

Chronic Kidney Disease in Medicare

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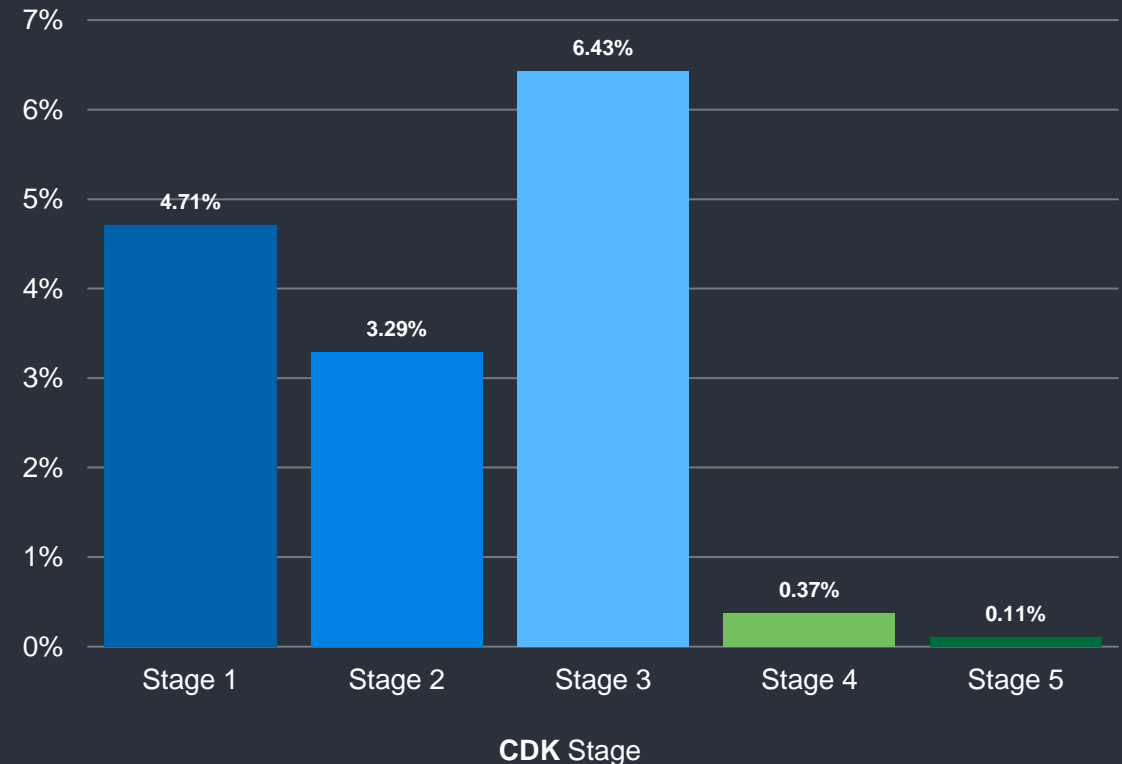
What is chronic kidney disease and who is impacted?

Almost 15% of the U.S. population (37 million people) has CKD

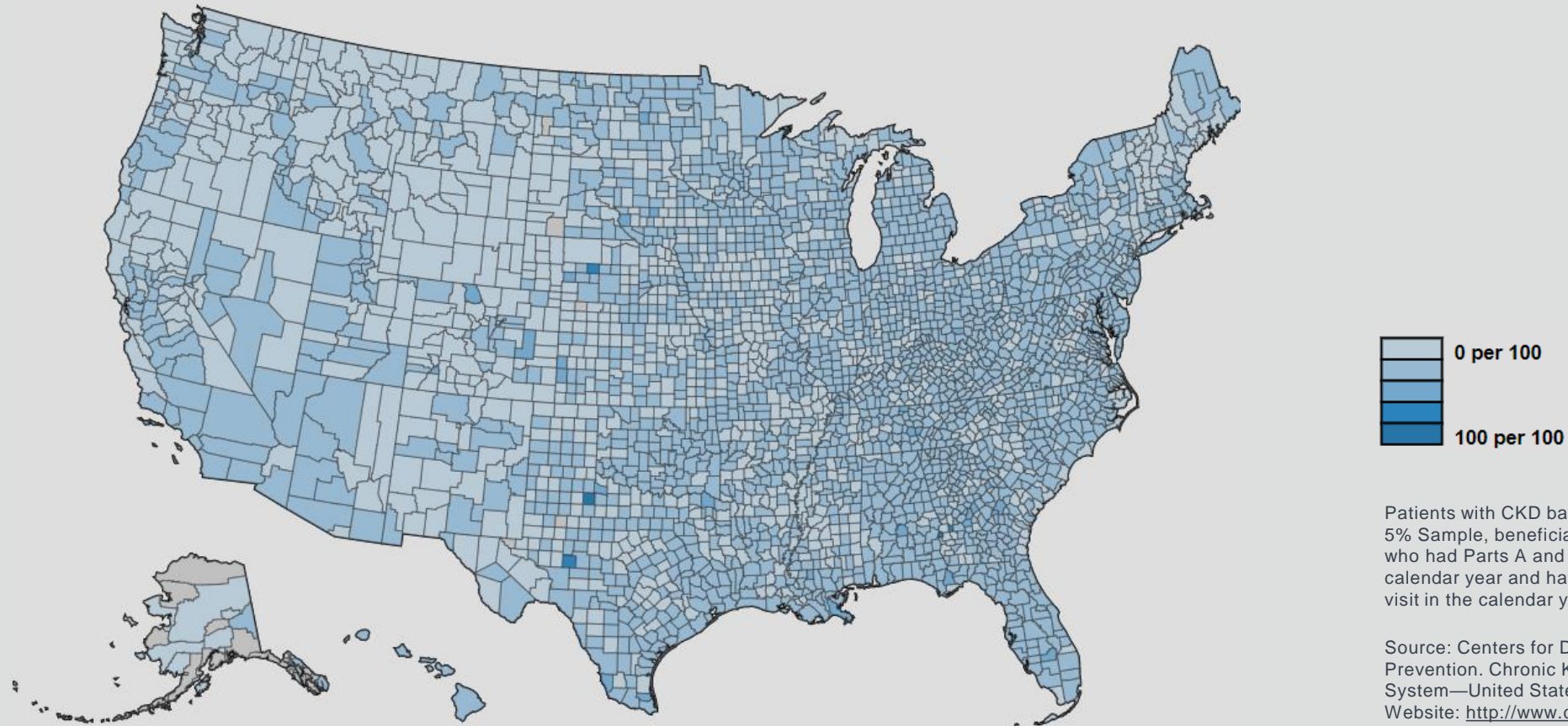
- **Prevalence of CKD increases with age**, ranging from 6.3% of individuals ages 20-39 to 32.2% of individuals ages 60+.
- There are six stages of CKD:
 - Stage 1: Kidney damage with normal or increased GFR (glomerular filtration rate, an indicator of how well the kidneys filter blood)
 - Stage 2: Mild reduction in GFR
 - Stage 3: Moderate reduction in GFR
 - Stage 4: Severe reduction in GFR
 - Stage 5: Kidney failure
 - End Stage Renal Disease (ESRD) [dialysis dependent]
- Given the age distribution of CKD, CKD patients are concentrated in the Medicare markets (fee-for-service and Medicare Advantage)

Sources: National Health and Nutrition Examination Survey (NHANES), 2015-2018 participants age ≥ 20.
Website: <https://adr.usrds.org/2020/chronic-kidney-disease/1-ckd-in-the-general-population>

Prevalence of CKD by Stage: 2015 - 2018



CKD prevalence varies significantly in the US...

