

Health (In)Equity & Chronic Kidney Disease

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Health Equity

According to the Centers for Disease Control and Prevention:

“Health equity is achieved when **every person has the opportunity to ‘attain his or her full health potential’** and no one is ‘disadvantaged from achieving this potential because of social position or other socially determined circumstances.’”

(1) [cdc.gov//healthycommunitiesprogram/healthequity.htm](https://www.cdc.gov/healthycommunitiesprogram/healthequity.htm)



Objectives

- Provide an overview of how CKD and ESRD outcomes differ by race, ethnicity, and socioeconomic status.
- Describe disparities in CKD management.
- Examine differences in home dialysis use and transplant.
- Leverage innovation to drive outcomes.



*How Do
CKD & ESRD
Outcomes
Differ by
Race &
Ethnicity?*



CKD Prevalence in the U.S.

- ~14% of U.S. adults have CKD (although few of them know about it)¹



**That's 1 out of every 7 people!
or ~37 million Americans**

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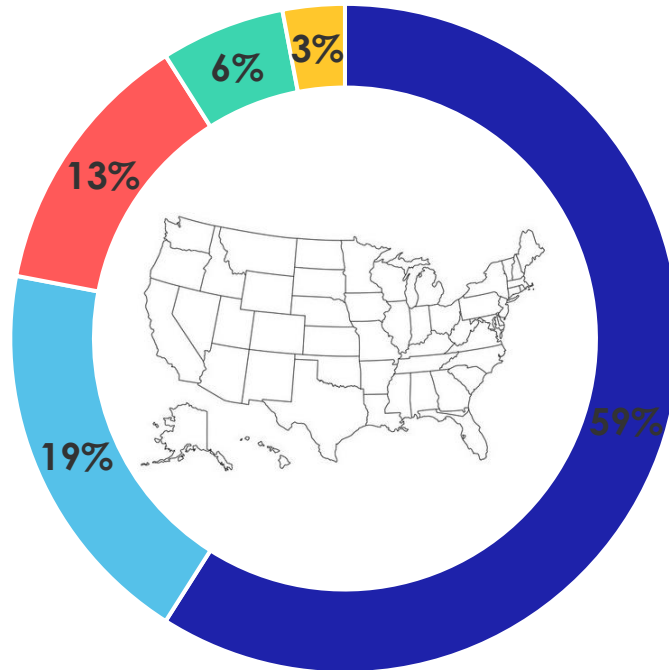


That's **1 out of every 7 people!**
or **~37 million Americans**

- **Non-Hispanic Black:** ~19% (1 out of every 5 people)
- **Hispanic/Latino:** ~12.5% (1 out of every 8 people)

Population Makeup in 2020: A Comparison

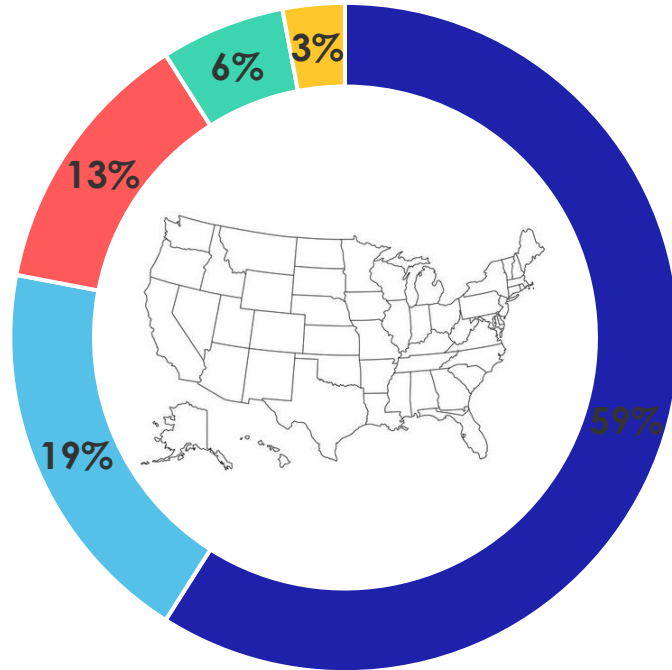
Racial/Ethnic Makeup of U.S. Population in 2020¹



- White (non-Hispanic)
- Hispanic/Latino
- Black (non-Hispanic)

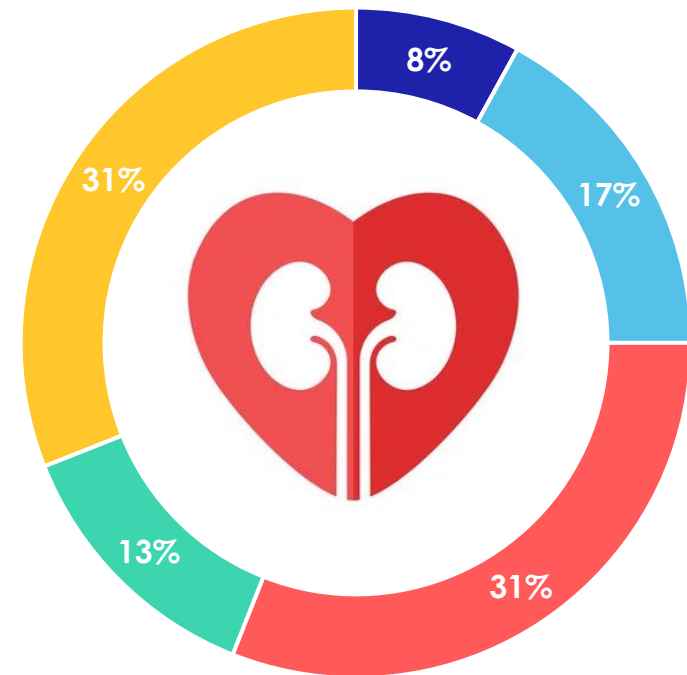
Population Makeup in 2020: A Comparison

Racial/Ethnic Makeup of U.S. Population in 2020¹



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Racial/Ethnic Makeup of “New ESRD” Patients in U.S. in 2020²

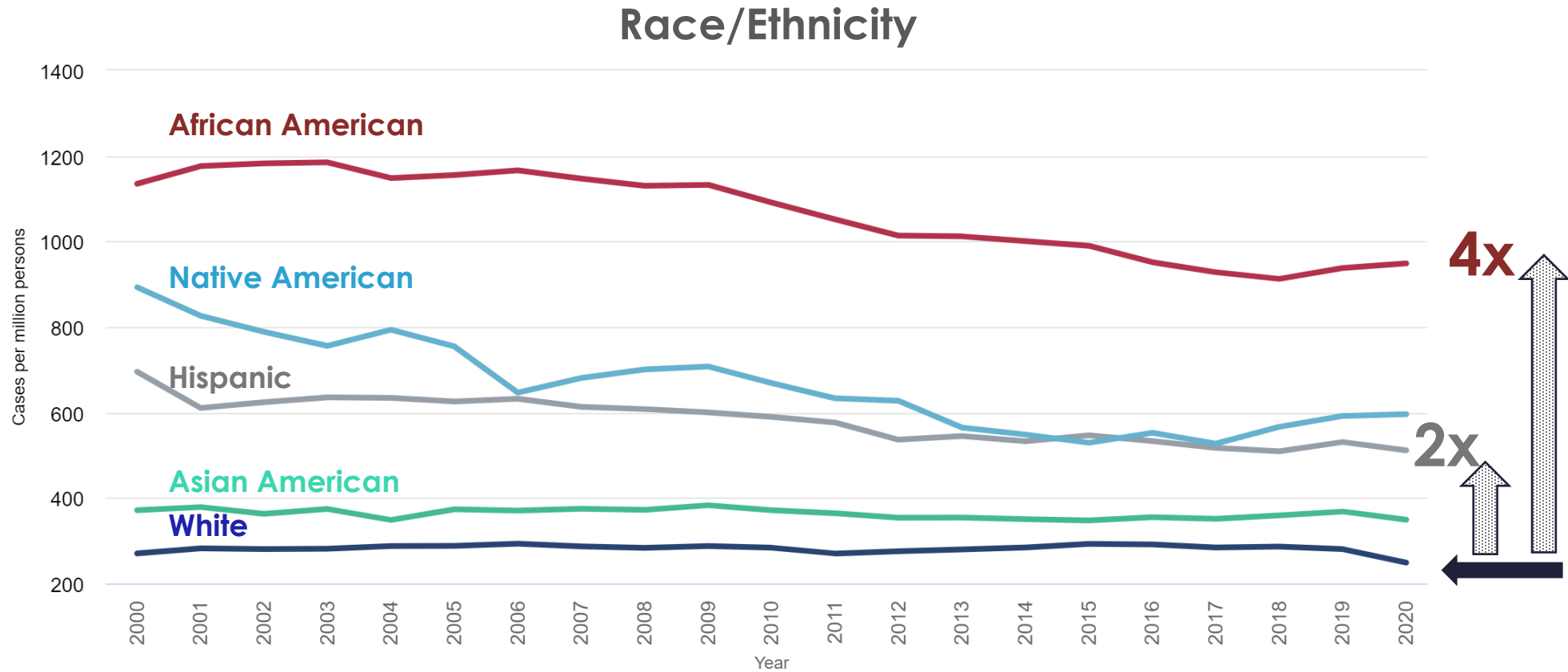


- White (non-Hispanic)
- Hispanic/Latino
- Black (non-Hispanic)
- Asian
- Other

(1) USAfacts.org;

(2) 2022 United States Renal Data System Annual Data Report

How Does ESRD Incidence Differ by Race/Ethnicity?



