

Chronic Kidney Disease in the community:

Leveraging resources effectively, lessons learned from KDSAP

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

Disclosures

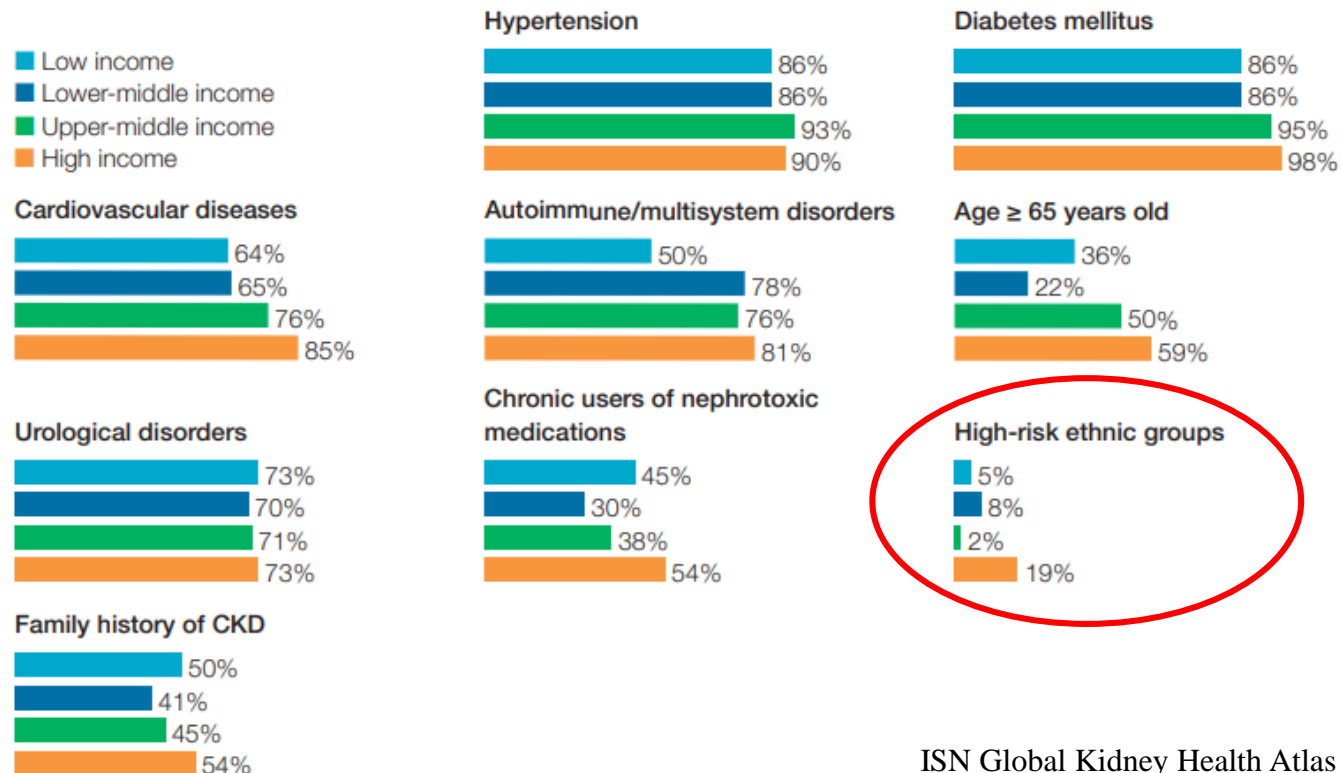
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 - Member, World Kidney Day Steering Committee, representing North America and Caribbean
 - Member of International Society of Nephrology (ISN) Board representing North America and Caribbean

Overview

- 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...

Kidney Health Inequality exists

Fail to address CKD among the high-risk ethnic groups

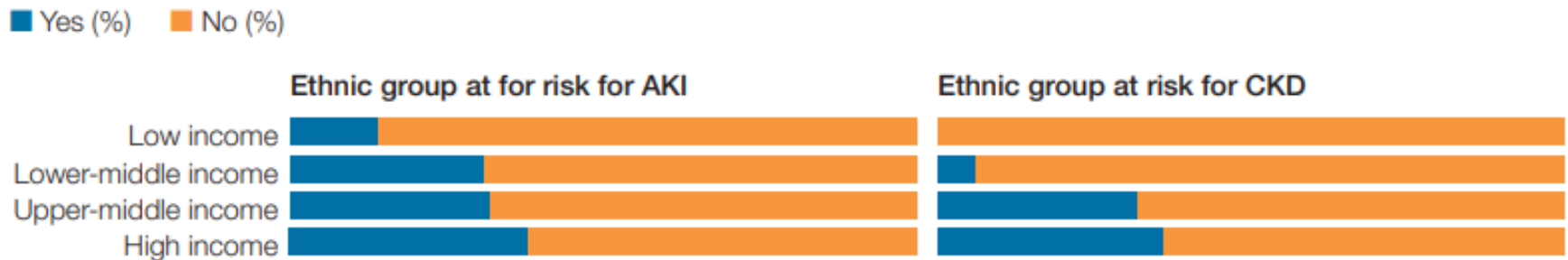


ISN Global Kidney Health Atlas | 2019

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

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

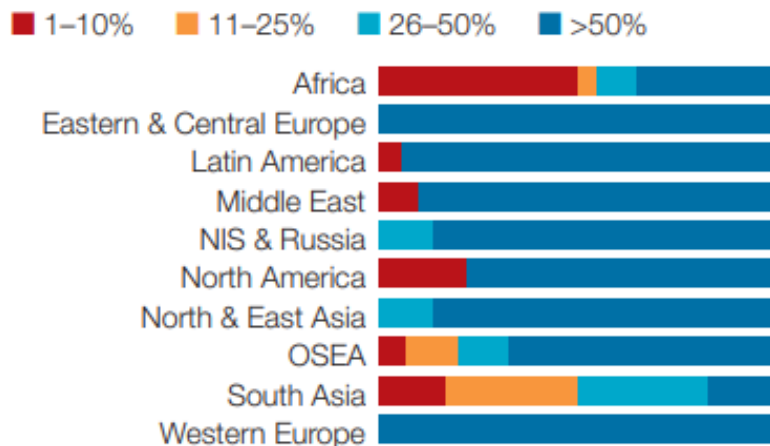


- *Ethnic group is less likely to be reported as high-risk population for kidney disease especially in low-income countries and populations*

Kidney Health Inequality

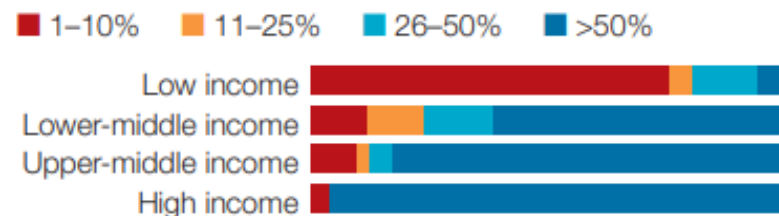
Low income is associated with less accessibility to Kidney Replacement Therapies (KRT) at the onset of ESKD

Figure 6.7 | Accessibility of KRT at the onset of ESKD, by ISN region



NIS: Newly Independent states
OSEA: Oceania and South East Asia

Figure 6.8 | Accessibility of KRT at the onset of ESKD, by World Bank income group



Kidney health inequalities

The Facts

UK

PEOPLE FROM LOWER SOCIO-ECONOMIC GROUPS ARE MORE LIKELY TO:

**DEVELOP
CHRONIC
KIDNEY
DISEASE**



**PROGRESS
FASTER
TOWARDS
KIDNEY FAILURE**



**DIE EARLIER
WITH CHRONIC
KIDNEY
DISEASE**

**KIDNEY DISEASE MAY ALSO CONTRIBUTE
TO SOCIAL DEPRIVATION**



PEOPLE FROM BLACK, ASIAN AND MINORITY ETHNIC POPULATIONS



**ARE MORE LIKELY
TO PROGRESS FASTER
TOWARDS KIDNEY FAILURE**



**ARE LESS LIKELY
TO RECEIVE A
KIDNEY TRANSPLANT**

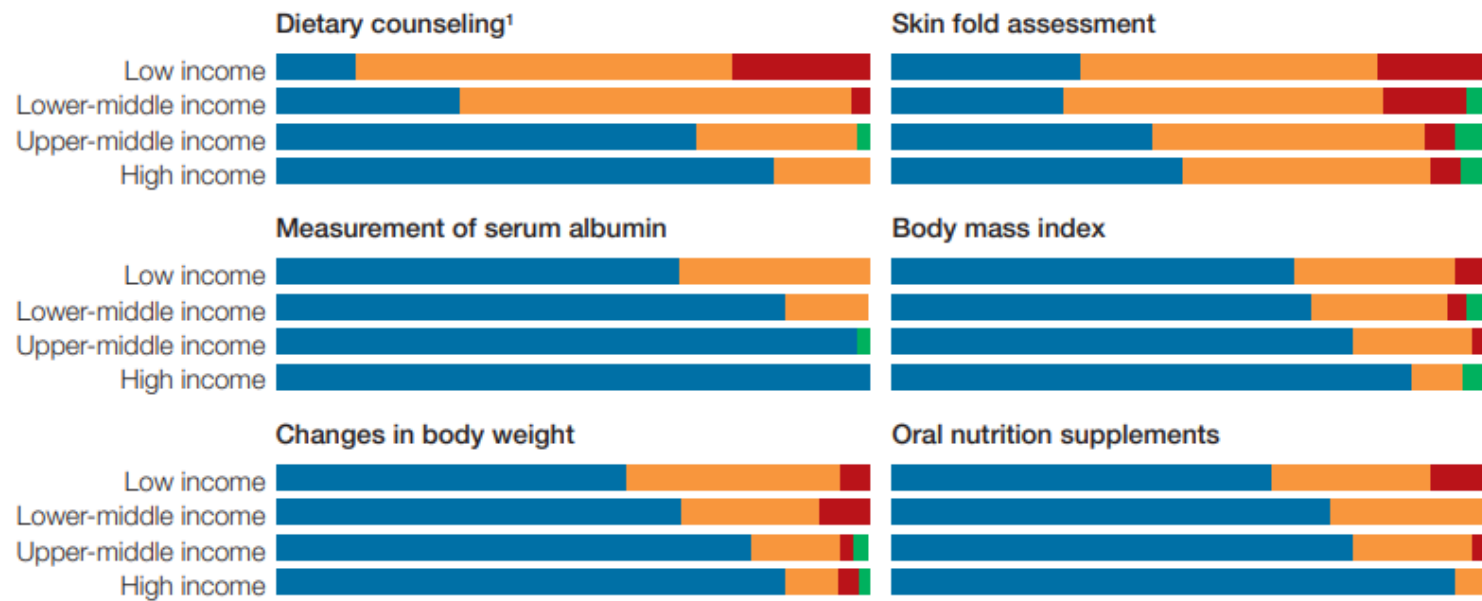


Kidney Health Inequality

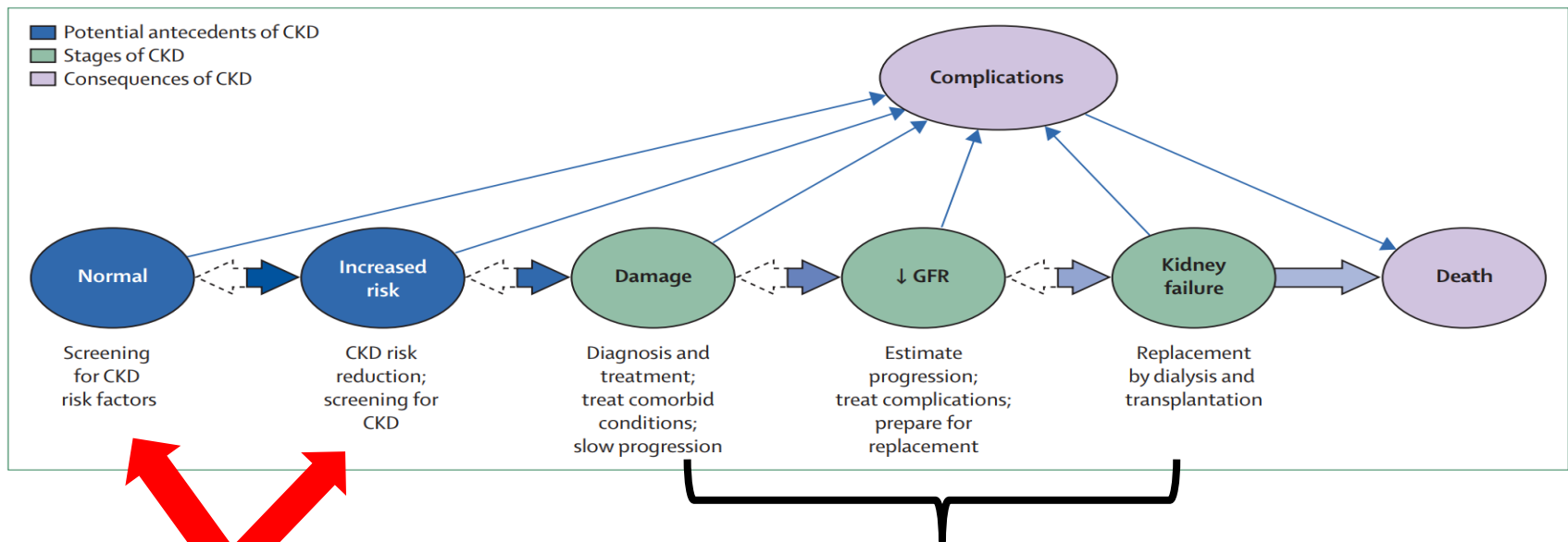
Less nutritional services for kidney care in low-income countries

Figure 6.29 | Availability of nutritional services for kidney care, by World Bank income group

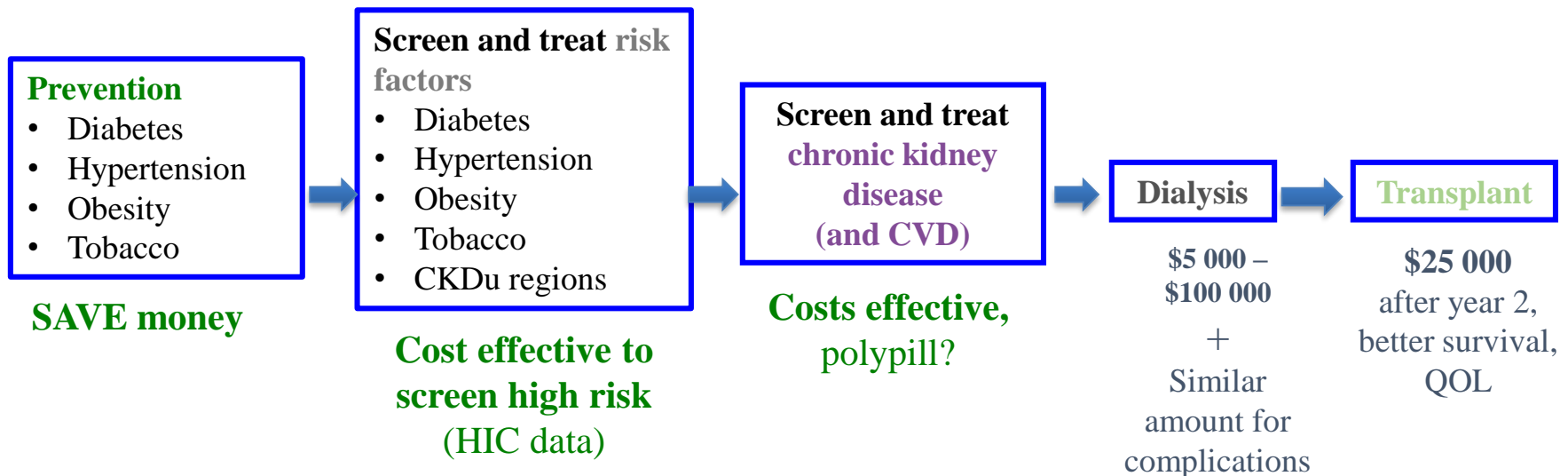
■ Generally available (%) ■ Generally not available (%) ■ Never available (%) ■ Unknown (%)



¹ By a person trained in nutrition.