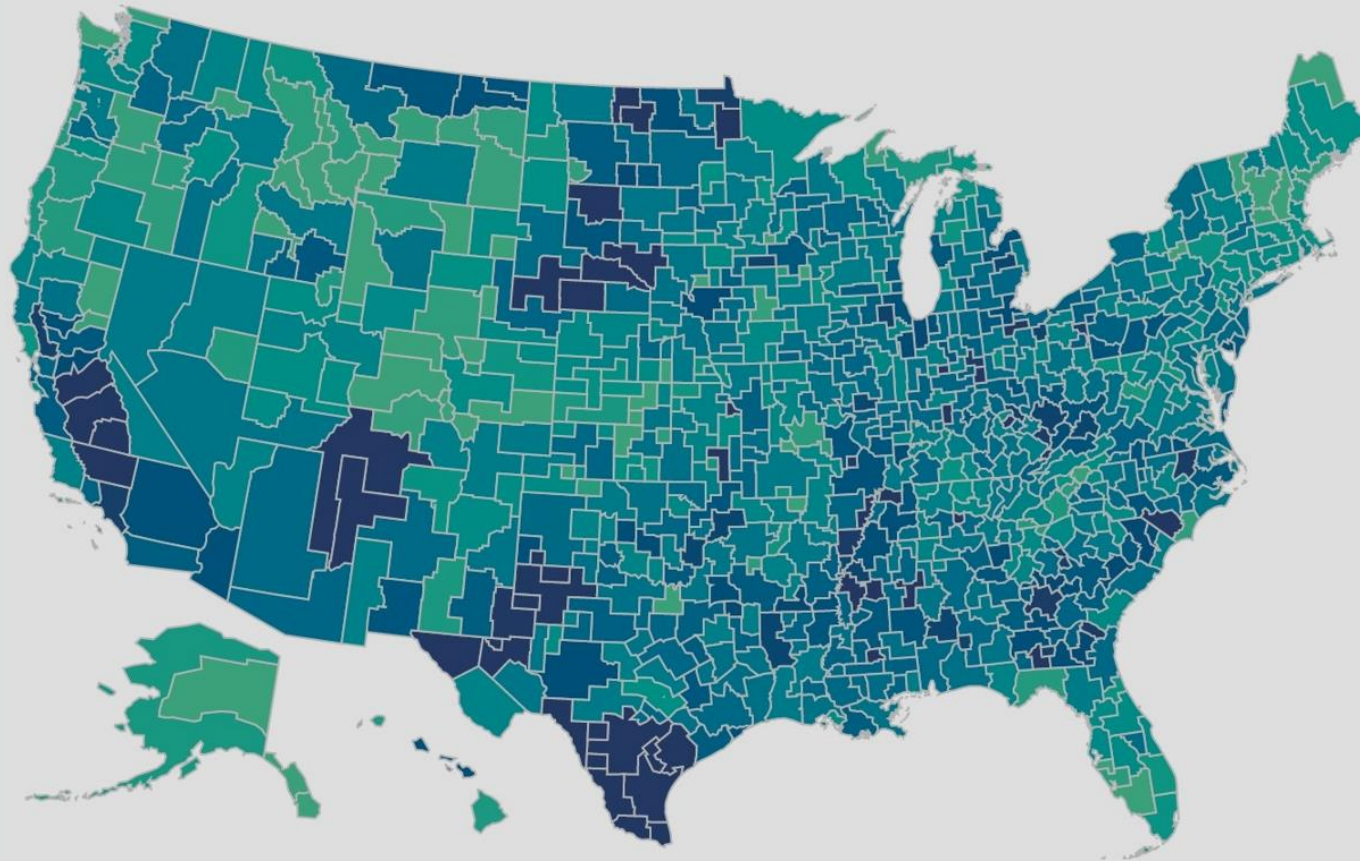


Patients with CKD based on the 2019 Medicare 5% Sample, beneficiaries aged 65 years or older who had Parts A and B coverage for the entire calendar year and have at least one outpatient visit in the calendar year

Source: Centers for Disease Control and Prevention. Chronic Kidney Disease Surveillance System—United States.

Website: <http://www.cdc.gov/ckd>

...and so does ESRD prevalence



Adjusted ESRD prevalence (cases per million people), by Health Service Area, 2017-2018

Data Source: 202 United States Renal Data System Annual Data Report.
Website: <https://adr.usrds.org/2020/end-stage-renal-disease/1-incidence-prevalence-patient-characteristics-and-treatment-modalities>

What is ESRD?

ESRD is advanced kidney disease, requiring kidney transplant or dialysis for patient survival

2018

785,883

cases

Kidney failure is permanent in almost all cases, resulting in the need for a regular course of long-term dialysis or a kidney transplant to maintain life



