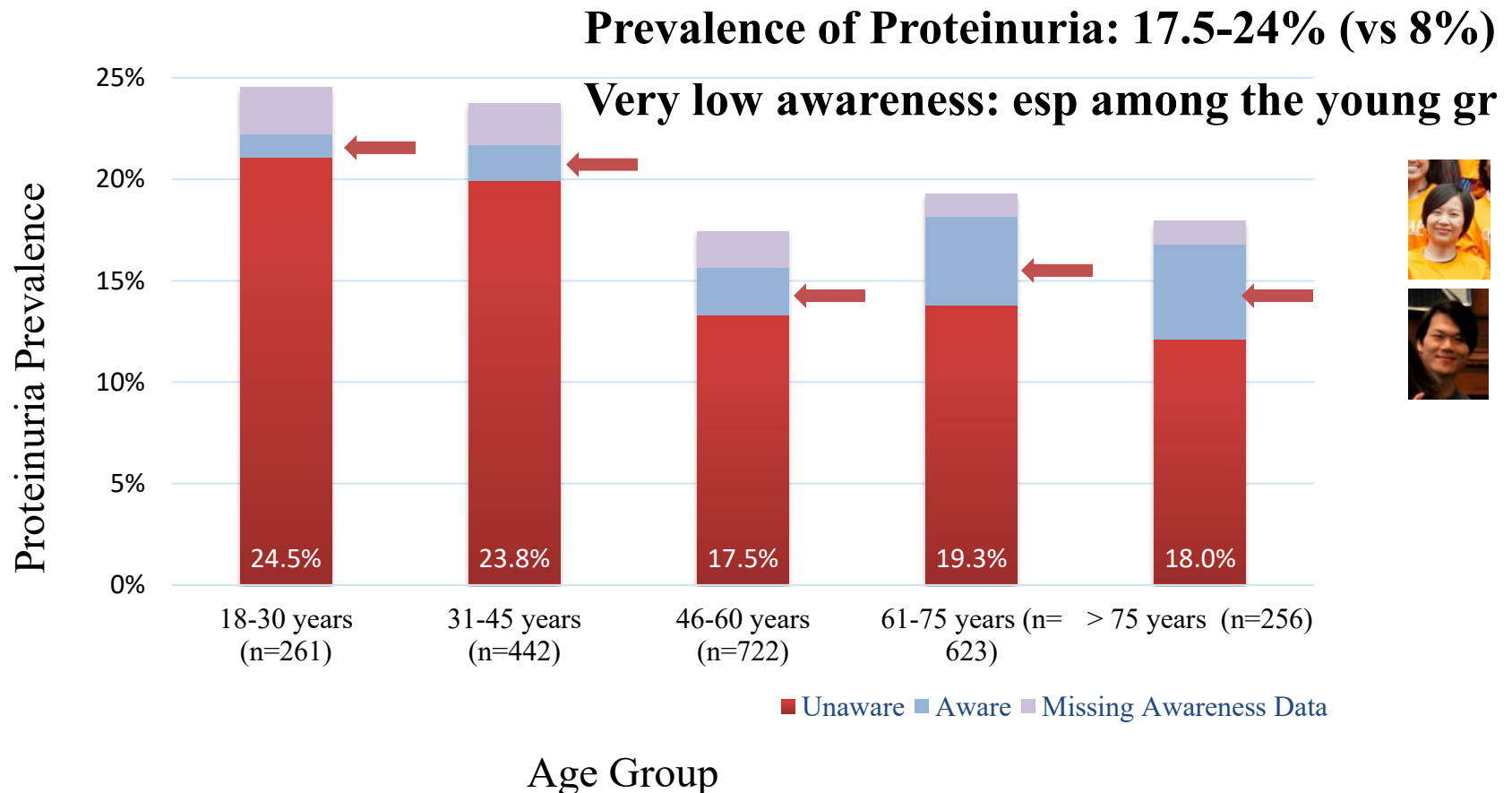


High prevalence of hypertension among the KDSAP participants when compared to NHANES