CKD Progression – Do Rates Differ?

Do rates of CKD progression in U.S. differ between White, African American, and Hispanic adults?

24 studies (~7.2 million adults)¹
African Americans and Caucasians

- 16 studies reported a higher risk of CKD progression in African Americans
- 8 found similar risk

6 studies (~1.2 million adults)¹
Hispanics and Caucasians

- All 6 studies reported a higher risk of CKD progression in Hispanics

Socioeconomic Status (SES) and CKD



“A way of describing people based on their education, income, and type of job.”¹

Socioeconomic Status (SES) and CKD



“A way of describing people based on their education, income, and type of job.”¹

“People with lower SES usually have less access to financial, educational, social, and health resources than those with higher SES.

As a result, they are more likely to be in poor health and have chronic health conditions and disabilities.”

How Are SES and CKD Related?

Analysis of 43 studies (~6.9 million people) from America, Europe, Asia and Africa

INCOME



EDUCATION



Chronic Kidney Disease

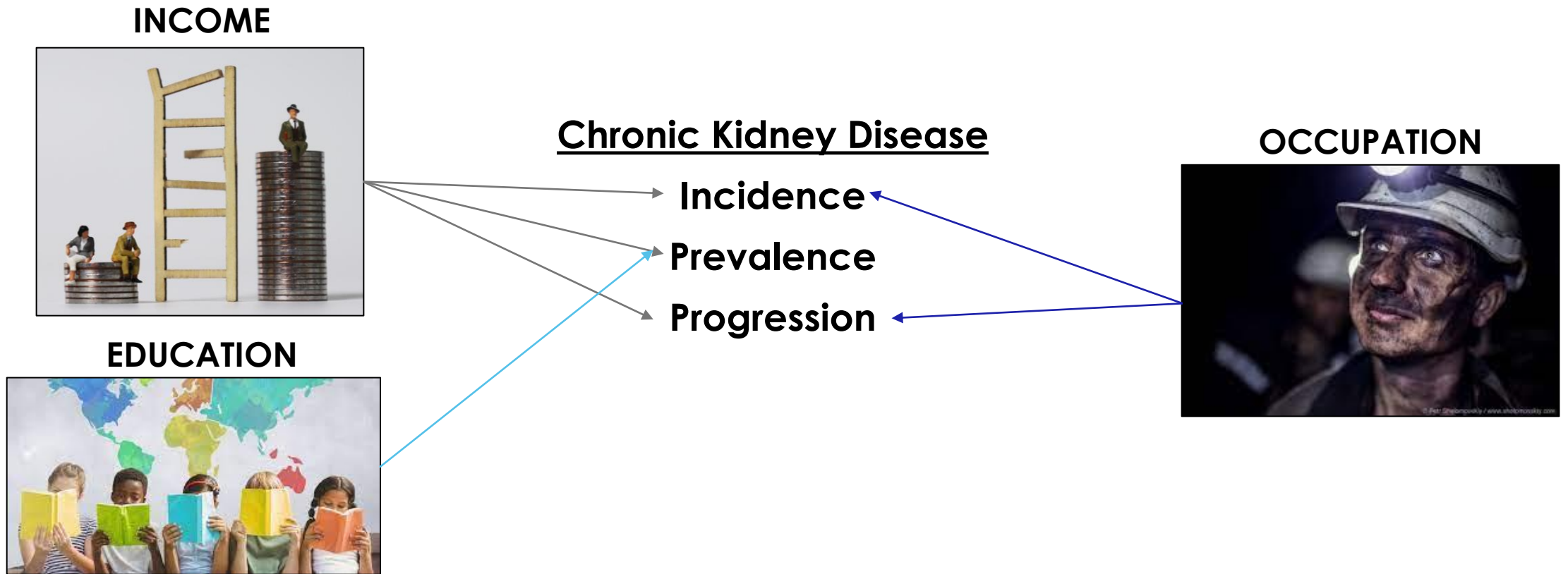
Incidence
Prevalence
Progression

OCCUPATION



How Are SES and CKD Related?

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↳ **In the U.S. specifically: 20 studies (~1.5 million people)**



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Low Income



55% risk
of having CKD

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Low Income



55% risk
of having CKD

Low Education



17% risk
of having CKD

Recap: What Have We Learned So Far?

- Racial and ethnic minorities are disproportionately burdened by CKD and ESRD
 - African American and Hispanic adults experience faster CKD progression than Whites
 - Each year, a higher percent of African American and Hispanic adults start dialysis compared to Whites
- Lower socioeconomic status is associated with higher CKD prevalence



So, why does this happen?

Is Everybody Receiving the “Right” Care to Slow CKD?

Three broad categories:

1. Lifestyle modification
2. Appropriate medications
3. Education, education, education



CKD Guideline-based Performance Metrics

Metric

Guideline Recommendations

ACEi/ARB Use

- Recommended to slow CKD progression

Statin Use

- Recommended in adults ≥ 50 with CKD

Nephrology Care

- Recommended for Stages 4-5 CKD, as well as select Stage 3 Patients

Outcome Measures

BP Control

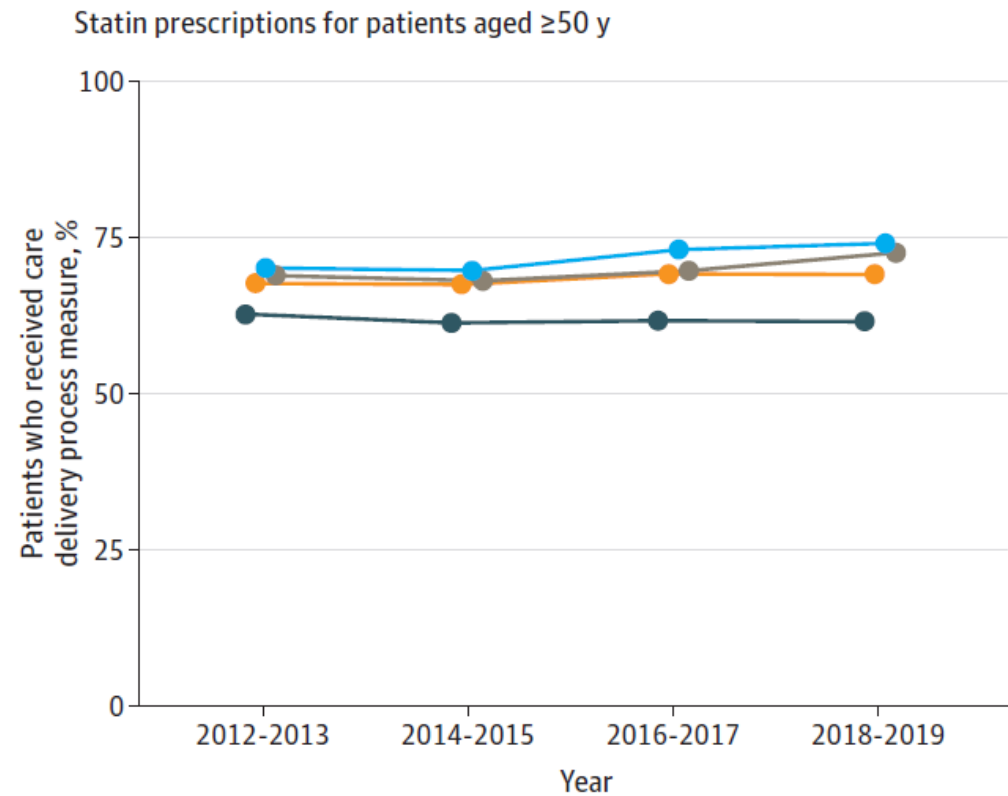
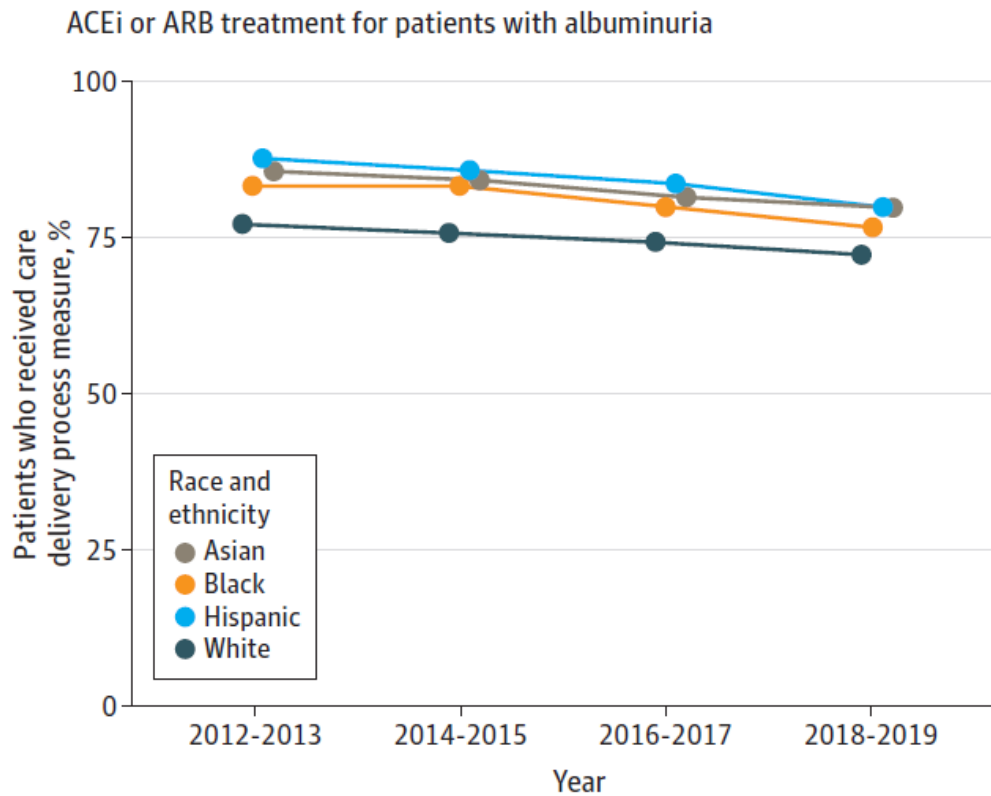
- BP < 140/90