Vast majority of patients are in Medicare FFS

But some are also in commercial, Medicare Advantage, (MA) and Medicaid



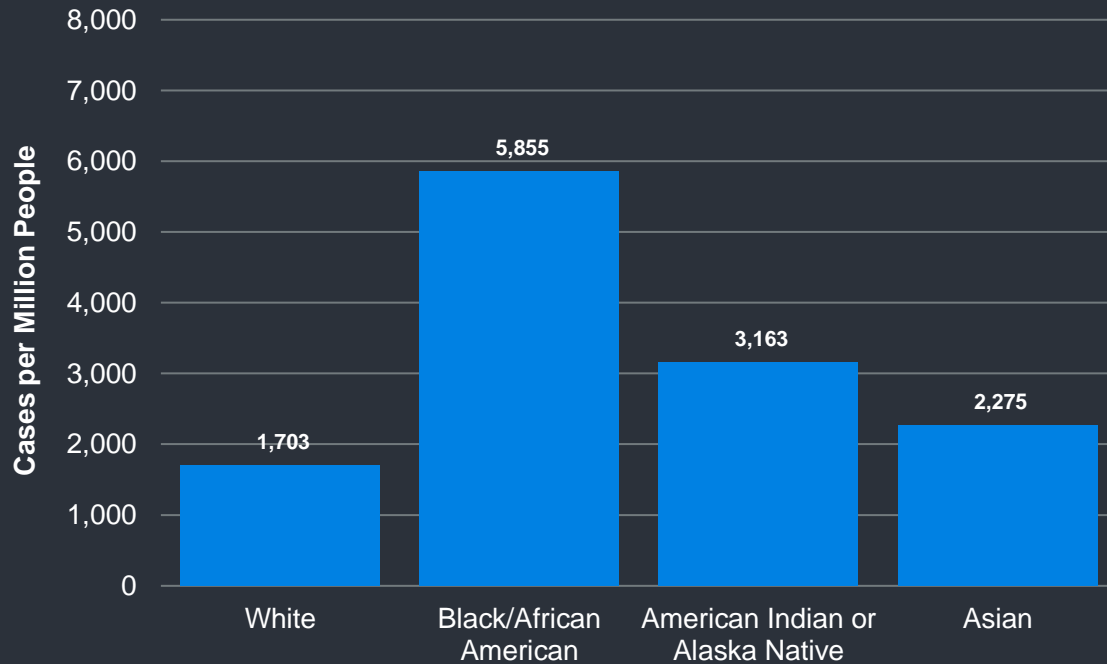
Until 2021, unless already enrolled in MA, new ESRD patients could not enroll in MA. Starting in 2021, ESRD beneficiaries could enroll in MA.



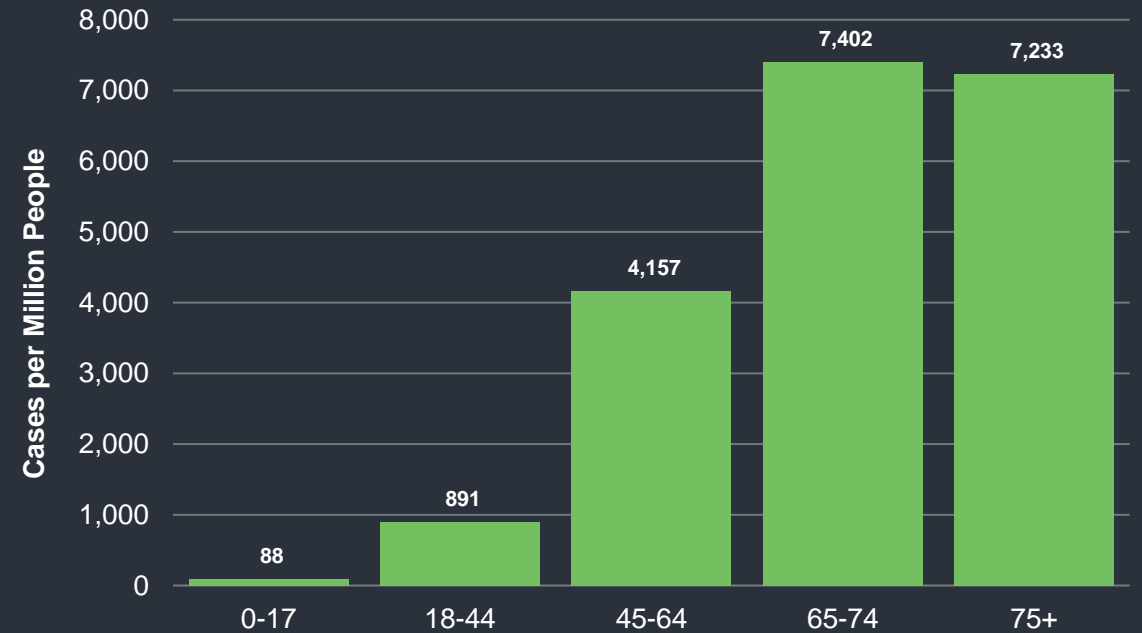
Source: 2020 USRDS Annual Data Report: Epidemiology of kidney disease in the United States, <https://adr.usrds.org/2020/end-stage-renal-disease>

ESRD disproportionately impacts older and minority populations

Adjusted Prevalence of ESRD by Race - 2018



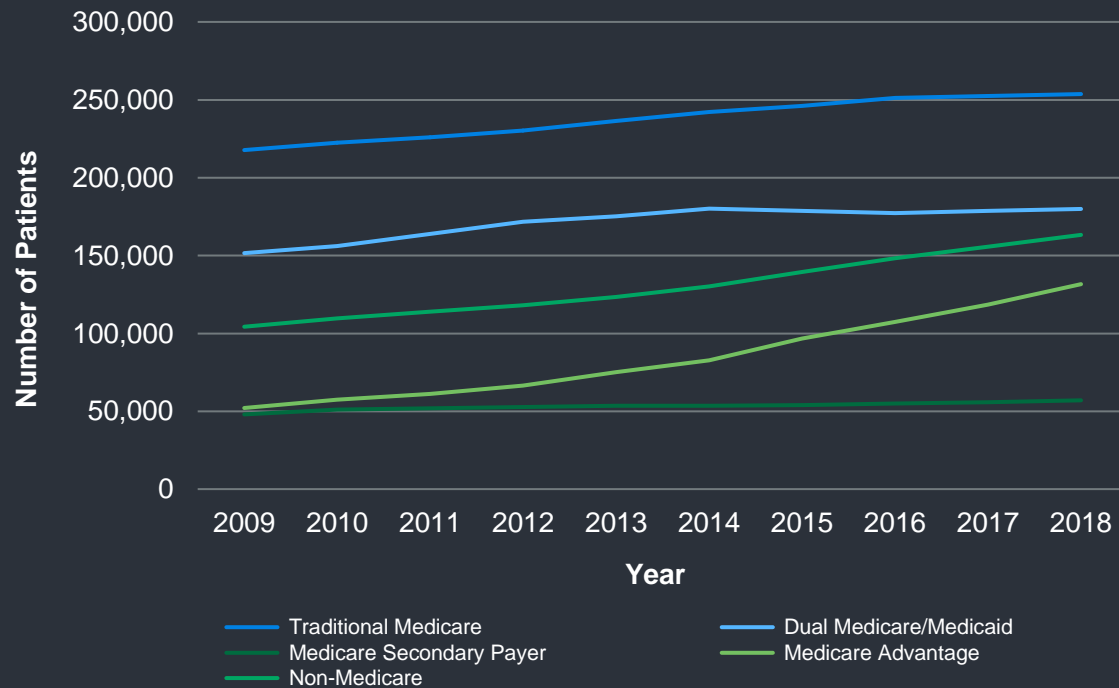
Adjusted Prevalence of ESRD by Age - 2018