	Total	Age < 40	Age 40-59	Age ≥ 60
■ KDSAP	67.5 % (1410/2088)	44.3% (196/442)	65.6% (523/797)	81.4% (691/849)
■ NHANES	45.6%	21.4%	51.1%	71.8%

Proteinuria in the KDSAP participants in Community: High Prevalence and Low Awareness



Proteinuria/Microalbuminuria

- Prevalence: ~ 8%
 - Meta-analysis of 1.1 million individuals (Hemmelgran et al. *JAMA* 2010; Matshshita et al. *Lancet* 2010; Wen et.al. *Am J Kidney Dis* 2011)
 - Alberta Kidney Disease Network (> 920.000 Canadian) (Hemmelgran et al. *JAMA* 2010)
- Outcome:
 - Canadian study: Associated with
 - ✓ **All-cause mortality**: adjusted HR of 2.1
 - ✓ **Doubling sCr**: adjusted HR of 2.7
 - ✓ **ESRD for individuals w/initial normal eGFR** (> 60 ml/min/1.73m²): Adjusted HR of 1.7 for
 - Taiwanese study: Comparing with smoking (HR 1.55)
 - ✓ **Higher all-cause mortality**
 - Dipstick with trace proteinuria: HR 1.7
 - Dipstick with 1+ proteinuria: HR 2.31
 - ✓ **Shortening life-span**
 - Proteinuria shorten life span up to 7 years



KDSAP: Leveraging resources effectively at the community level



KDSAP:

Leveraging resources effectively at the community level

- **Universities are uniquely situated to serve the needs of urban minority populations**
 - Ethnic minorities are largely clustered in urban areas in the United States
 - a 2018 United States Economic Research Service study shows that minorities make up 43% of urban populations and only 22% of rural populations.
 - Almost two-thirds of American colleges are in urban areas.
 - University populations closely follow this minority population distribution
 - KDSAP model:
 - Mobilizes **undergraduate students** at universities
 - Host health **screenings in areas proximal to the university**
 - Allowing for the **fostering of relationships with local communities.**



KDSAP:

Leveraging resources effectively at the community level

- **Undergraduate's Local Community-Based Programs can Improve Participant Trust**
 - Implementing an effective early detection program for CKD in the community:
 - **A large barrier: a distrust of the medical system by many individuals.**
 - **One strategy to build patient trust is to eliminate language barriers between the patient and the provider**
 - KDSAP model:
 - Encourages chapters to recruit volunteers with foreign language experience