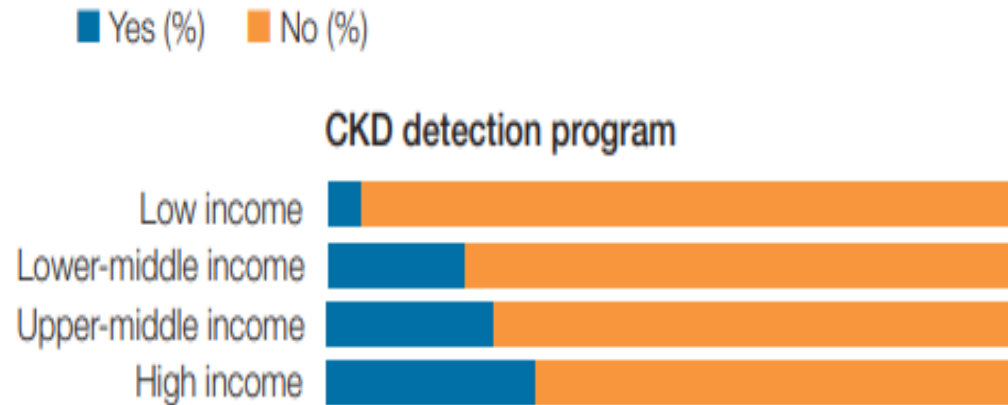


Main focus and efforts (time, energy and money)



Not “cost effective”

Screening for CKD is lacking, worldwide







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:

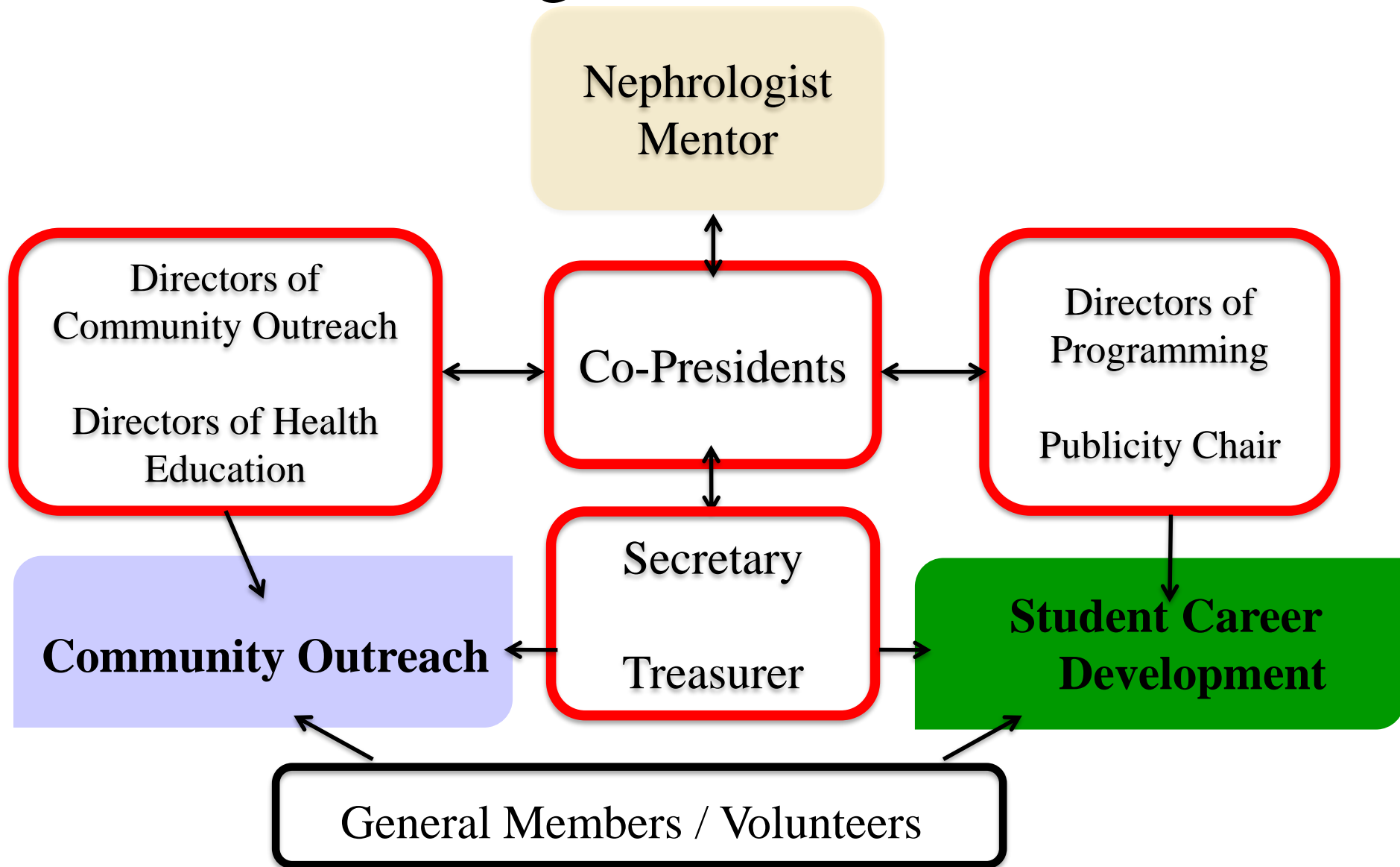
Community Kidney Disease Detection Program (CKDD)

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

In Campus Activities:

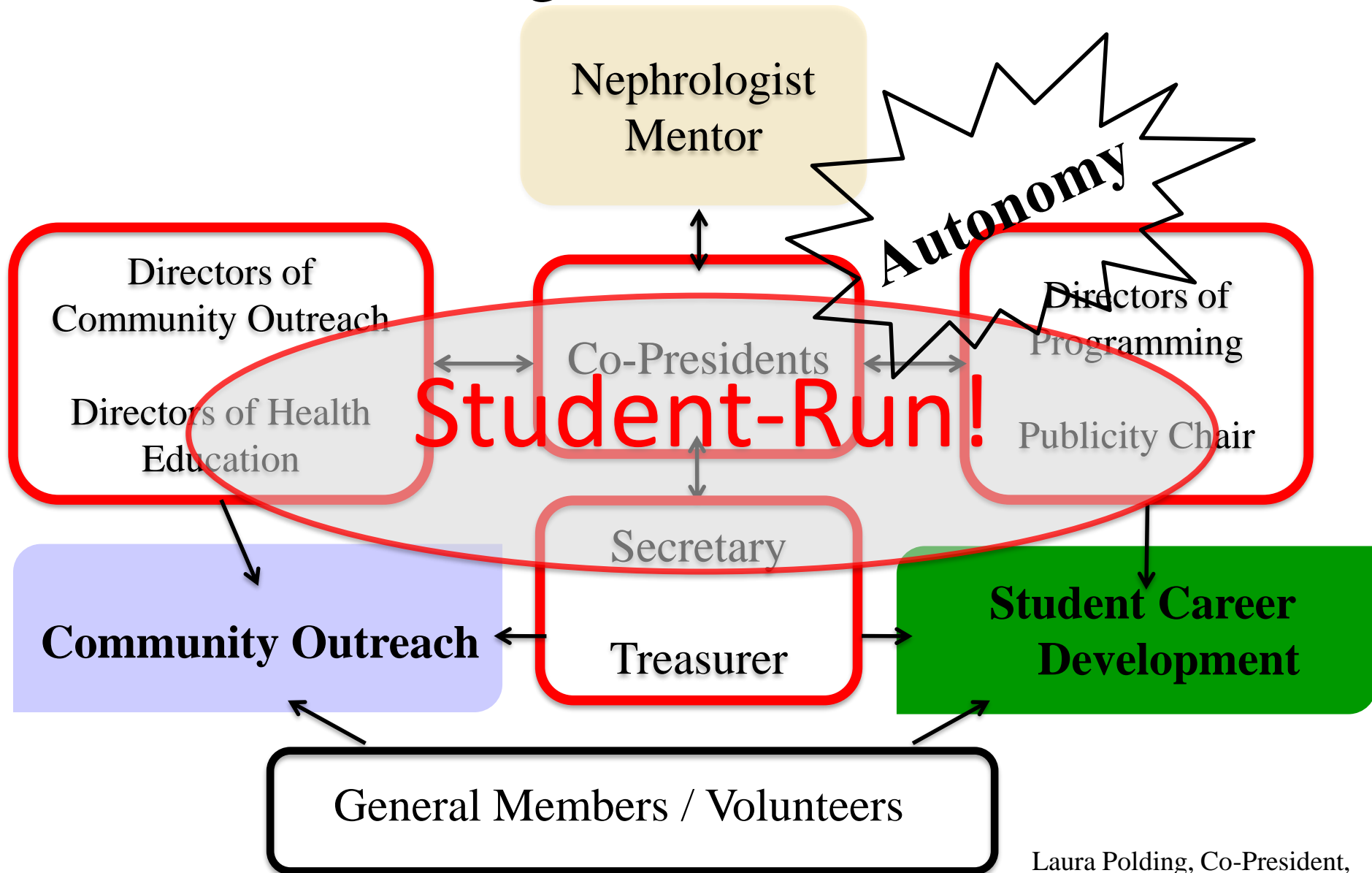
- **Leadership**
- **Mentorship and Career Exposure**
 - **Seminar Series**
 - **Discussion Panels**
 - **Clinical Shadowing**
 - **Hierarchical Mentoring**