Source: United States Renal Data System. 2018 USRDS annual data report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2018. Retrieved from: <https://adr.usrds.org/2020/end-stage-renal-disease/1-incidence-prevalence-patient-characteristics-and-treatment-modalities>

ESRD coverage and expenditures

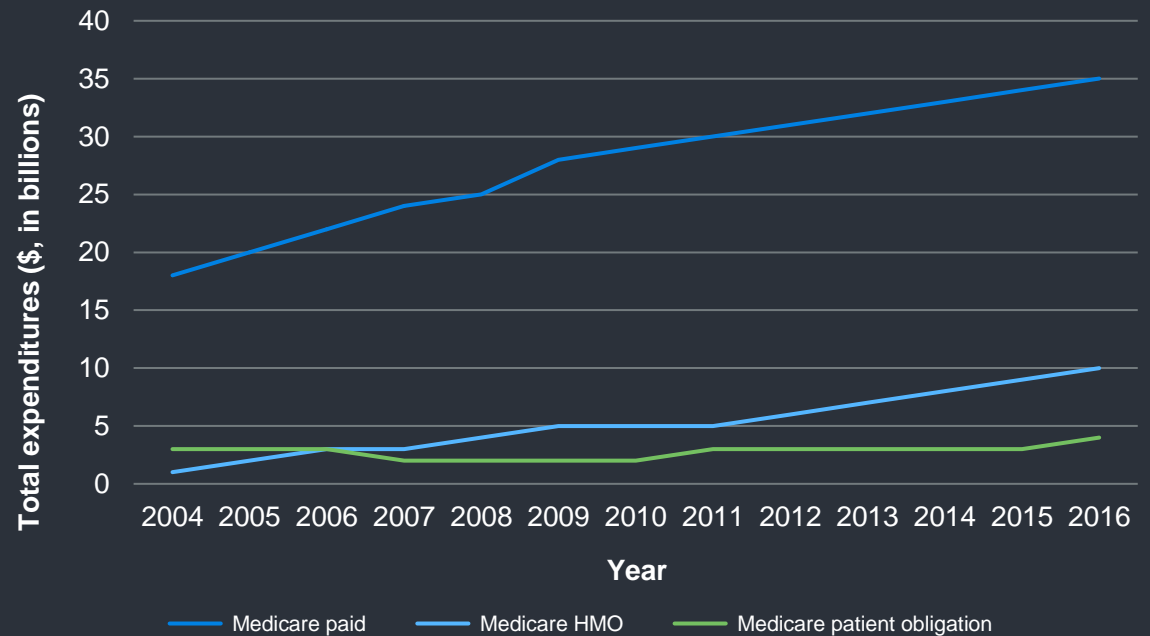
ESRD patients by coverage



Source: 2020 USRDS ESRD Database

Medicare ESRD expenditures are increasing

Trends in ESRD expenditures, 2004-2016



Source: USRDS ESRD Database; Reference Table K.1., 2018

Medicare has a special benefit for patients with ESRD

Medicare Parts A and B benefits were extended to ESRD patients eligible for Social Security benefits via the Social Security Act in 1972.

- ESRD and amyotrophic lateral sclerosis (ALS) are the only diseases with specific Medicare entitlement benefits.



For patients with ESRD, Medicare provides coverage of all services, not only those related to kidney failure.



CMS pays for dialysis under the ESRD prospective payment system (PPS)



Under the ESRD PPS facilities are paid a single case-mix-adjusted payment which includes composite rate services and ESRD-related drugs, laboratory services, and medical equipment and supplies

- Covered drugs include:
 - Part B ESRD-related drugs
 - Part D oral ESRD-related drugs with an injectable equivalent, (statutory provisions delayed the inclusion of oral-only ESRD-related drugs into the payment bundle until 2025)



Some MA plans bundle dialysis services similar to the CMS ESRD PPS, while other MA plans pay for dialysis services on a fee-for-service basis.



Changes to ESRD in Medicare

21st Century Cures Act changes



Enrollment changes

Due to the Act, starting 2021 any ESRD patient can join a Medicare Advantage plan

Medicare Advantage plans have 42% of Medicare members, but only 17% of Medicare dialysis patients, because beneficiaries with ESRD could not join a Medicare Advantage plan in the past



Contracting with providers

Medicare Advantage plans have network coverage requirements that lead them to cover services provided by dialysis providers without much leverage

Dialysis providers contract at higher reimbursement from plans compared to the FFS reimbursement



Payments to plans

CMS did not change plan reimbursement for ESRD patients for 2021 but continues to analyze the issue

Payments from CMS are often too low. Benchmarks are based on FFS reimbursement



What are plans changing?

- Risk score coding for ESRD beneficiaries
- Contracting with dialysis providers
- Managing care for ESRD population
- Reviewing benefits and coverage of medications for ESRD beneficiaries



Source: CMS and <https://www.milliman.com/-/media/milliman/pdfs/articles/medicare-advantage-eight-critical-considerations.ashx>

ESRD enrollment in 2021

What was the result of the annual enrollment period for Medicare?

Enrollment expectations

- MA bids: plans initially estimated an additional 930,000 projected ESRD member months (approximately 75-95K enrollees) from 2020 to 2021.
- Based on an analysis by CMS OACT, ESRD enrollment in MA plans is expected to increase by 83,000 by 2030 due to the 21st Century Cures Act provision. This increase is assumed to be phased in, with half of that increase projected to occur in 2021¹.
 - In February 2021, CMS confirmed that approximately 40,000 ESRD patients migrated to MA plans for 2021³
 - This enrollment increase is significantly less than the 930,000 ESRD member months that MA plans added to their 2021 bids ($930,000 / 12 = 77,500$)⁴
- Based on these estimates, over 25% of beneficiaries with ESRD will be enrolled in MA in 2021, increasing to about 40% by 2030¹

¹ AHIP (2021). What Are the Rules on MA for Individuals with ESRD?, Retrieved from: <https://www.ahip.org/medicare-advantage-what-is-changing-for-beneficiaries-with-end-stage-renal-disease-esrd-in-2021/#:~:text=ESRD%2C%20or%20kidney%20failure%2C%20affects,grandfathered%20through%20empl over%2Dsponsored%20coverage.>

³ CMS OACT User Group Call Date 02/25/2021, Retrieved from: <https://www.cms.gov/files/document/cy-2022-actuarial-bid-questions.pdf> (Topic #8)