Diabetes Control

- HbA1c < 7.0%
-

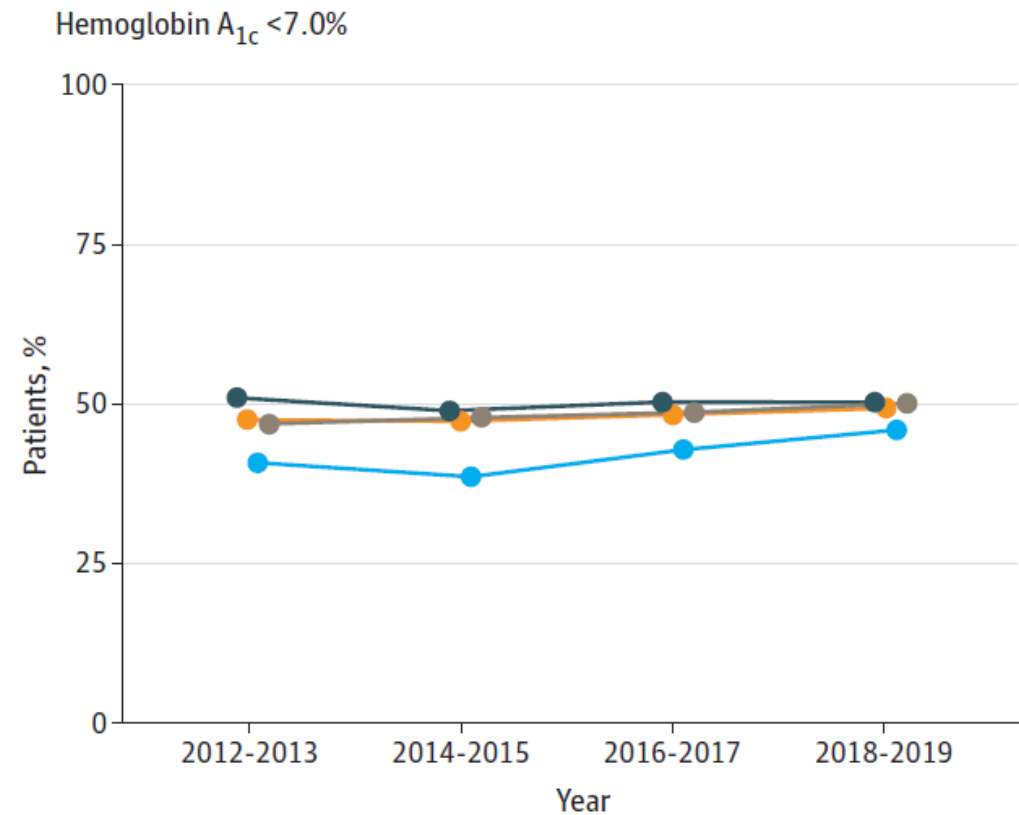
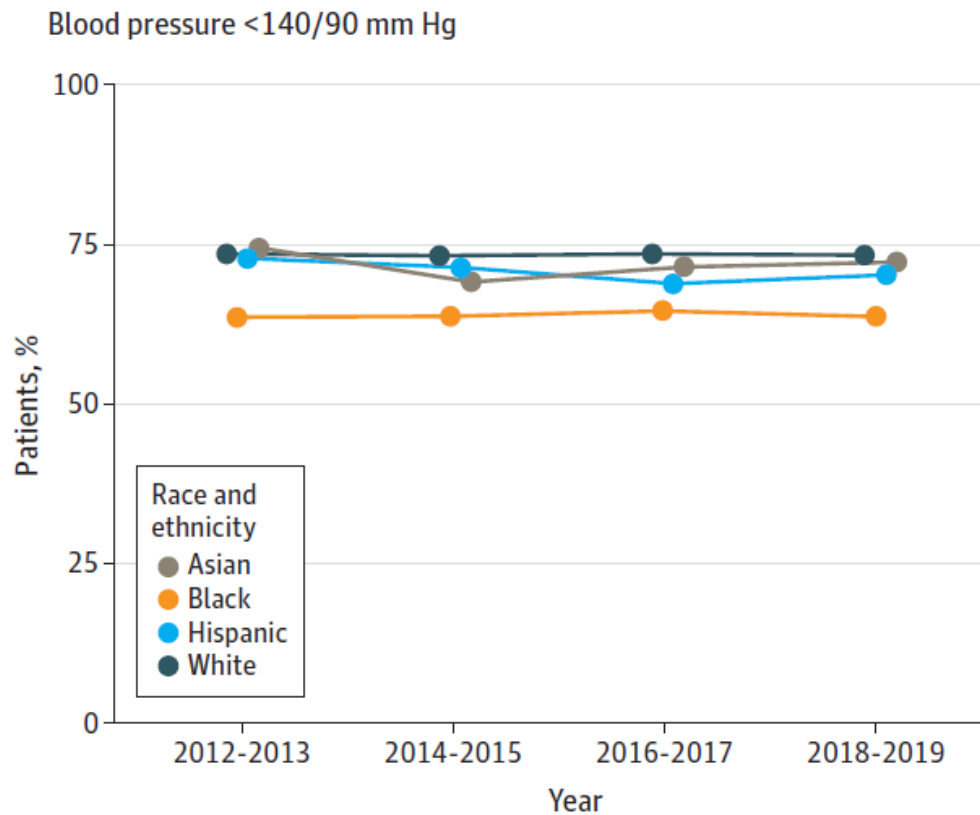
ACEI/ARB & Statin Use

Among ~450,000 patients with CKD:



Blood Pressure and Diabetes Control

Among ~450,000 patients with CKD:



Pre-Dialysis Nephrology Care

- Did patients with advanced CKD see a nephrologist in the year prior to starting dialysis?
 - **And, does this number vary by race or ethnicity?**