KDSAP Organizational Structure



Laura Polding, Co-President,
Harvard College Chapter

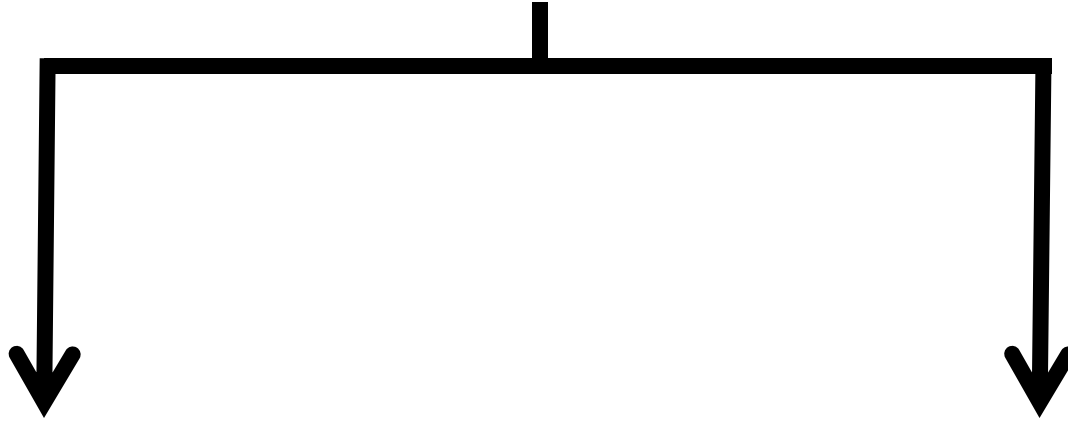
KDSAP Organizational Structure



Laura Polding, Co-President,
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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



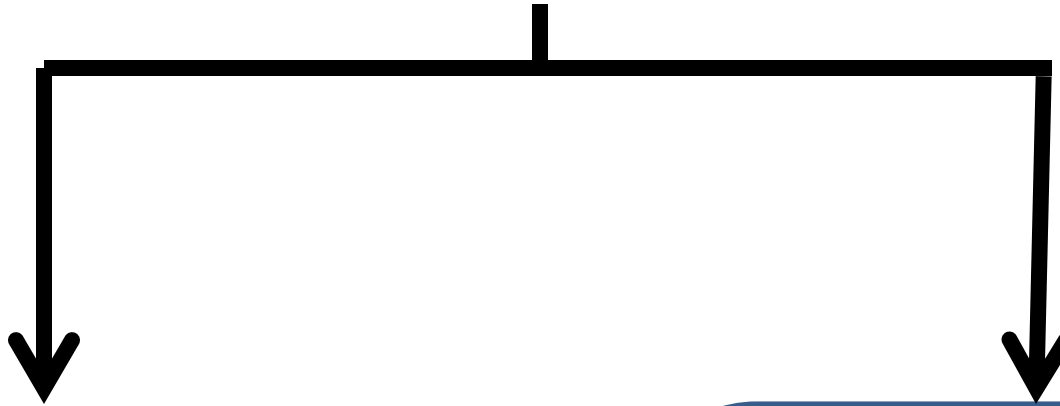
Restaurant Workers



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**

Student Career Development:

Leadership within the organization

Serving as a board member:

- Co-presidents
- Secretary
- Treasurer
- Directors of Community Outreach
- Directors of Health Education
- Directors of Programming
- Publicity Affair

*Develops unique and specific skill sets that would
prepare students for their future careers*

Student Career Development: Mentorship and Career Exposure

- **“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



Universal Precaution and Professionalism (UPP)

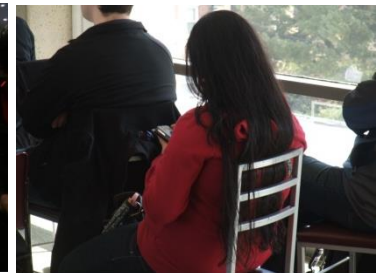
1. Infection Control

- *Standard Precautions: Hand hygiene; One glove policy*
- Universal Precautions and Bloodborne Pathogens
- Preventing Needlestick and Sharps Injuries

2. Acquire skills essential to practicing medicine

- *Concept of HIPAA*
- Operating glucometer, Urine machine, manual BP & BMI

3. Medical Professionalism



Blood Pressure Training

- Recruit Renal fellows as instructors
- Once per semester
- Not mandatory: only those who are certified are allowed to work at BP station during screening in the community



Kidney Disease Screening and Awareness Program (KDSAP)

Chapters: 28 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)
- Carnegie Mellon University (PA)
- University of Connecticut (CT)
- University of Michigan (MI)
- Johns Hopkins University (MD)
- Tufts University (MA)
- 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 Maryland College Park (UMCP) (MD)
- Utah Valley University (UT)
- University of Texas at Dallas (TX)
- University of Texas at Austin (TX)
- University of Minnesota, Twin Cities (MN)
- Dartmouth University (NH)
- University of Florida

In Progress:

- Stanford University (CA)
- Georgia Tech (GA)
- Spellman University (GA)
- Medgar Evers College (NY)
- University of Colorado (CO)
- Duke University (NC)
- Massachusetts Institute of Technology (MA)

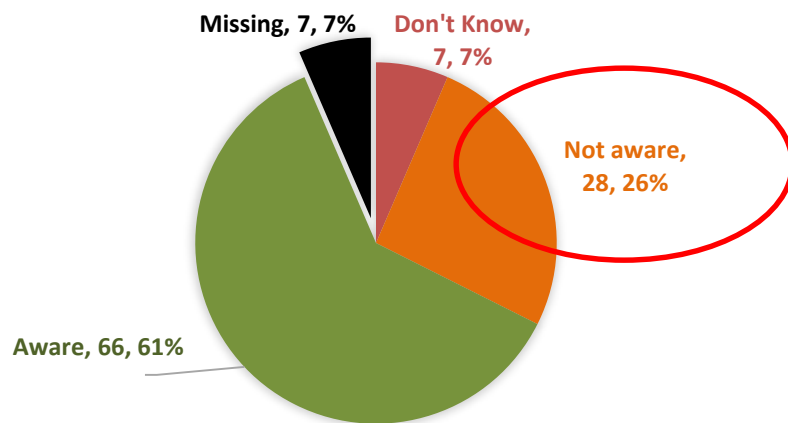
What have we learned from
community-based CKD prevention ?



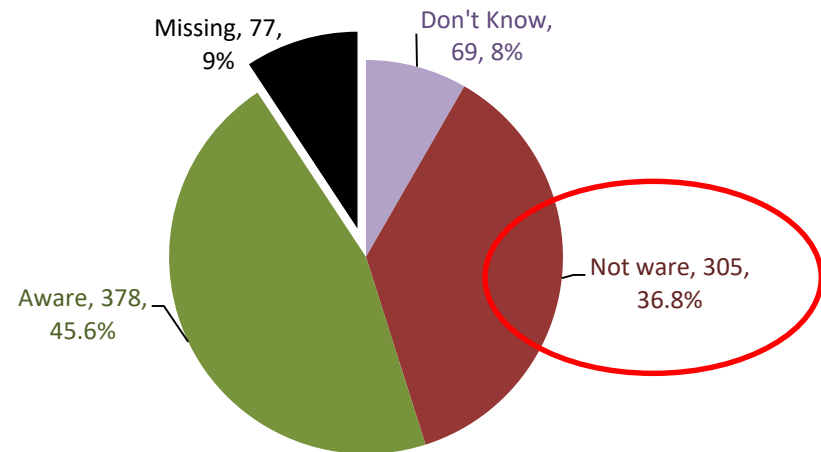
KDSAP experiences

High unawareness of DM & HTN among the KDSAP screening participants

Among 2,300 participants:

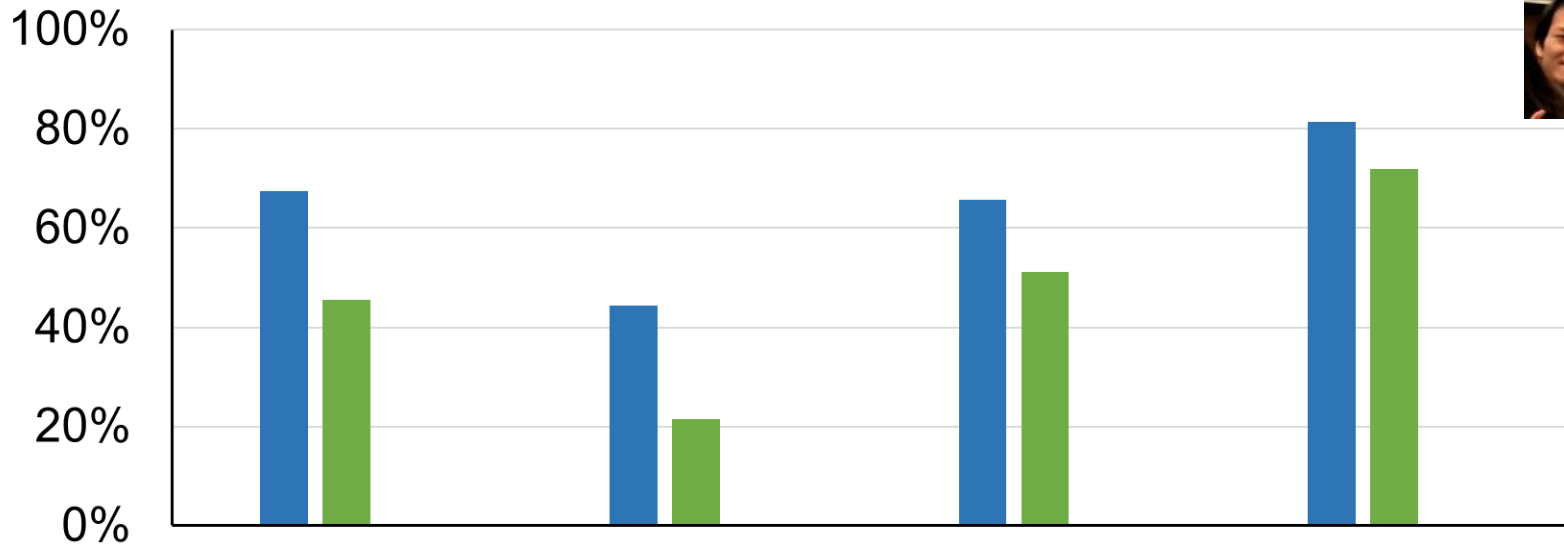


Diabetes unawareness: 26%



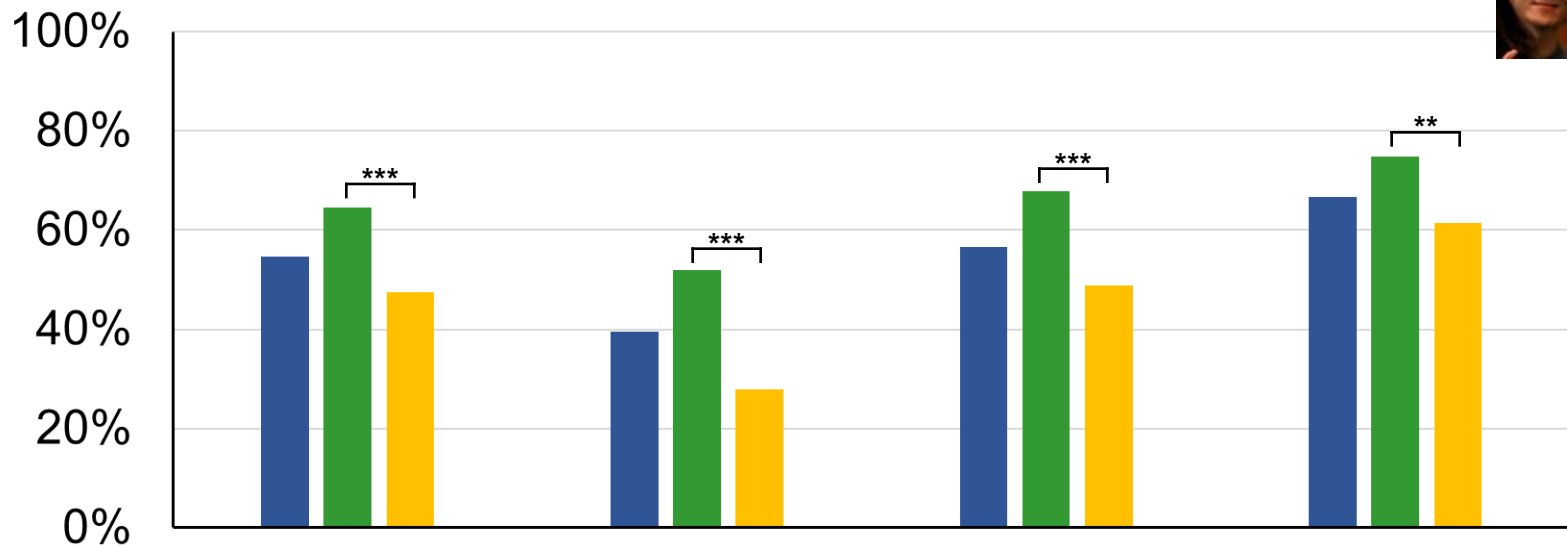
HTN unawareness: 36.8%

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



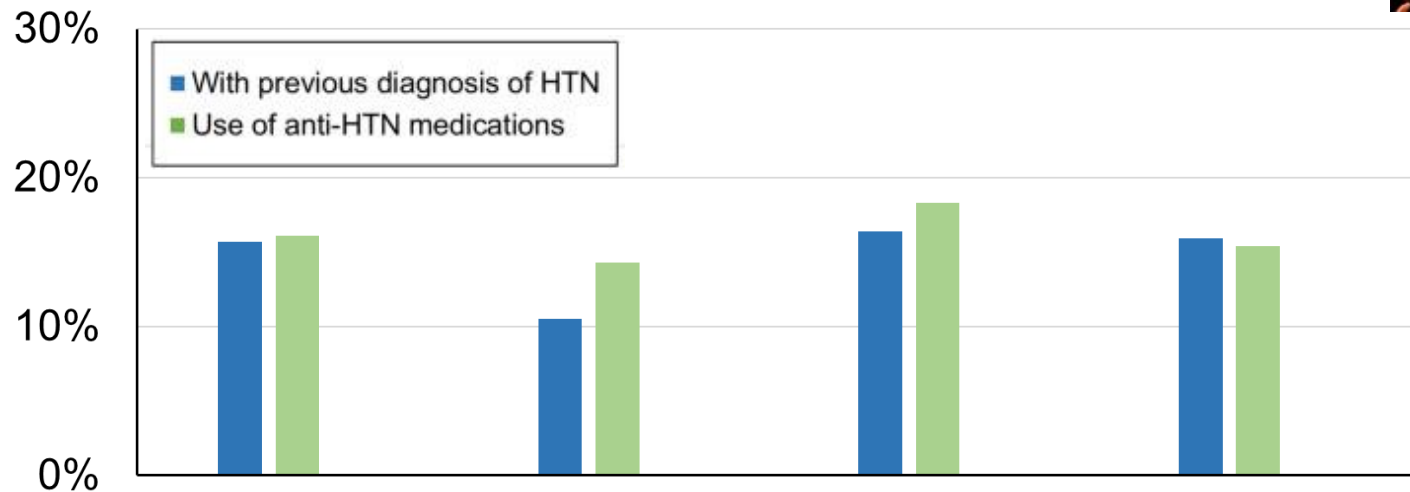
	Total	Age < 40	Age 40-59	Age ≥ 60
■ KDSAP	67.5 % (1410/2088)	44.3% (196/442)	65.6% (523/797)	81.4% (691/849)
■ NHANES	45.6%	21.4%	51.1%	71.8%

High detection rate of high BP among KDSAP participants without previous diagnosis of hypertension



	Total	Age < 40	Age 40-59	Age ≥ 60	p
Overall	784/1433 (54.7%)	160/404 (39.6%)	347/614 (56.5%)	277/415 (66.7%)	<0.001
Male	391/605 (64.6%)	102/196 (52.0%)	167/246 (67.9%)	122/163 (74.8%)	<0.001
Female	393/828 (47.5%)	58/208 (27.9%)	180/368 (48.9%)	155/252 (61.5%)	<0.001

Low efficacy of controlling BP among participants with hypertension using anti-hypertensive medications



	Total	Age < 40	Age 40-59	Age ≥ 60	p
■ Hypertension	103/655 (15.7%)	4/38 (10.5%)	30/183 (16.4%)	69/434 (15.9%)	0.65
■ Medication	74/459 (16.1%)	2/14 (14.3%)	23/126 (18.3%)	49/319 (15.4%)	0.74