⁴ CMS November 202 Actuarial User Group Call, Retrieved from: <https://www.cms.gov/files/document/user-group-call-agenda-2020-11-12.pdf>



Stage progression for CKD patients

CKD is a progressive condition



Patients generally cannot move backwards through stages of kidney disease as kidney function worsens

But progression through stages can be slowed

A recent SOA-funded paper creates a model that uniquely combines CKD stage progression and cost prediction based on covariates and historical data

<https://us.milliman.com/en/insight/a-two-part-model-of-the-individual-costs-of-chronic-kidney-disease>

Choice of covariates

The study includes many comorbidities to predict future CKD stage and costs

Available information was limited to claims data records, so lab results were not included directly

- Asthma
- Back Pain
- High Blood Pressure
- Various Cancers
- Chronic Obstructive Pulmonary Disease
- Diabetes
- Diet discussions
- Congestive Heart Failure
- Heart Infection/Inflammation
- Major Congenital Heart/Circulatory Disorders
- Specified Heart Arrhythmias
- Acute Myocardial Infarction
- Unstable Angina and Other Acute Ischemic Heart Disease
- Ischemic or Unspecified Stroke
- Hemodialysis
- Hepatic Cysts
- Hyperlipidemia
- Cardiomegaly
- Congenital renal cyst
- Pneumonias and Other Severe Lung Infections
- Proteinuria
- Renal Anemia
- Nicotine dependence
- Weight
- Gross Hematuria
- Urinary Tract Infection



The National Kidney Foundation lists several important social determinants of health (SDOH) that we could not capture (below)

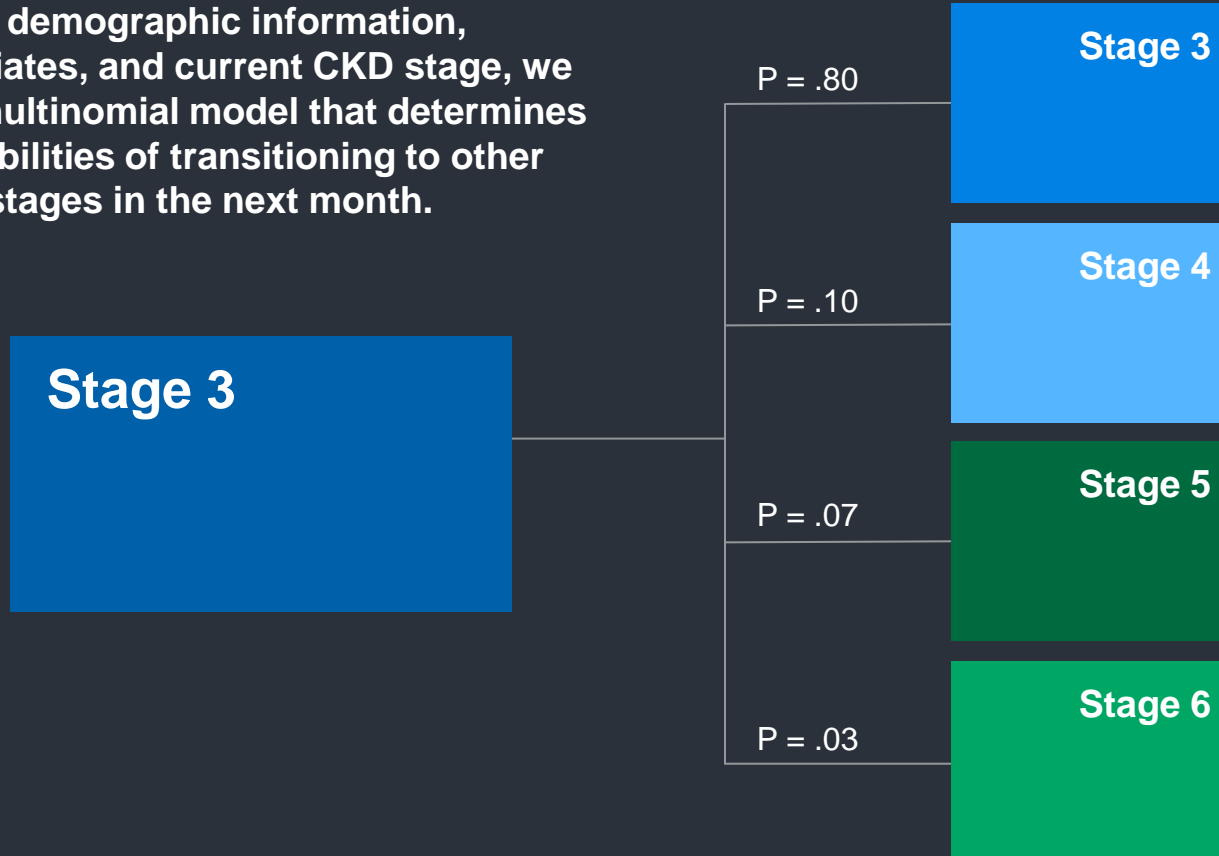
- Food insecurity
- Housing instability
- Unreliable transportation
- Domestic or neighborhood violence
- Utility access

https://www.kidney.org/atoz/content/kidney_discauses



Model Part 1: Predict Future CKD Stage

Using demographic information, covariates, and current CKD stage, we fit a multinomial model that determines probabilities of transitioning to other CKD stages in the next month.