N = ~250,000

Years 2005 to 2007

Race/Ethnicity	Nephrology Care
Black	-18%
Hispanic	-33%
Asian	-16%

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Years 2005 to 2007

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N = ~170,000

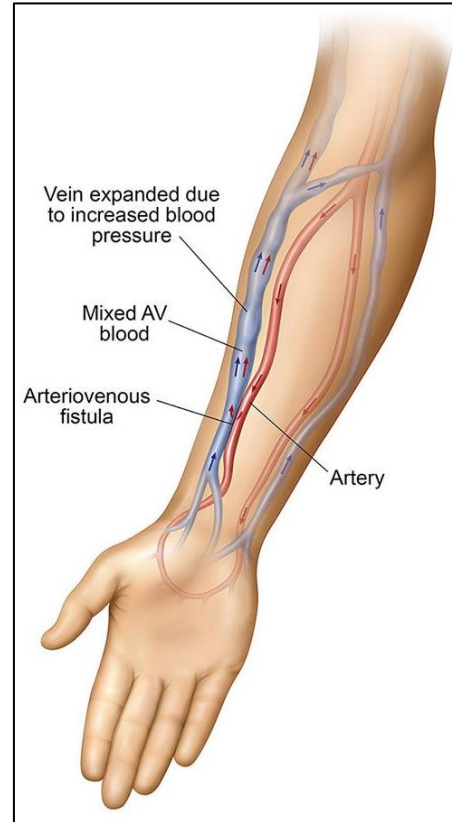
Years 2014 to 2015

Race/Ethnicity	Nephrology Care
Black	-24%
Hispanic	-39%
Asian	-10%

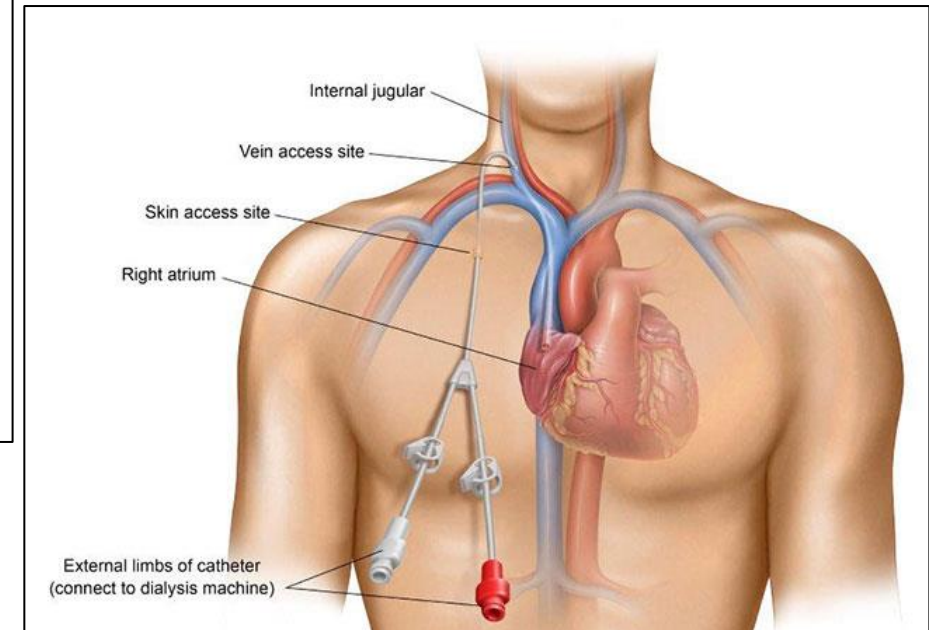
Hemodialysis Access

- ~400,000 patients started hemodialysis (HD) between 2006-2010
- What percent started HD with an arteriovenous fistula (AVF)?
 - Whites 18%
 - Blacks 15.5%
 - Hispanics 14.6%

AVF or AVG



Central Venous Catheter



Hemodialysis Access

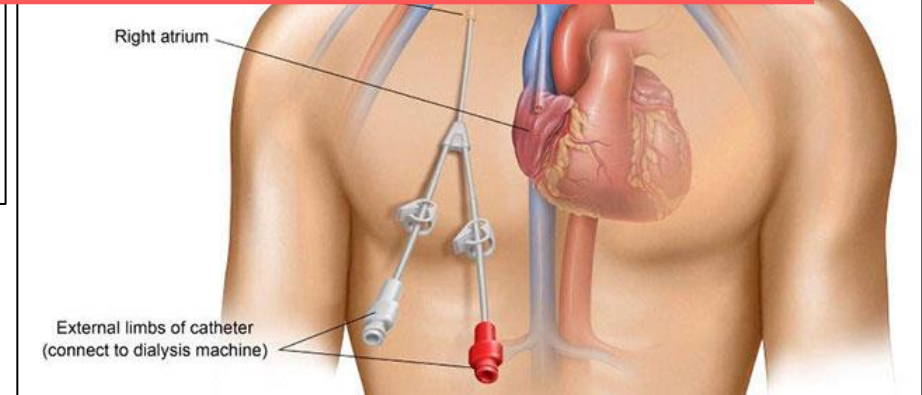
AVF or AVG



~400,000 patients started

Likelihood of starting hemodialysis with an AVF was **11.5x higher** among those with prior nephrology care!

- Hispanics 14.6%



Home Dialysis vs. In-Center

- What is home dialysis?
 - Peritoneal Dialysis (PD)
 - Home Hemodialysis (HHD)
- Dialysis at home offers many benefits to patients compared to in-center¹
 - Better health outcomes
 - Freedom and flexibility
 - Overall energy levels
 - Faster recovery times
 - Improved quality of life
 - Liberalized diet
 - Potential for fewer medications
 - Higher likelihood of working
 - Greater likelihood of receiving a kidney transplant
 - Ease of travel
- In 2020, **87% of patients starting dialysis started on in-center hemodialysis**²
- Contrast this to **94% of nephrologists who would choose home dialysis for themselves**³

(1) NKF.org.

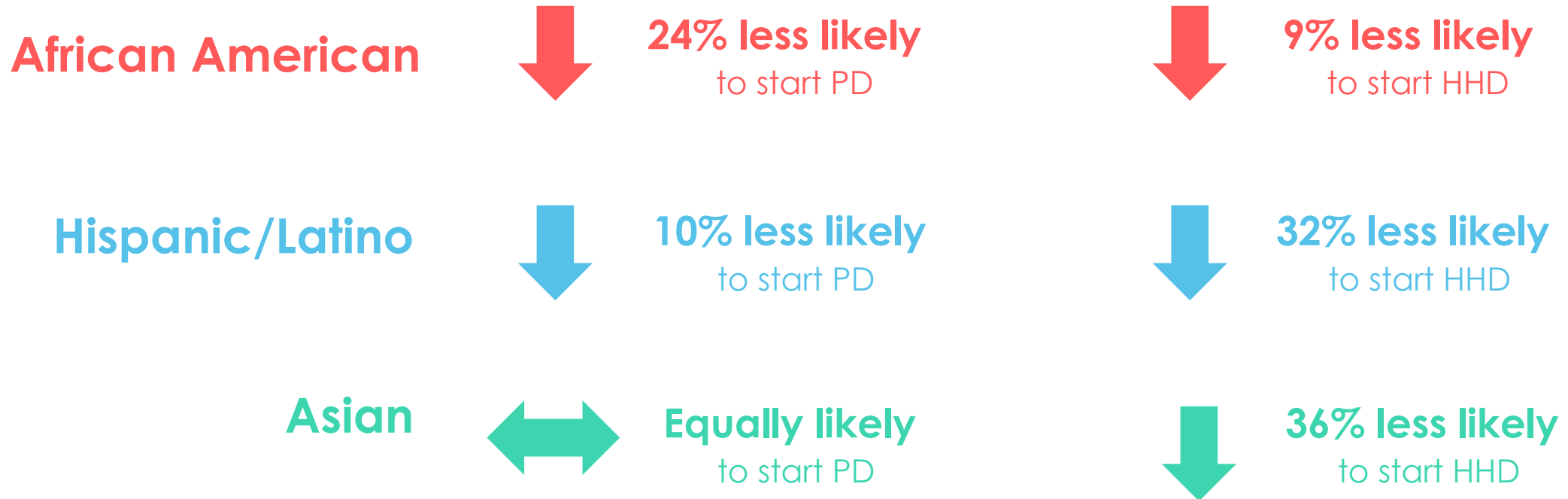
(2) (2) USRDS Annual Data Report.

(3) (3) Merighi, et al. *Hemodialy Int*, 2012.