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

Albuminuria alone is a strong prognostic factor for CKD progression

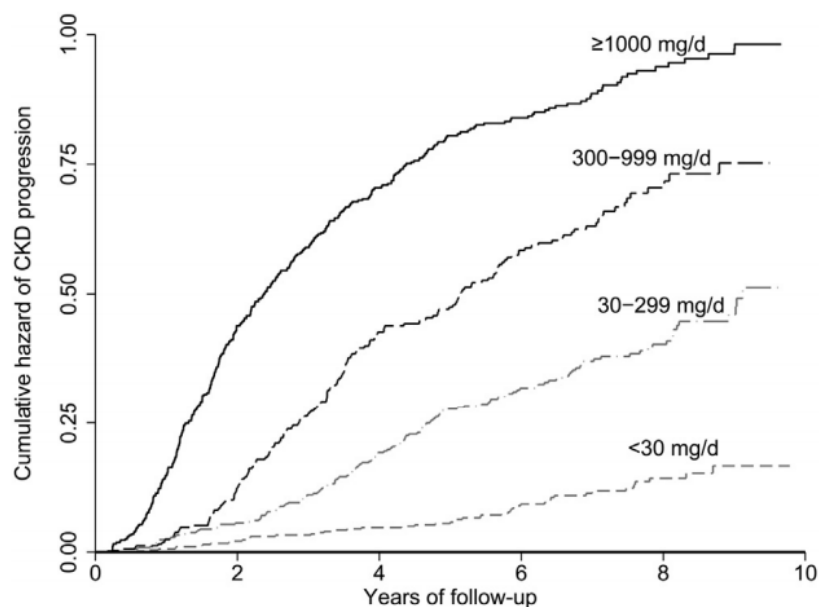


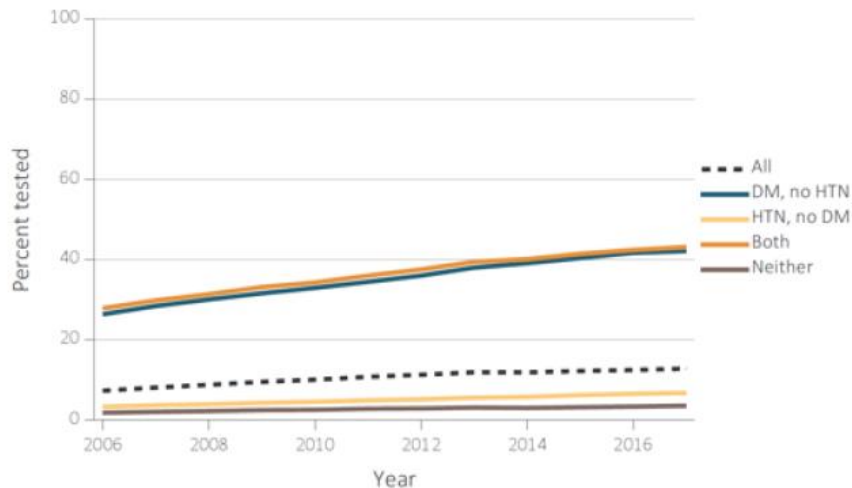
Figure 2. Kaplan-Meier plots of the cumulative hazard of chronic kidney disease (CKD) progression by baseline 24-hour urinary albumin excretion.

Table 4. Changes in eGFR_{tu}s

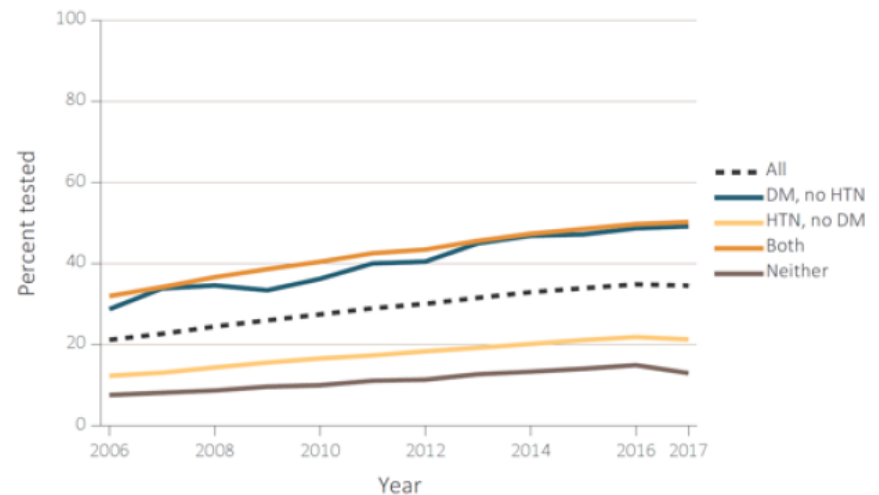
Albuminuria, mg/24 h	n	Adjusted eGFR Change, mL/min/1.73 m ² per y ^a
<30	515	-0.19 (0.11)
30-299	498	-1.38 (0.11)
300-999	335	-2.78 (0.19)
≥1,000	465	-5.25 (0.20)

Testing Urine Albumin among Patients with and without CKD-no difference

12.9% of Medicare patients aged 65 and older **WITHOUT** diagnosed CKD received urine albumin testing in 2017

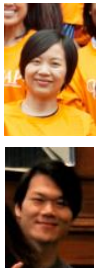
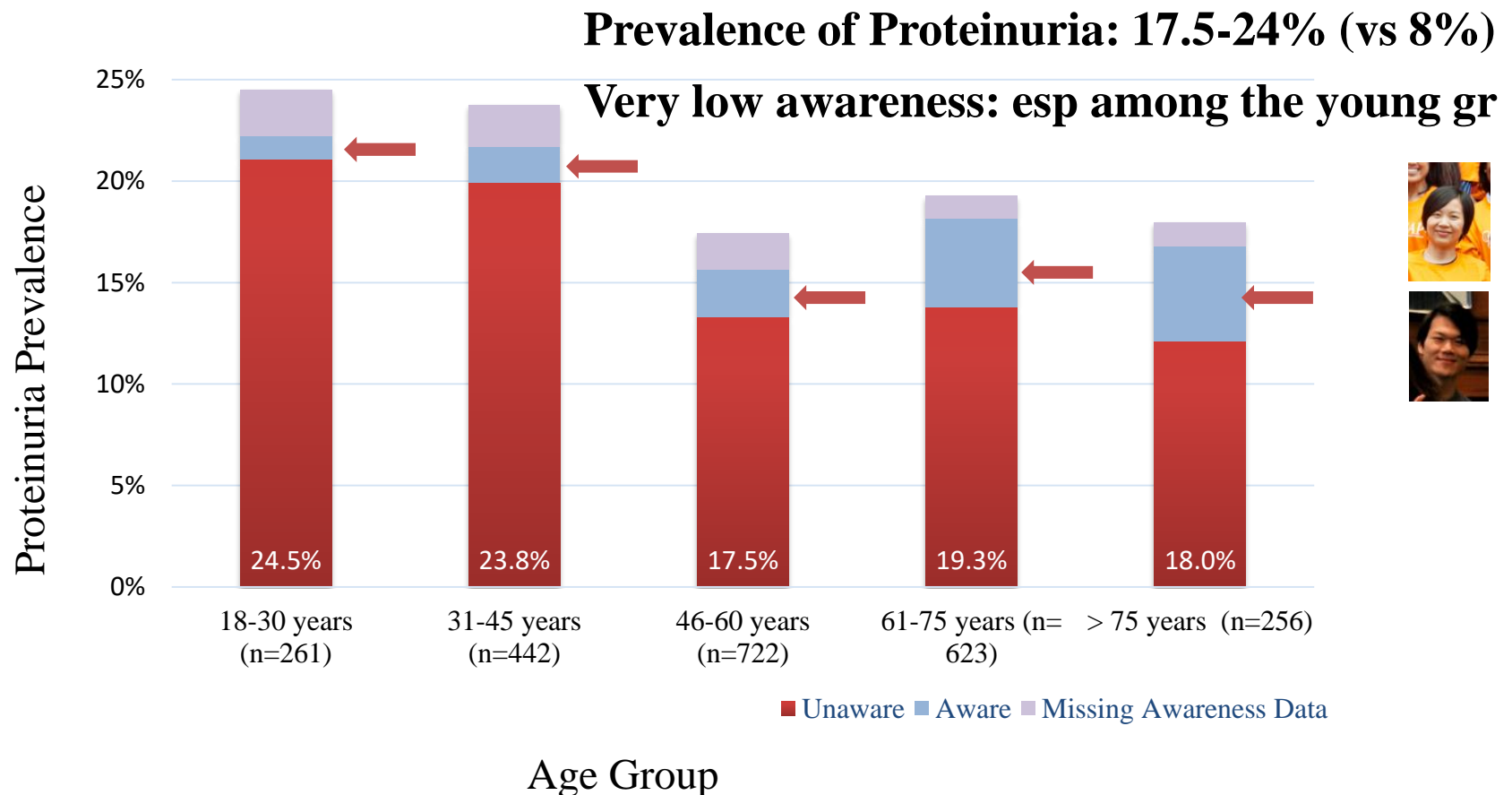


Patients aged 65 and older **WITH** diagnosed CKD received urine albumin testing in 2017 were **similar**, though somewhat higher rates