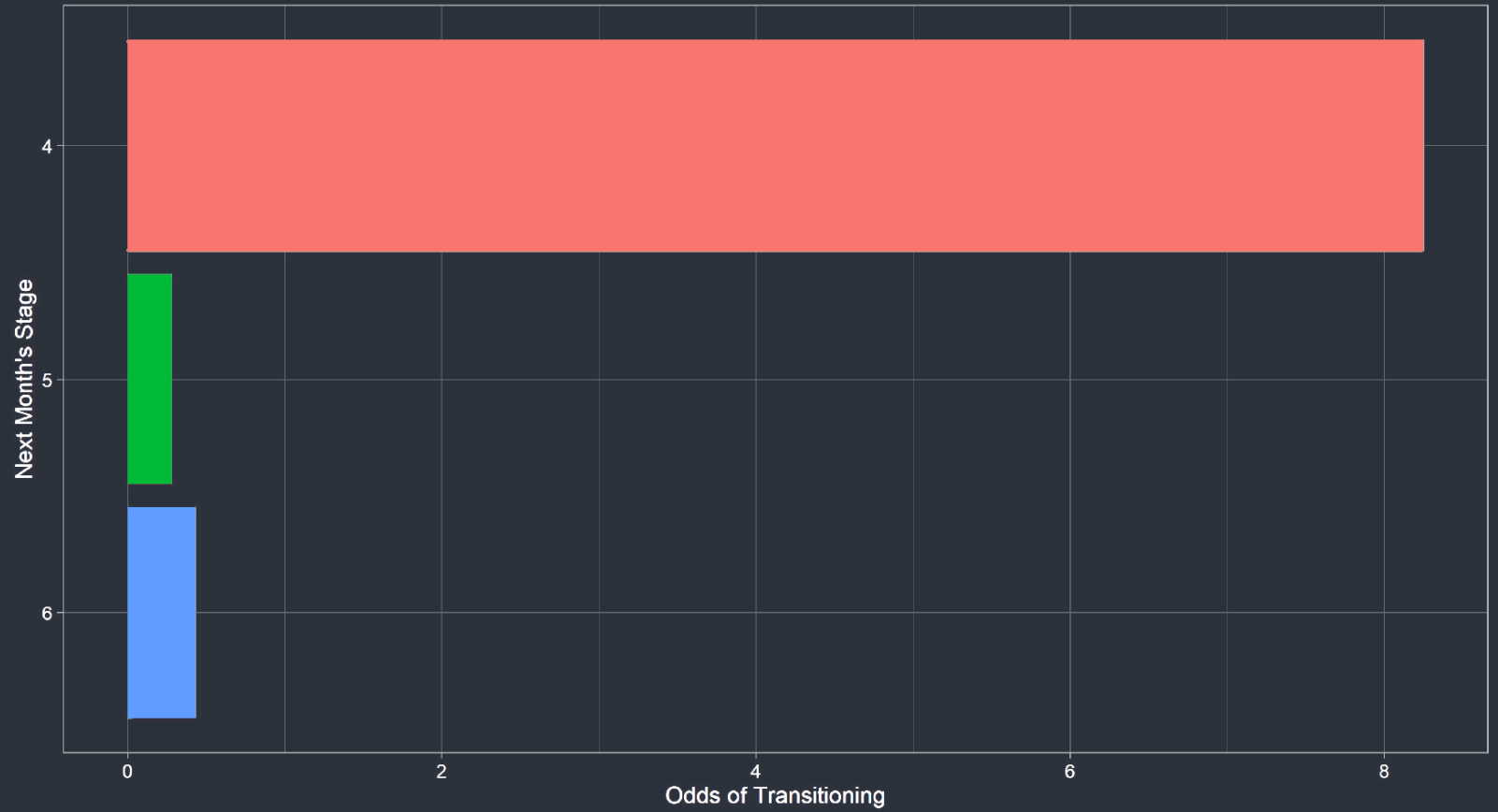
Model Part 2: Predict Future Healthcare Costs

Using the same demographic and covariate data, combined with the prediction for future CKD stage, this model predicts future healthcare costs.