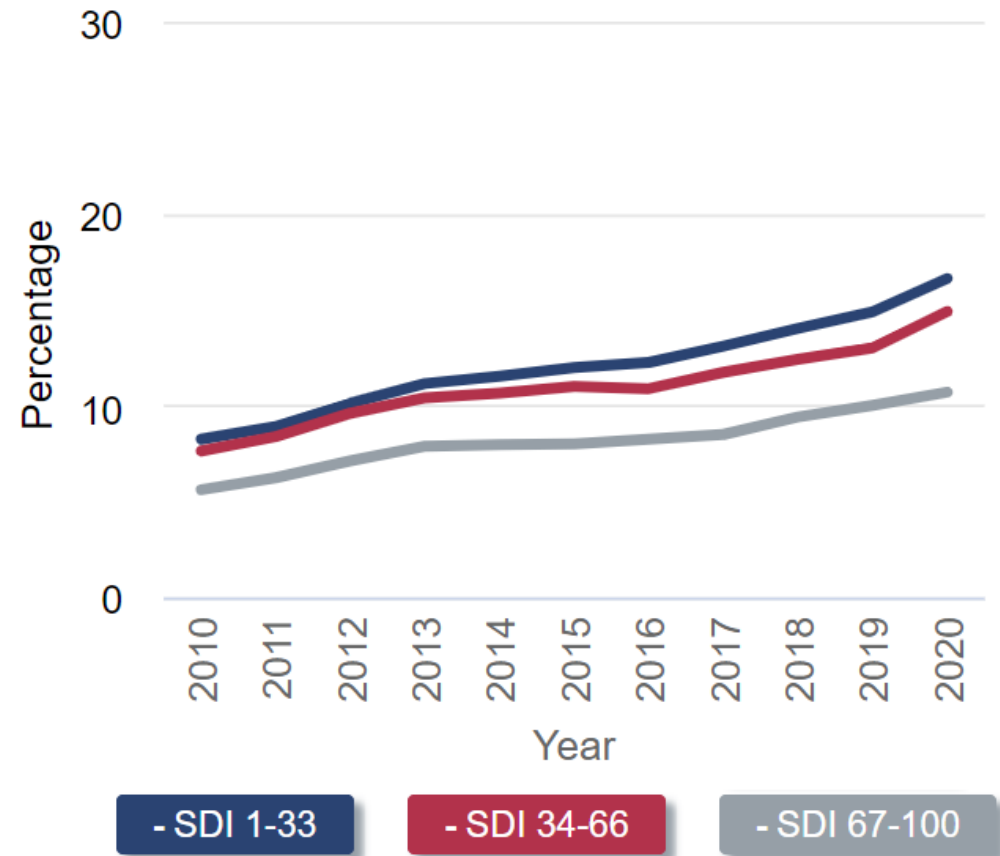
Home Dialysis Use by Race & Ethnicity

Peritoneal Dialysis

Home Hemodialysis



Home Dialysis Use by Socioeconomic Status



SDI – Social Deprivation Index

SDI is a composite measure of area level deprivation based on seven demographic characteristics, measure by “percent of”

- Living in poverty
- Less than 12 years of education
- Single parent households
- Living in rented housing
- Living in overcrowded housing
- Households without a car
- Non-employed adults < 65

Barriers to Home Dialysis Use

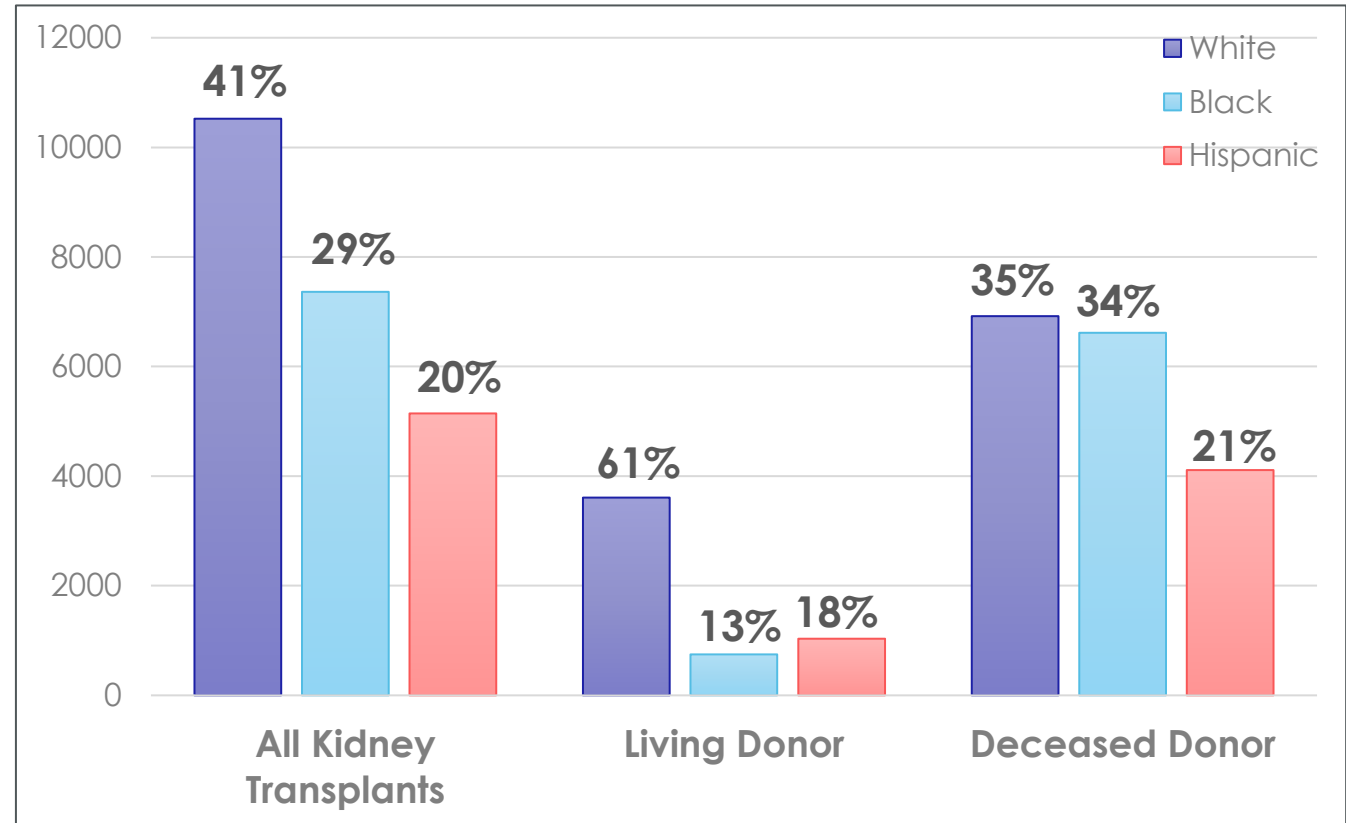
- **Social determinants of health**
 - Uninsurance (White 4%; Black 11%; Hispanic 13%)
 - Education, poverty, etc.
- **Physical barriers**
 - Medical history (obesity, diabetes)
 - Living situation
- **Geographical Barriers**
 - Rural vs. Suburban vs. Urban
- **Language/Cultural barriers**
 - Primary language
 - Distrust of medical system
 - Multigenerational households
- **Lack of Nephrology Education**
 - ~50% patients are not informed of options
 - Nephrologists lack experience!
- **Fear**
 - Fear of needles, Is it safe? Etc.

Kidney Transplantation in 2022

Currently the **gold standard treatment** for people with end-stage renal disease

of Transplants in 2022:

- Total: 25,499
- Living Donor: 5,863
- Deceased Donor: 19,636

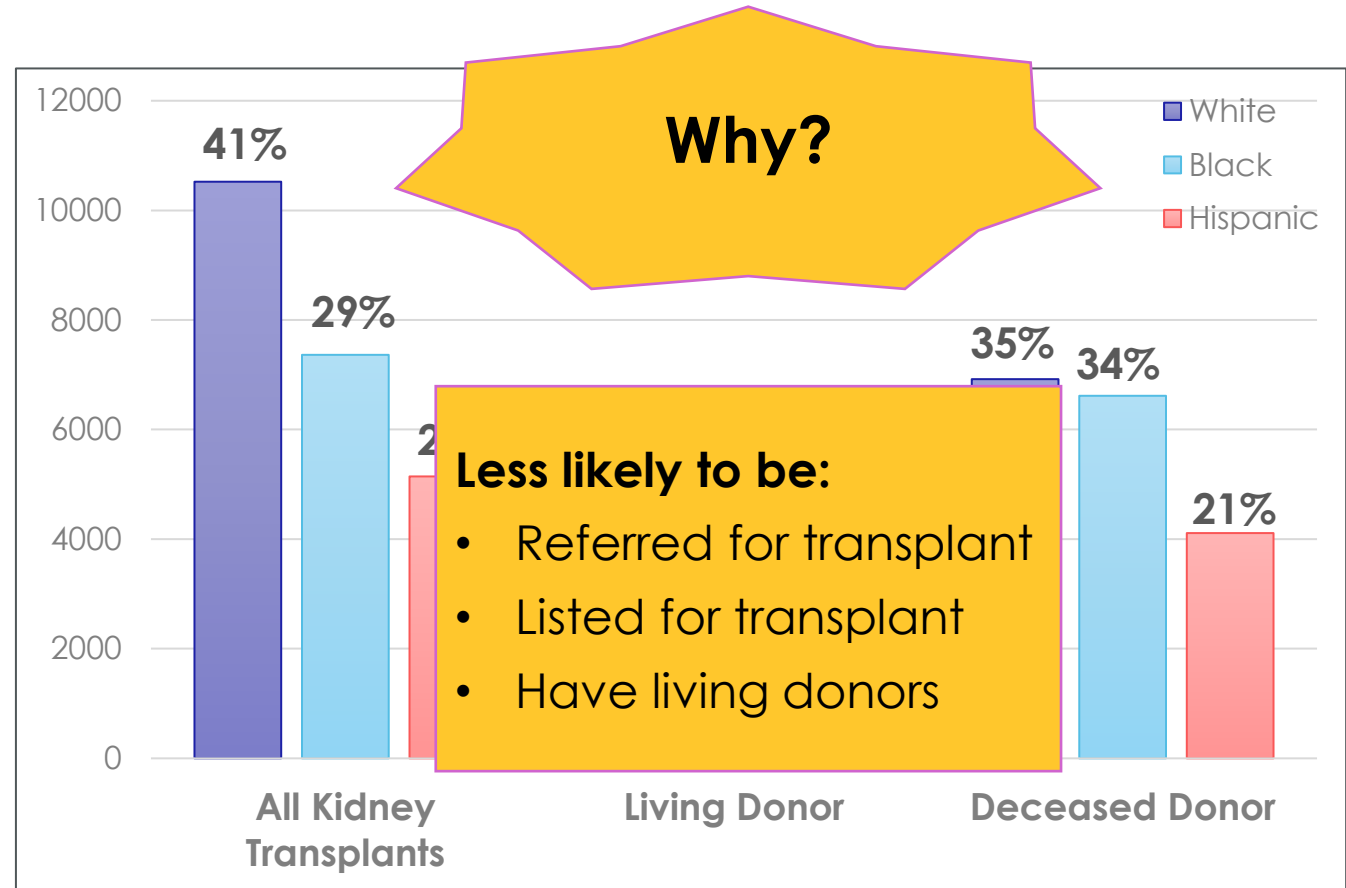


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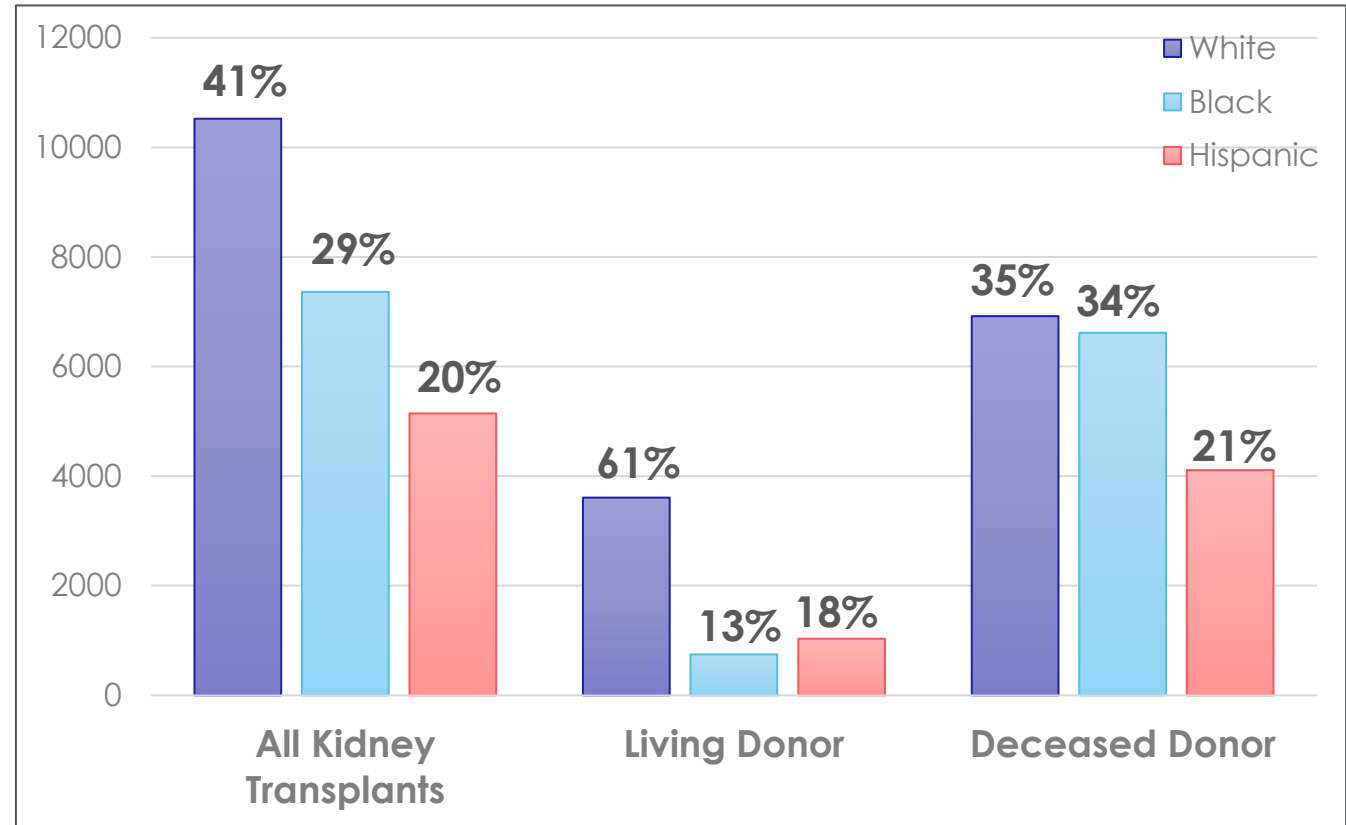
Kidney Transplantation in 2022

~825,000 patients on dialysis in 2022!

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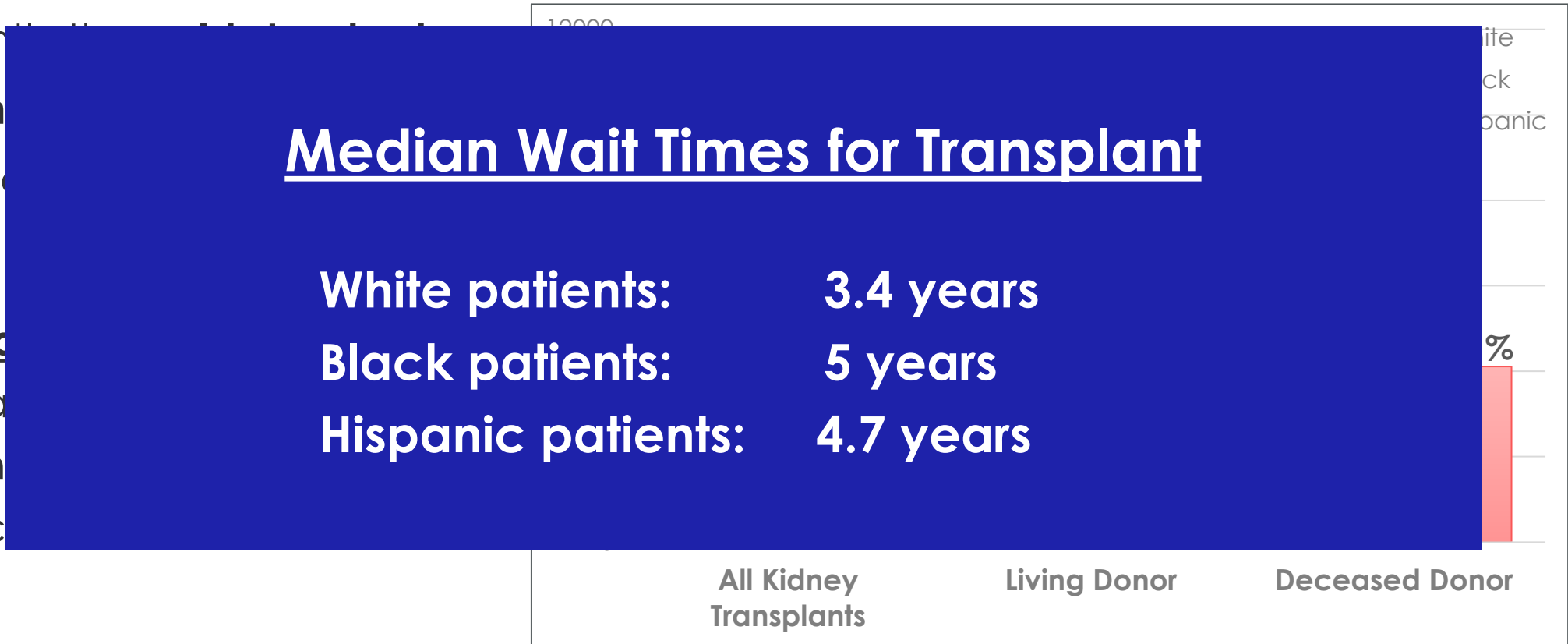


Kidney Transplantation in 2022

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- Total
- Living
- Dec



How Can Health Systems and Providers Promote Health Equity?