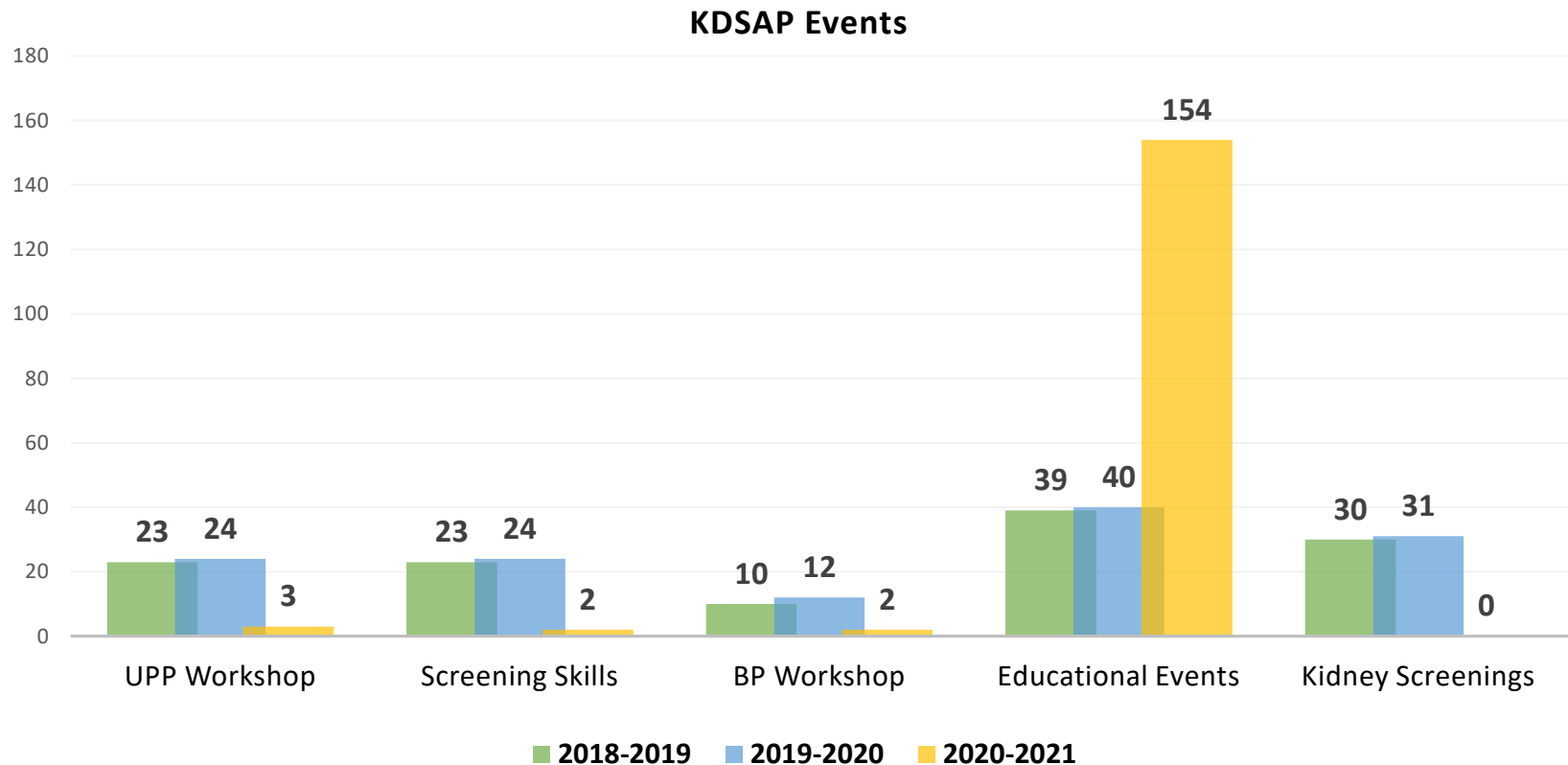
Patients with the combined diagnosis of CKD, DM, and HTN were tested for urine albumin in **50.3%** of the Medicare population

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



KDSAP: Leveraging resources
effectively at the community level

Number of KDSAP Educational Events increased during Covid



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 to 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**
 - **A large barrier** for implementing an effective early detection program for CKD is **a distrust of the medical system** by many individuals, including those with kidney disease, in the community.
 - **One strategy to build patient trust**, especially among minority and immigrant populations at increased risk for CKD 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**
 - Stand out due to their **accessibility** to volunteers **with little training**
 - Screening is conducted with just 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)

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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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

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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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Provide space for participants to reflect and share their values, priorities and concerns during screenings and workshops
3. Create choice awareness	<ul style="list-style-type: none"> Inform participants of their CKD screening results and methods to prevent and control disease Educate participants about CKD treatment options
4. Describe treatment options	<ul style="list-style-type: none"> Educate participants about CKD treatment options Provide participants with sample questions to ask their physicians regarding treatment options
5. Tailor information	<ul style="list-style-type: none"> Present information based on participants' levels of understanding and needs Tailor workshops to different age groups and preferred languages
6. Deliberate	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Provide referrals and recommendations to participants after screenings and workshops Ensure participants retain ultimate authority over their health decisions