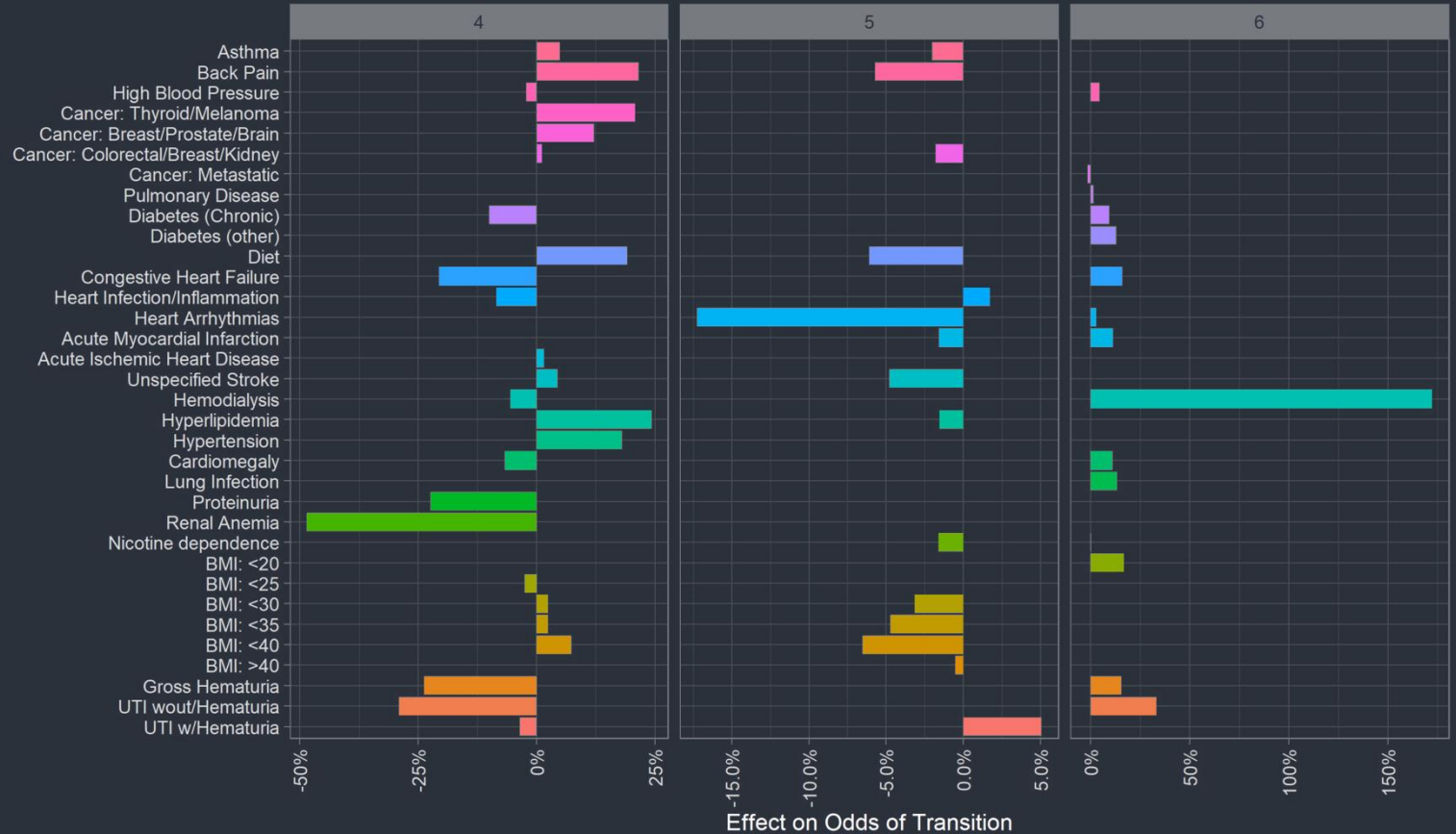
Medicare Stage Model Coefficients

Preliminary Odds of Paths
Starting in Stage 4



Medicare Stage Model Results

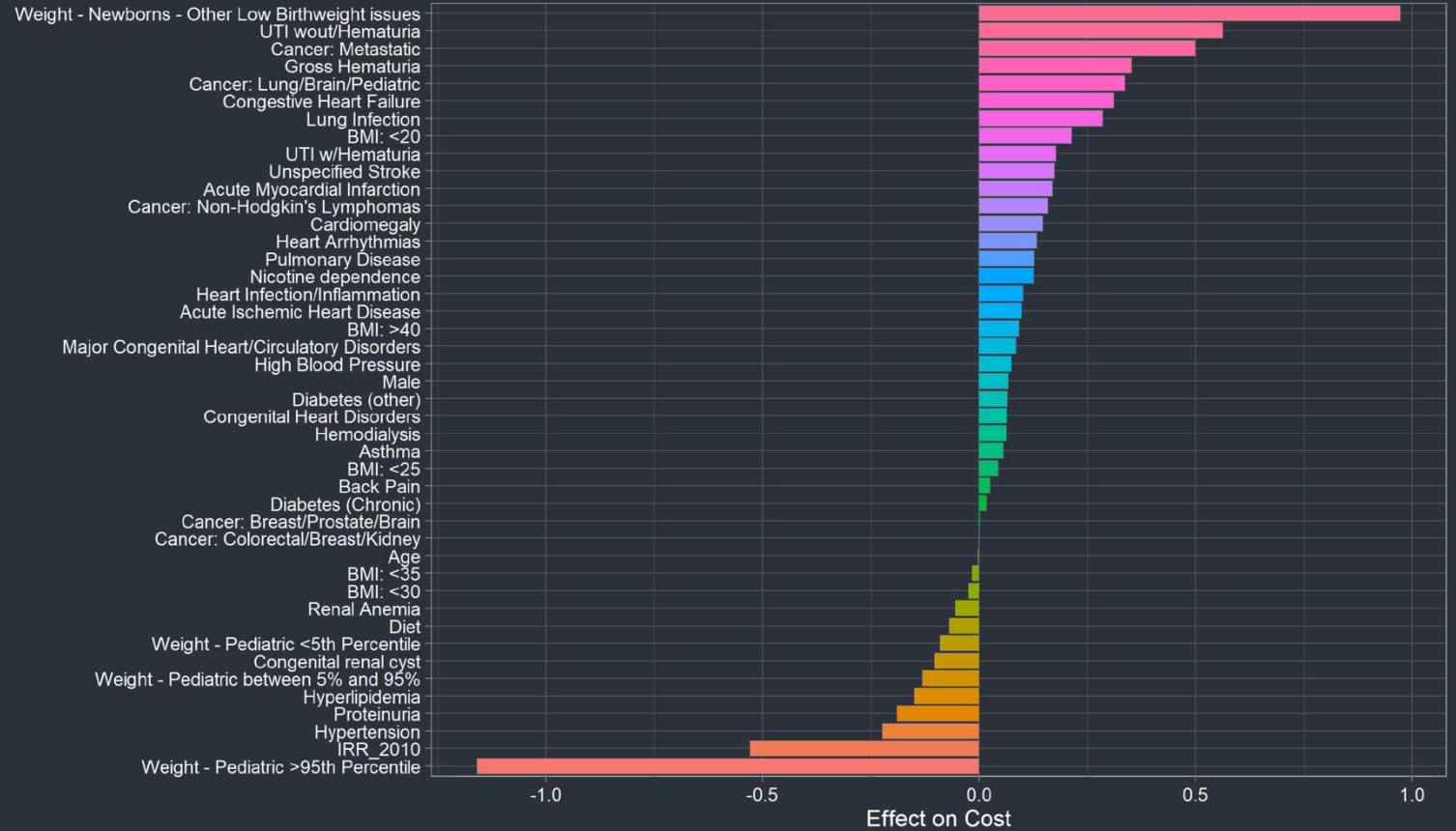
Effects on Movement (From Stage 4)



Medicare Cost Model Results

Stage 4 cost

(from gamma model)



Recent Developments in CMMI Innovation Models

Kidney Care Choices
and ESRD Treatment Choices

Executive Order – Advancing American Kidney Health

Mandatory Kidney Care Model

ESRD Treatment Choices (ETC) Model

Encourages greater use of home dialysis and kidney transplants for Medicare beneficiaries with ESRD, while reducing Medicare expenditures and preserving or enhancing the quality of care furnished to beneficiaries with ESRD.



Source: <https://innovation.cms.gov/innovation-models>

Optional Kidney Care Models

Kidney Care Choices (KCC) Model

This model incentivizes kidney disease prevention, encourage kidney transplantation and offer distinct payment options to further these goals.

- Kidney Care First (KCF) Model
- Comprehensive Kidney Care Contracting (CKCC) Models
 - Graduated option
 - Professional option
 - Global option



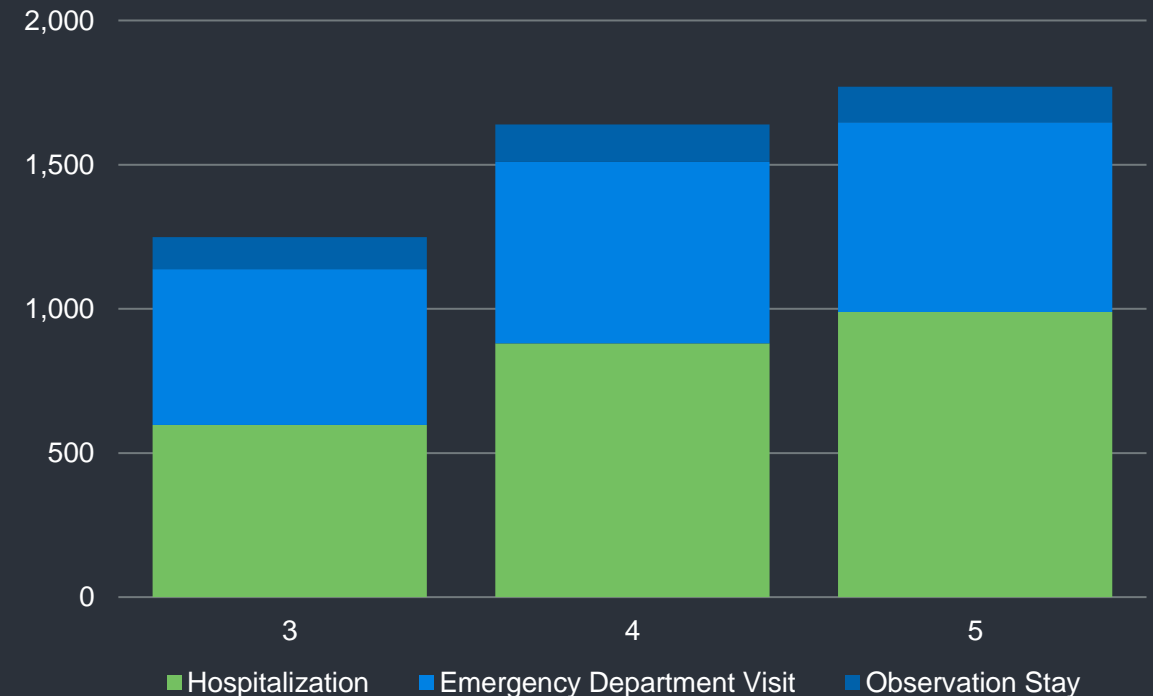
Kidney Care Choices (KCC) Model

A CMMI innovation model focused on managing patients with kidney disease from early stages