1. Awareness
2. Meet People Where They Are
3. Educate, Educate, Educate
4. Innovation



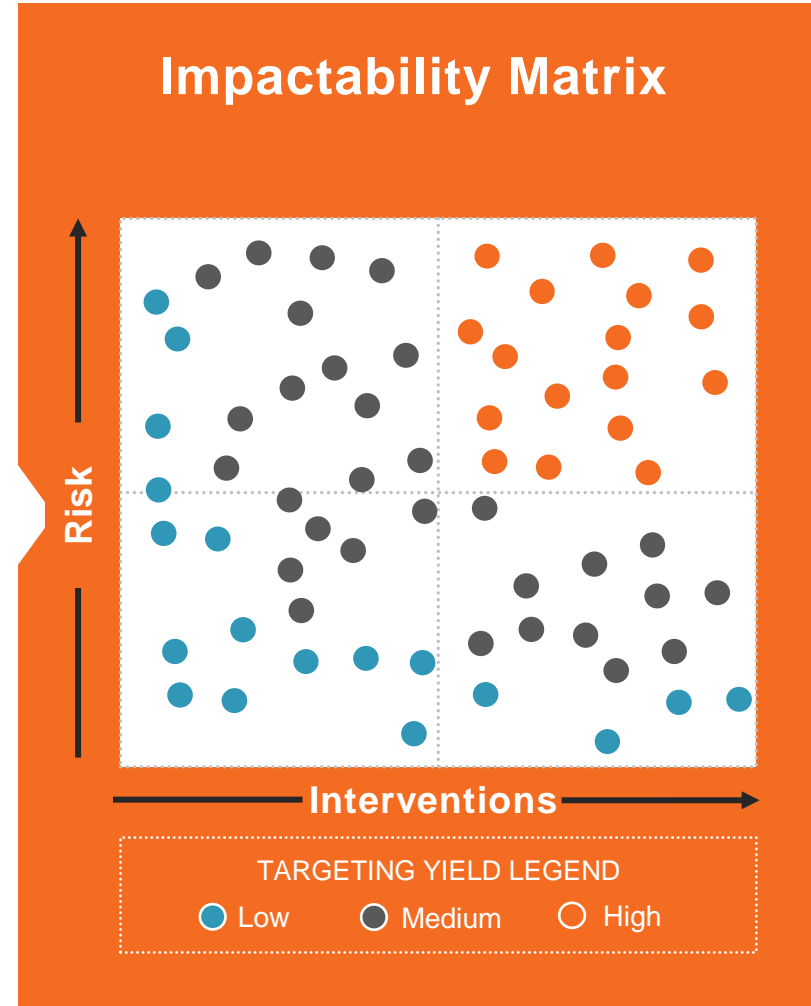
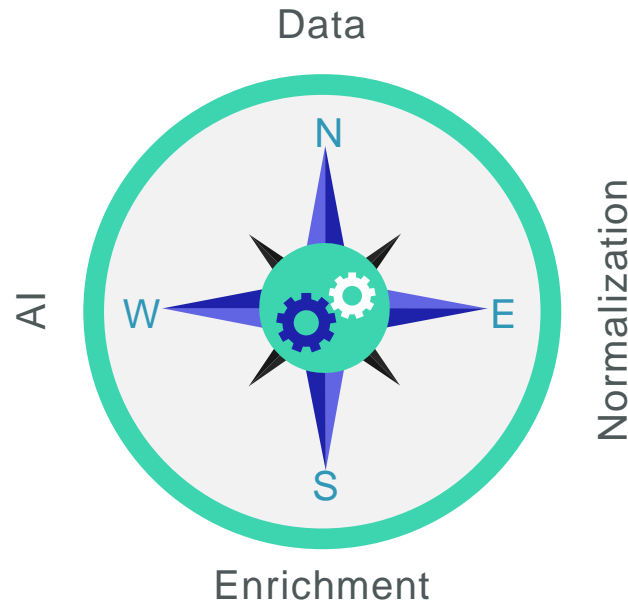
*Leveraging
Innovation
and Managing
Cost of Care*



Data & Analytics Fuel KHM Program



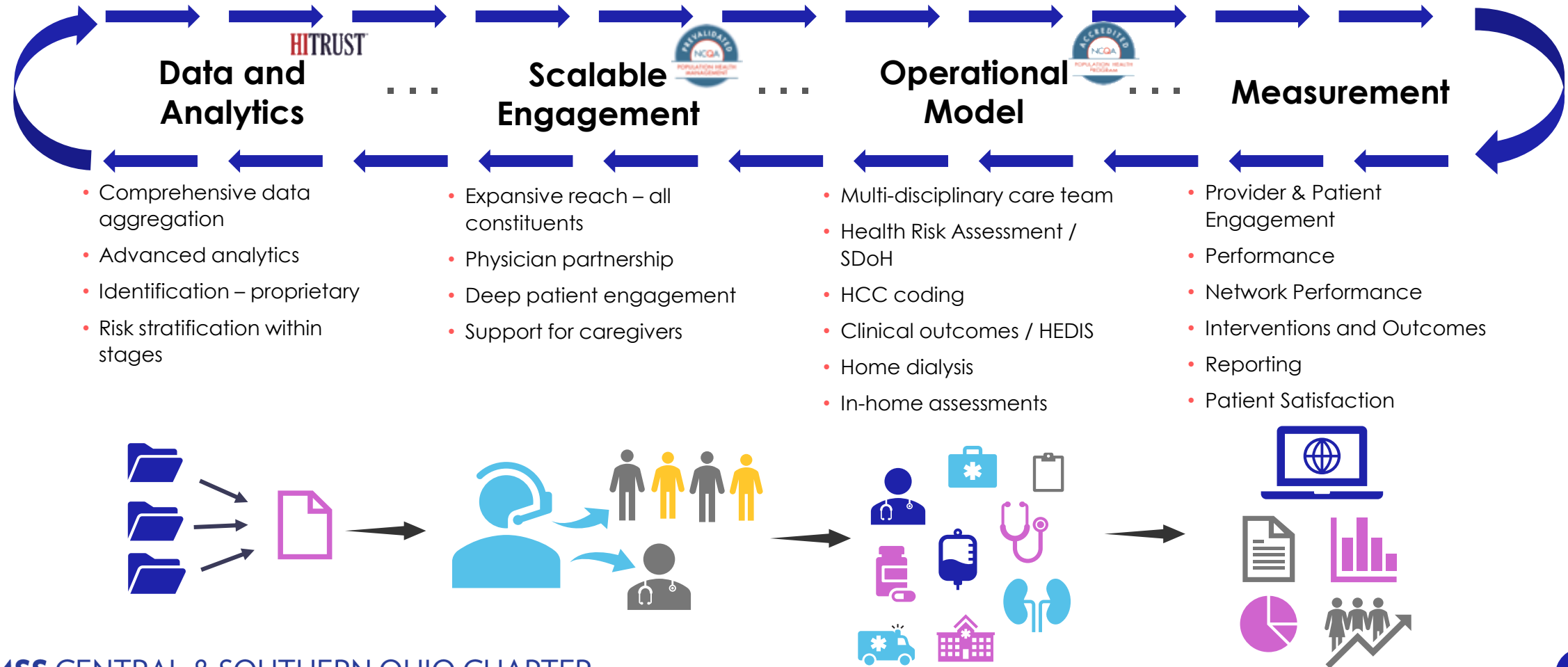
PH Platform Applies Artificial Intelligence (AI)



Population Health Framework

Value Proposition	Industry Problem	Solution
Early Identification	Chronic kidney disease (CKD) affects ~15% of U.S. adult population, but ~90% are unaware of their condition	Apply proprietary analytics and “move upstream” to identify patients early in their CKD progression and establish a treatment pathway based on their risk and stage of disease
Slowing Disease Progression	Fragmented nature of kidney care (i.e., multiple comorbidities and hence healthcare providers) has contributed to worsening health outcomes for patients	Engage with patients and their team of providers to deliver proactive and coordinated care via actionable and timely data and clinical insights
Planned Dialysis Starts	Historically, ~75% of end-stage patients have “crashed” into dialysis – planned dialysis starts are associated with better outcomes and higher home dialysis rates	Coordinate early referral to nephrologists and assist patients in developing their personal renal replacement therapy plan
Optimize Renal Replacement Therapy	Opportunity to improve patient quality of life by emphasizing home dialysis, transplant, and conservative care, as appropriate	Empower patients with improved education and accessibility and recommend nephrologists associated with better outcomes
Admission/Readmission Management	kidney disease patients, particularly those with multiple comorbidities, are at higher risk of acute events	Proactive engagement with patients and providers to avoid unnecessary admissions and ensure appropriate transitions in care to prevent readmissions