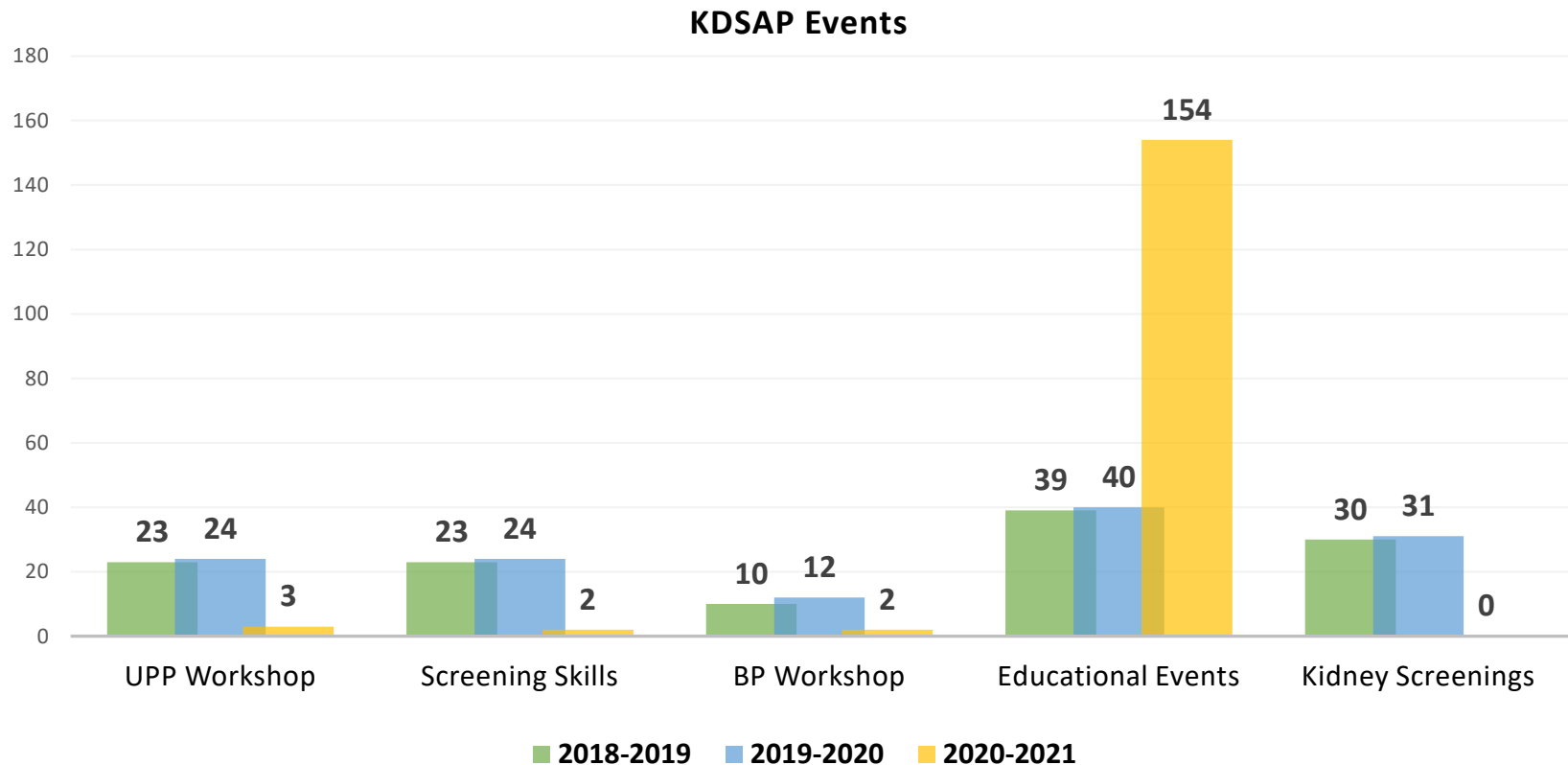
KDSAP:

Leveraging resources effectively at the community level

- **Kidney Education and CKD Screening Tools are Accessible to Volunteers With Simple Training**
 - **Accessible** to volunteers with little training
 - **Simple screening tools:** a sphygmomanometer, urinalysis machine, glucometer, measuring tape, and scale.
 - **It is inexpensive**
 - the total operational cost is ~ \$800, with an additional yearly recurring cost of \$1500 for consumable items such as glucose strips, lancets, and urine test strips. (This cost is calculated based on the assumption that one KDSAP chapter screens 200 participants in a year)



Number of KDSAP Educational Events increased during Covid



KDSAP:

Leveraging resources effectively at the community level



Leveraging Resources Effectively at the Community Level: Lessons Learned from the Kidney Disease Screening and Awareness Program



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¹Renal Division, Department of Internal Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, USA

KDSAP:

Leveraging resources effectively at the community level

- May serve as a potential model to address barriers to “share decision-making in CKD” at the community level

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COMMENTARY

Health and
Social Care in the community

WILEY



Addressing barriers to shared decision-making in chronic kidney disease in the United States: An example from a community-based screening programme

Nhu Dang BA¹ | Anthony Zhong BA² | Li-Li Hsiao MD, PhD^{2,3}

KDSAP:

Leveraging resources effectively at the community level

TABLE 1 Core Components of shared decision-making addressed through KDSAP screenings and workshops

Core components of shared decision-making [Bomhof-Roordink et al., 2019]	Examples from KDSAP
1. Learn about the patient	- Engage participants in their community, not in a hospital/clinic setting - Gather information about participants' health practices and medical history - Assess participants' understanding of CKD
2. Understand patient preferences	Provide space for participants to reflect and share their values, priorities and concerns during screenings and workshops
3. Create choice awareness	- Inform participants of their CKD screening results and methods to prevent and control disease - Educate participants about CKD treatment options
4. Describe treatment options	- Educate participants about CKD treatment options - Provide participants with sample questions to ask their physicians regarding treatment options
5. Tailor information	- Present information based on participants' levels of understanding and needs - Tailor workshops to different age groups and preferred languages
6. Deliberate	- Initiate conversations between participants and volunteers at each screening station - Deliver Q&A workshops to address participants' questions - Provide participants with sample questions to ask their physicians about their CKD status
7. Make the decision	- Provide referrals and recommendations to participants after screenings and workshops - Ensure participants retain ultimate authority over their health decisions

Including Renal
transplant & dialysis

KDSAP

Cultivate interest in nephrology

KDSAP

Cultivate interest in nephrology

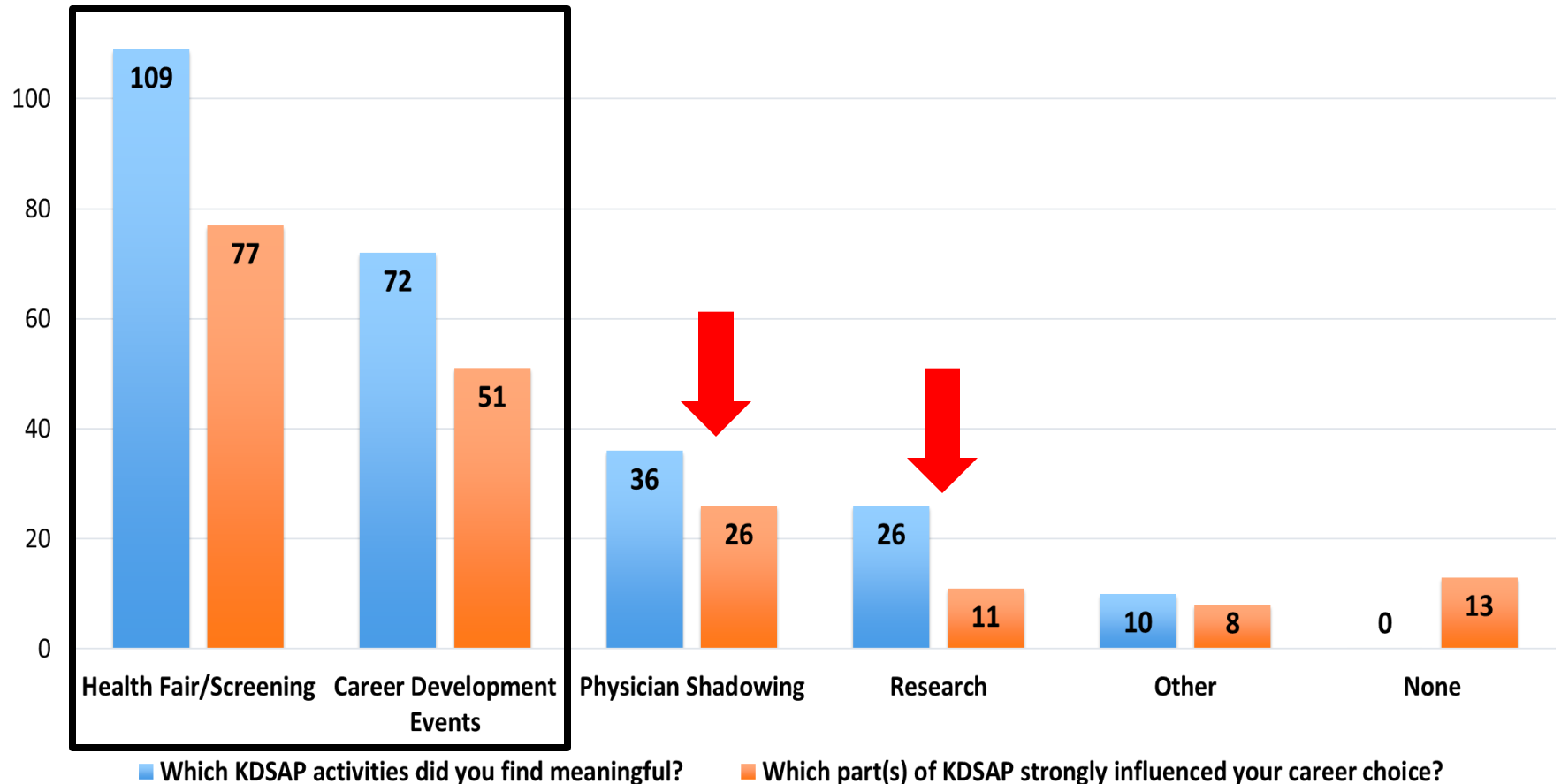
- Volunteering opportunities
- Hands-on clinical experiences
- Learn about kidney disease & risk factors
- Working side-by-side with Nephrologists