Including Renal
transplant

KDSAP

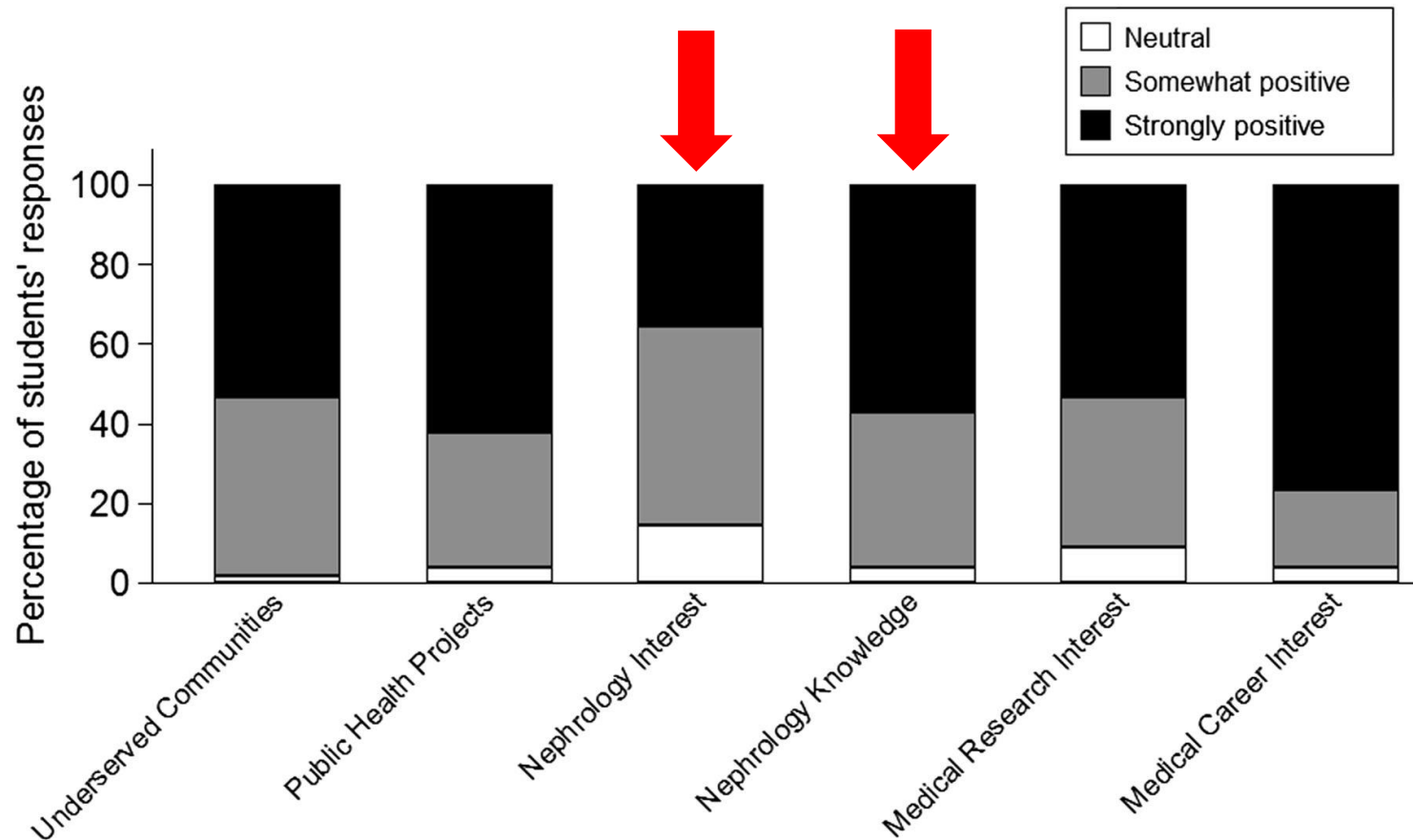
Cultivate interest in nephrology

KDSAP

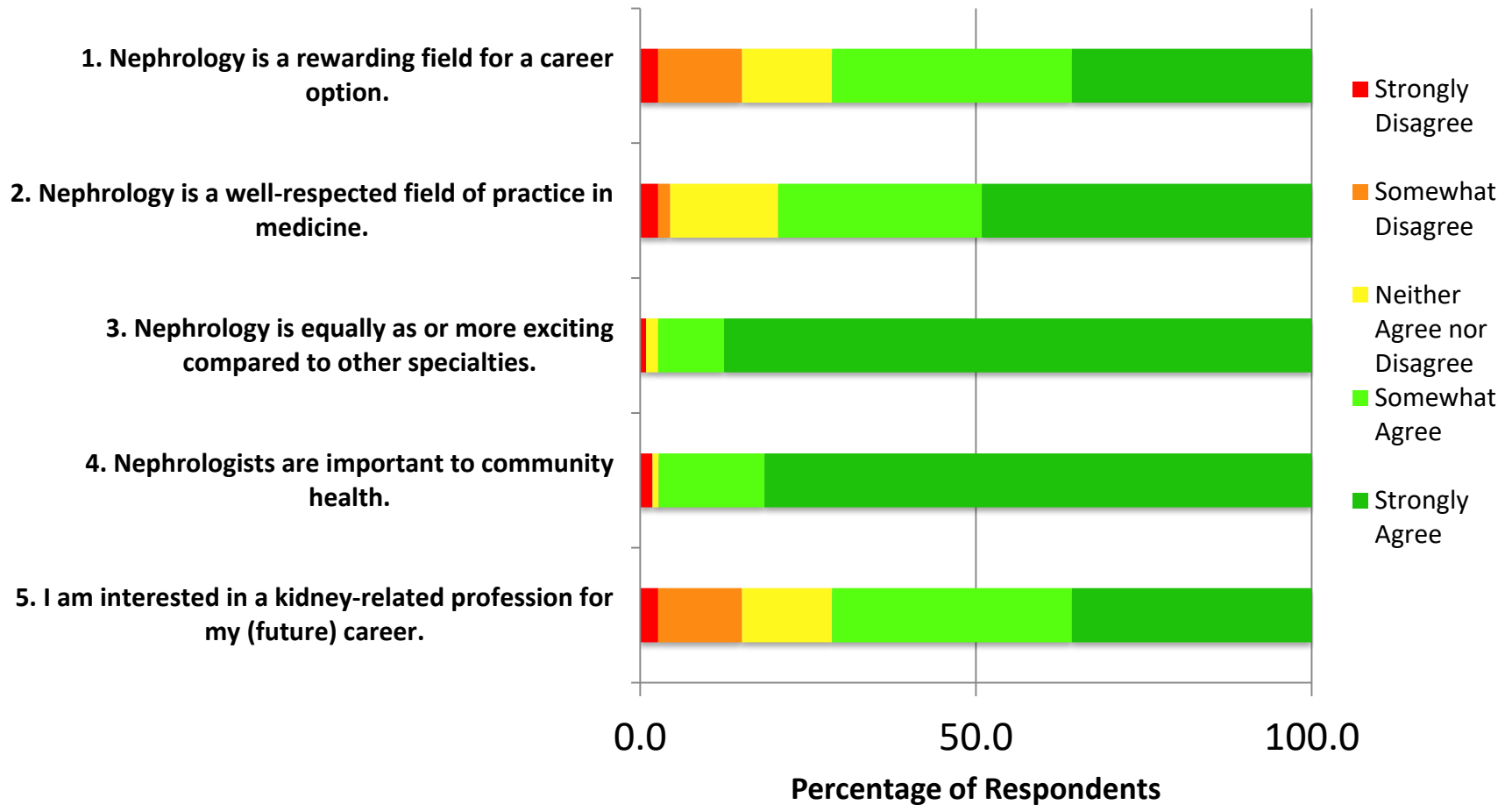
Cultivate interest in nephrology

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

KDSAP has a positive influence on students' academic and career choices



Alumni's perception on nephrology



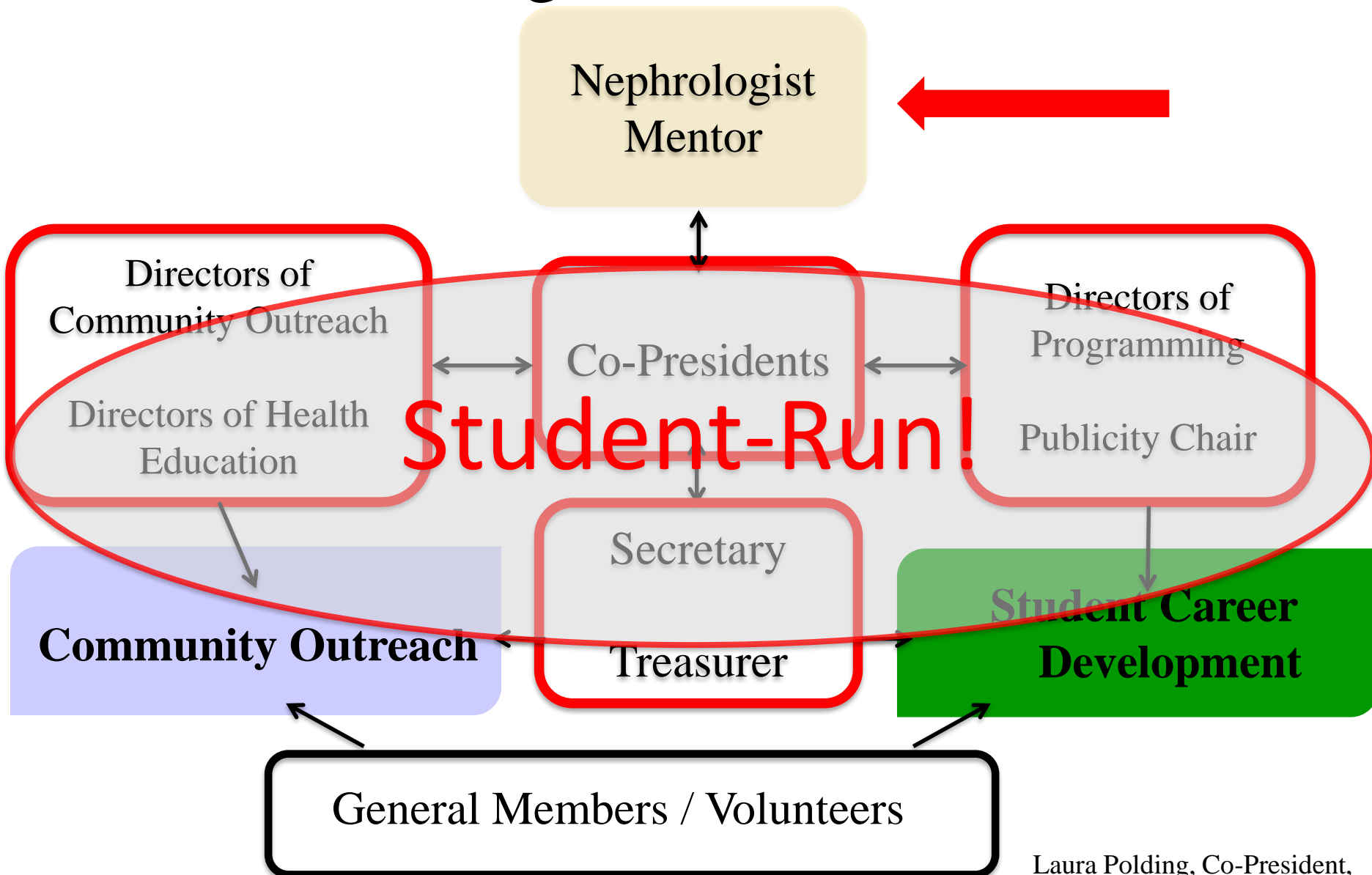
Summary

- Inequality & inequity exist in kidney health care
- 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 is cost effective

Summary

- KDSAP is a potential effective model in addressing workforce shortage in Nephrology and other subspecialties
 - Community outreach branch
 - In Campus activity branch

KDSAP Organizational Structure



Laura Polding, Co-President,
Harvard College Chapter

What can an Advisor do?

- ✓ Be a mentor
- ✓ Volunteer in community out-reach activities
- ✓ Participate in “meet the professor/doctor” series
- ✓ Bring your patients to the “meet the patient” series
- ✓ Allow students to shadow you in clinical setting

What can an Advisor do?

➤ *Be Inspiring*

➤ *Always available for your students*

Clinical Trials

Clinical Trials	Change in Management	
None		