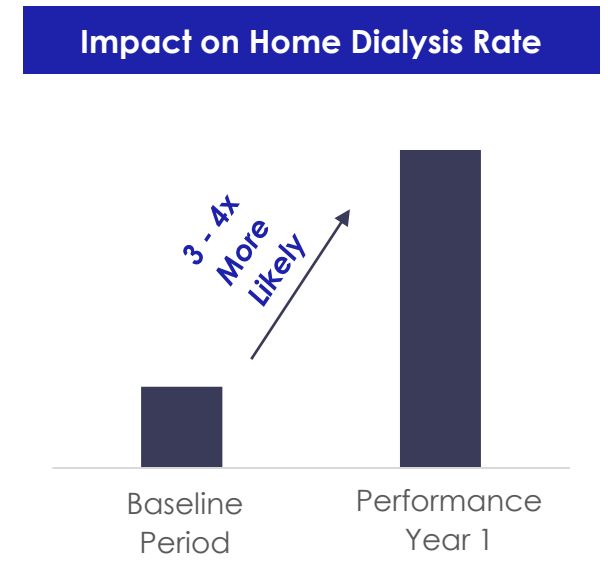
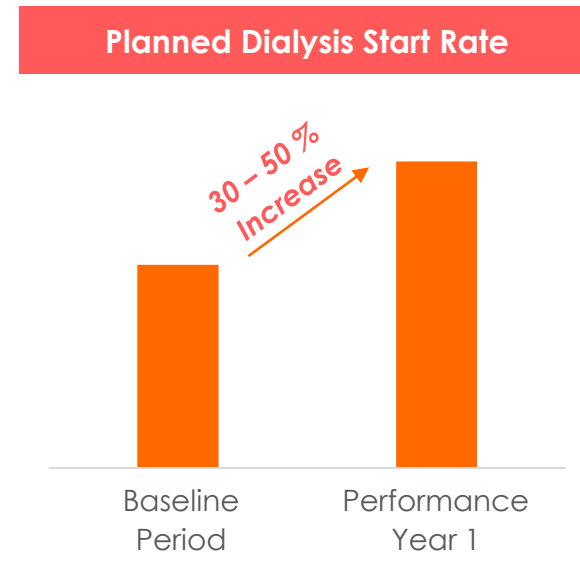
Kidney Health Management Program Cycle



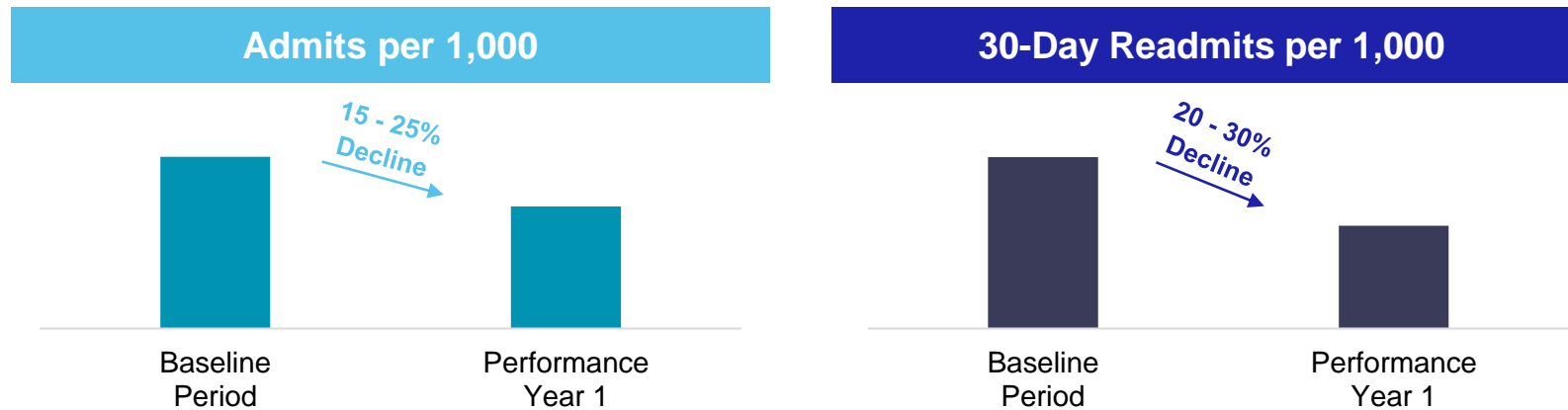
50% Increase in Planned Dialysis Starts

- We categorize dialysis starts as planned vs. crashed based on three key variables: (i) nephrologist visit counts, (ii) pre-ESRD CKD staging, and (iii) initiations via inpatient admissions
- **30 - 50% increase in planned dialysis start rate** during performance year
- Planned dialysis starts are associated with a 46% home dialysis rate while crashed dialysis starts are associated with a 11% home dialysis rate – implies that **patients with planned dialysis starts are 3 - 4x more likely to utilize home dialysis**

Dialysis “Crash” Definition	
Nephrologist Visit Count	Patient initiates dialysis with fewer than 3 nephrologist visits in prior 12 months
Pre-ESRD CKD Stage	Patient initiates dialysis and transitions to ESRD without previously being staged a Stage 5 patient
Initiation via Inpatient Admission	Patient initiates dialysis following an inpatient admission with a length of stay greater than 1 week



Admission/Readmission Management



Solution

- **Inpatient admissions and 30-day readmissions have declined**
 - Decline in index admissions combined with a reduction in 30-day readmits results in an outsized decline in 30-day readmissions
- Our solution for admission/readmission management is powered by both **technological and clinical expertise**
 - Our proprietary platform ingests data from multiple disparate sources and **stratifies patients based on their risk of an admission**
 - Our team provides comprehensive kidney care to improve clinical outcomes and slow disease progression, including comorbidity and medication management, preventative care, and addressing health barriers – as a result, **patients receive the right care, in the right place, at the right time**
- Care Navigators (CNs) and Quality Practice Advisors (QPAs) **leverage ADT data feeds in order to deliver timely follow-ups and prevent readmissions**
 - Ensure appropriate transitions in care, reconcile medications, arrange for home health and/or medical equipment, and assist in scheduling any required follow-up appointments between patients and their providers
 - Collaborate with clients to ensure consistent receipt of ADT files and determine opportunities to obtain files within 24 hours of an inpatient admission (vs. today's average of 3-5 days)

Summary



Why do CKD patients matter to Health Systems and ACOs: CKD Patients Challenging and Expensive to Treat!

- Chronic diseases like CKD account for 84% of all health care spending in the USA
- (CKD) has a complex and reciprocal relationship with other chronic diseases. Worldwide, hypertension and diabetes are the leading causes of CKD, and these diseases share common, modifiable risk factors for development. CKD is a major risk factor for development of cardiovascular disease and also increases the risk of cardiovascular mortality by 8- to 10-fold
- The propensity of CKD between 7-9% of the general population and up to 15% in the Medicare population
- 80% of Stage CKD patients don't know they have CKD until they crash, which leads to significant ED visits and expensive hospitalization.
- 70% of CKD patients have multiple other comorbidities.
- low-income status is also disproportionately associated with CKD, with increased risk of albuminuria, progression of CKD and end-stage renal disease (ESRD)

Leveraging Population Health Innovation to Treat CKD

- **Identify Disease and Drive Early Adoption**
 - Identify early-stage CKD and early intervention and treatment can reduce the cost of care dramatically and reduce disease progression
 - Opportunity to monitor and manage medication and pharmacy protocols to ensure medication adherence and reduce drug to drug interactions
- **Closing Gaps in Care:**
 - Drive Revenue Growth for service lines tied to Gaps in Care (i.e. lab, rad, pharmacy)
 - Improve referral patterns to specialists within the network
 - Reduce patient leakage
- **Improved Coding**
 - Improve RAF Scores through improved HCC Coding Identified by HM
 - Improve Reimbursement with accurate and appropriate coding

Leveraging Population Health Innovation to Treat CKD

- **Improve clinical outcomes:**
 - Definitive treatment protocols for existing CKD patients
 - Maximize treatment through AI and Predictive models
 - Real time monitoring of CKD patients care plans allows for immediate intervention by providers (Care Navigation team)
 - Improve Coordination of care between multiple providers
- **Mitigate Risk for Health Systems:**
 - Reduce probability ER visits and hospital admissions due to kidney crash
 - Mitigate potential CMS penalties through improved outcomes and HEDIS measures
 - Reduce readmissions through enhanced monitoring and preventative care for CKD, Diabetes and Hypertension
 - Downstream potential to improve Value Based Purchasing score and stay above the national benchmark

Thank You!