Impact of KDSAP on its members is beyond graduation

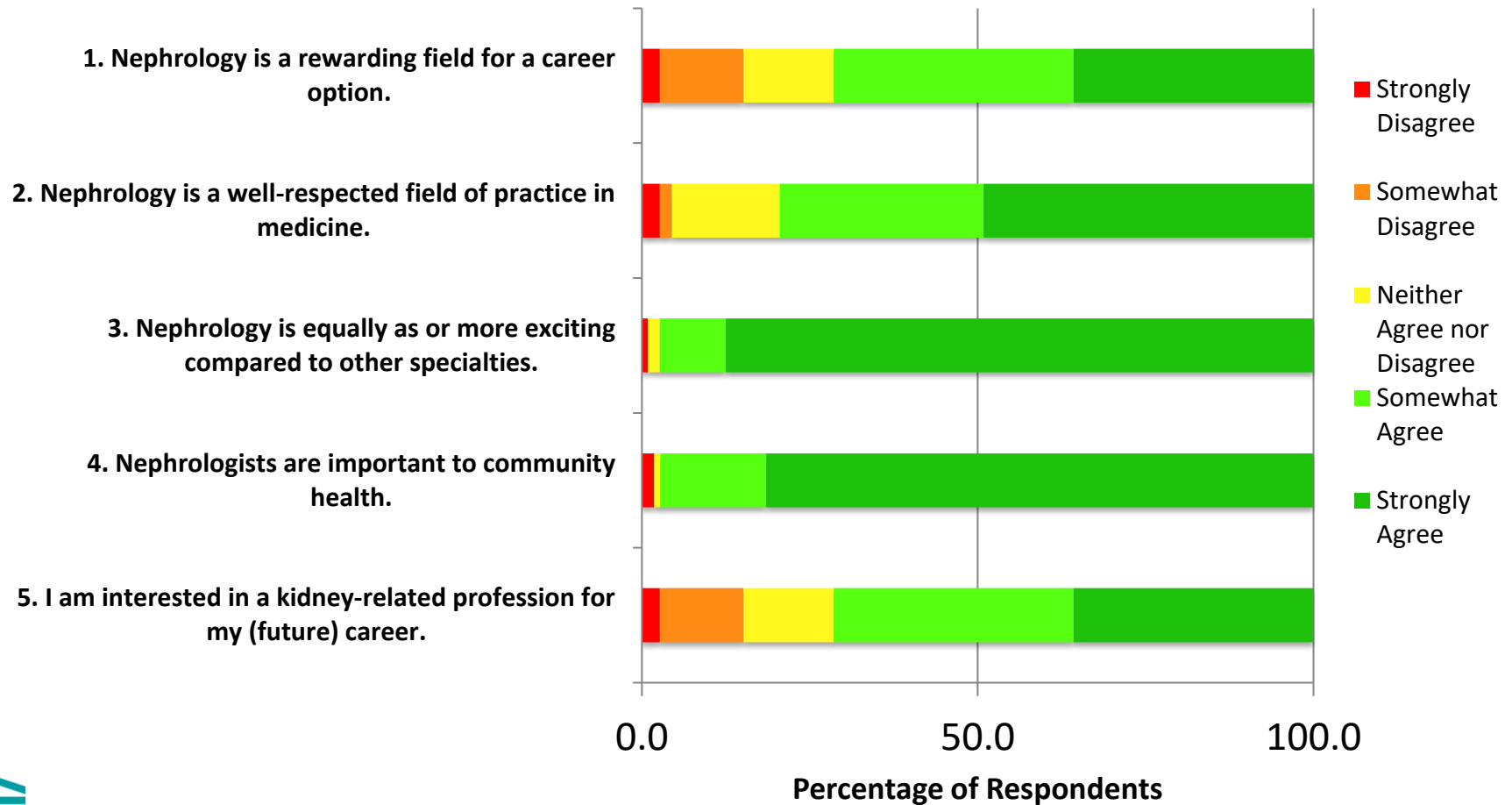
- Alumni survey after 10 years of KDSAP inception
 - Survey form was sent to 173 alumni
 - Received response from 112 (64.7%)



KDSAP activities play important roles in alumni's career Choices



KDSAP alumni's perception on nephrology are very positive



KDSAP Trainee's Perspective On nephrology



Topic	Reflection
Kidney screenings	<i>"Working at the urinalysis table, I was initially uncomfortable handling the urine samples. Once I learned about the wealth of information that we could collect from the simple urine test, however, I became amazed by the value of the tests, and handling the urine samples and working the machines became exciting."</i>
Kidney screenings	<i>"A highlight of each screening is hearing from our mentor Dr. Hsiao about an interesting case that she saw that day (Case of the day)."</i>
Career choice	<i>"While KDSAP has not made me certain that I want to be a nephrologist, it has made me much more aware of, informed about, and interested in nephrology."</i>
Career choice	<i>"To say that KDSAP had a significant impact on my life would be an understatement... my involvement in this organization has significantly influenced my decision to pursue a career in primary care..."</i>
Education	<i>"Leading Pitt KDSAP revealed a consistent relationship: the more people were educated, the more they proactively cared for their health and thus reduced their susceptibility to CKD. As a physician, I hope to emphasize this connection between health and education."</i>



CKD

used to be only progression
now there's hope for regression

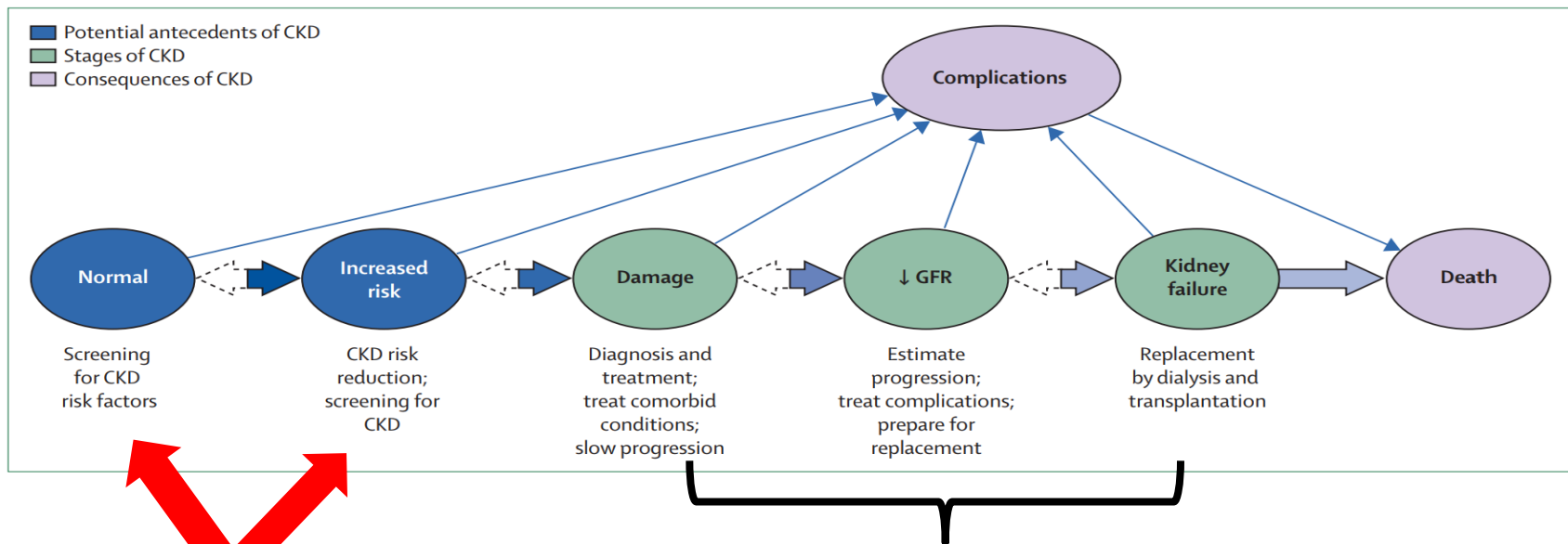


RASIs=Renin-Angiotensin System Inhibitors i.e. ACEI, ARB

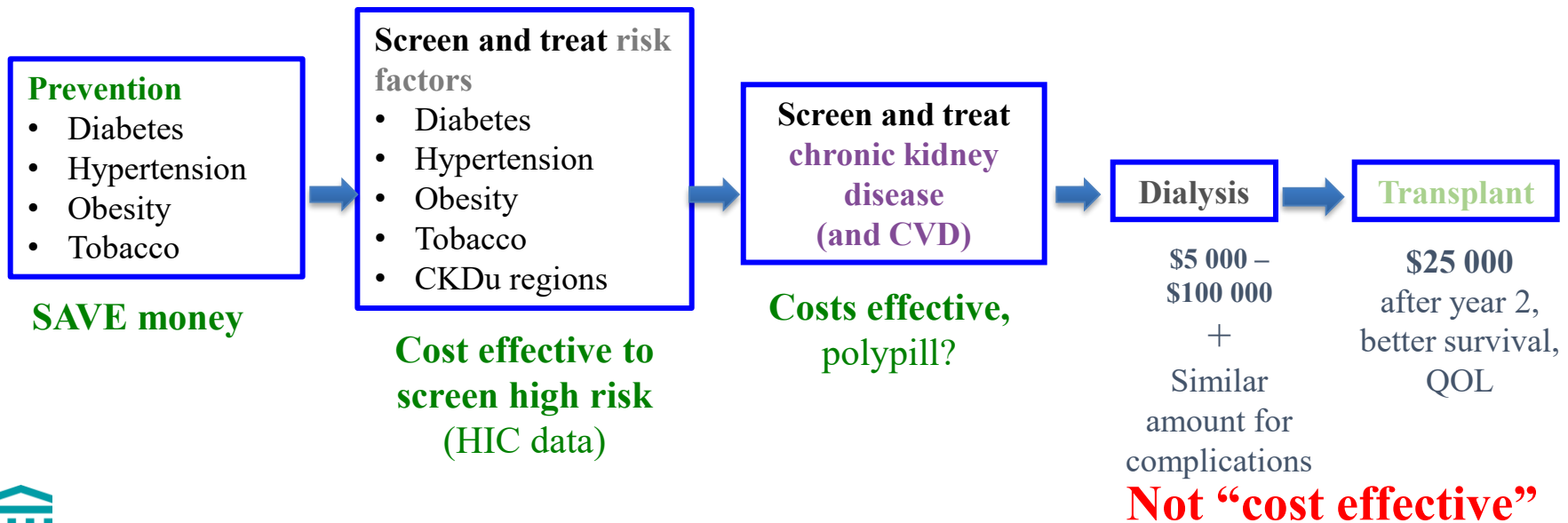
SGLT2i= Sodium-Glucose Transport Protein 2 Inhibitors i.e. Canagliflozin, Dapagliflozin, Empagliflozin

GLP-1 =Glucagon like Peptide-1 agonists i.e. Semaglutide (Ozempic, Wegovey)

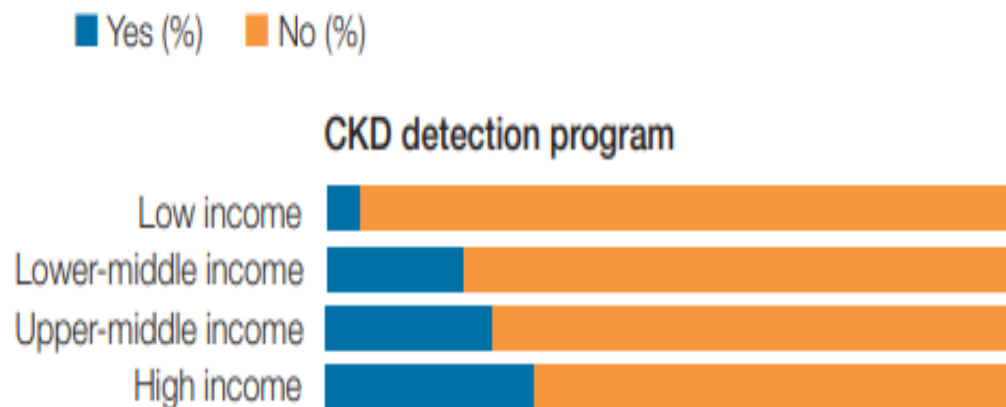
MRAs=Mineralocorticoid Receptor Antagonists i.e. Finerenone



Main focus and efforts (time, energy and money)



Screening for CKD is lacking, worldwide



2025 is a very good year for...

- The field of kidney
- The “World Kidney Day” Joint Steering Committee
- The KDSAP



2025 is a very good year for...

- *On May 23, 2025,*
 - *W.H.O. adopts global resolution making kidney health as **global priority**- the first ever for kidney!*
 - *W.H.O. officially makes “World Kidney Day” the UN “Global Public Health Day”!*



2025 is a very good year for...

- On chronic Kidney Disease W.H.O. highlights four key areas:
 - *Promote global awareness and education on CKD:*
 - *Increase public and professional awareness of CKD risk factors*
 - *Preventive actions through campaigns and policy initiatives*

KDSAP has been doing since 2008!!!



Summary

- The KDSAP's community-base approach particularly the underserved or minority populations is the right approach
- KDSAP is an effective model to address kidney disease
 - In the community level
 - To raise awareness of CKD
 - To identify at-risk individuals through its community outreach activities
- Screening for CKD risk factors in USA/high income countries can be cost effective

Recruiting undergraduate students as volunteers

- ✓ ***KDSAP model works in USA***
- ✓ ***It has proved to be a sustainable model***



Strategies of CKD Prevention

- How to early Screen CKD patients?
- How to Establish Integrated care program?

Can KDSAP serve as a
community-base model?



Strategies of CKD Prevention-How to early Screen CKD patients? How to Establish Integrated care program?

- will KDSAP work outside USA?
- If not, who will be the idea group, organization in the region to “enter” community?



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- Every KDSAP members
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