- “manage the care for Medicare beneficiaries with chronic kidney disease”
- “delay the onset of dialysis”
- “incentivize kidney transplantation”
- Participation is voluntary in select regions
- Several tracks ranging from upside-only to global capitation
- Capitation for managing nephrologists
- Began Jan 1, 2022
- Ends December 30, 2027

Source: <https://innovation.cms.gov/innovation-models/esrd-treatment-choices-model>

2018 Utilization Rates for Patients with CKD Stages 3-5



Source: <https://adr.usrds.org/2020/chronic-kidney-disease/8-transition-of-care-in-chronic-kidney-disease>

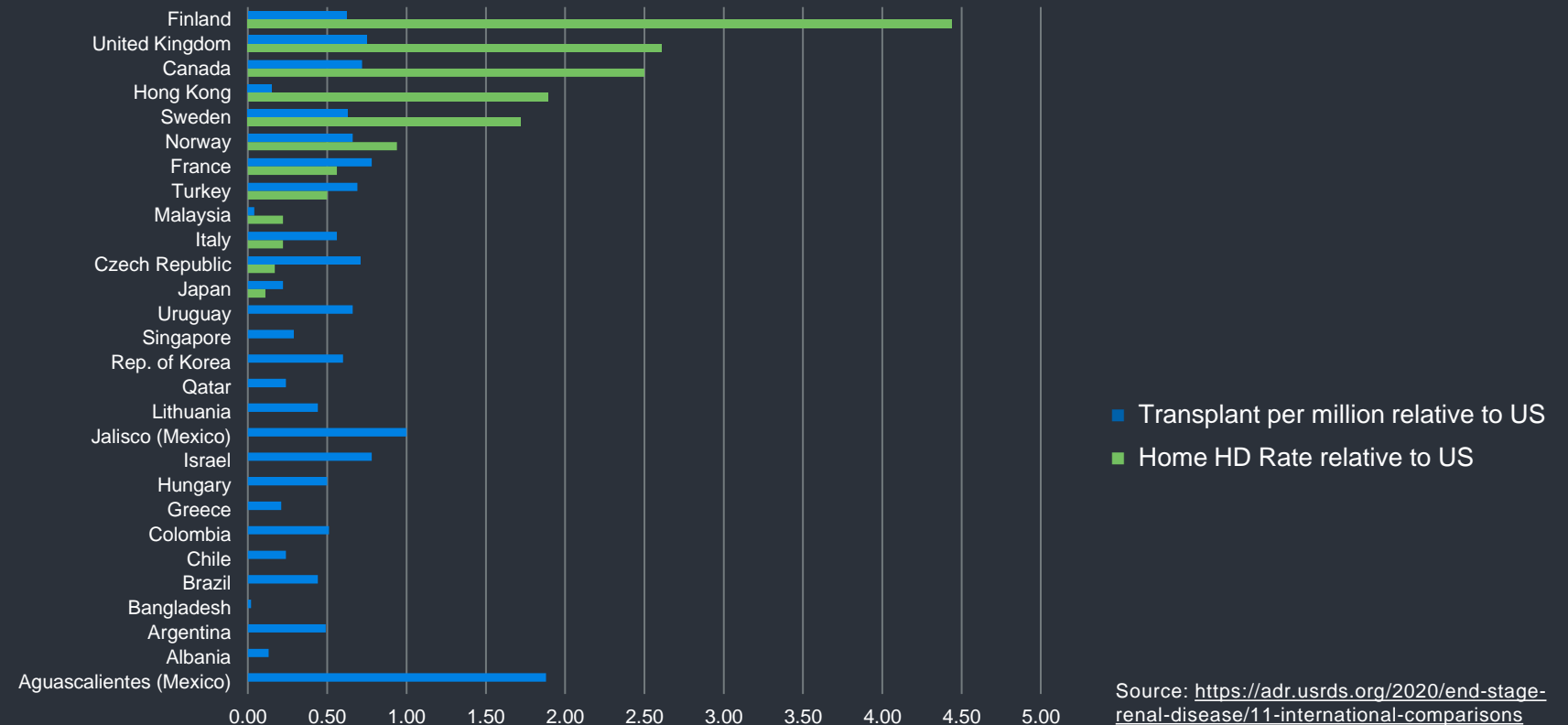
ESRD Treatment Choices (ETC) Model

A CMMI innovation model focused on home dialysis and transplant care

- “intended to encourage greater use of home dialysis and kidney transplants”
- Participation is mandatory for selected facilities/clinicians
- Increase to payments for home dialysis
- Adjustment (+/-) to in-center payments based on rate of home dialysis
- Began Jan 1, 2021
- Ends June 30, 2027

Source: <https://innovation.cms.gov/innovation-models/esrd-treatment-choices-model>

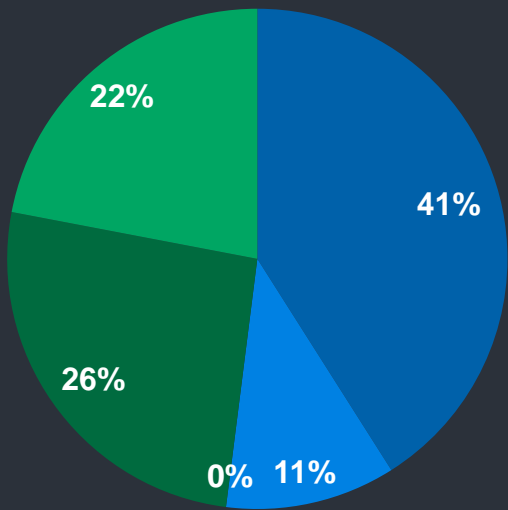
International Comparison for 2018 Home HD and Transplant Rates Relative to United States



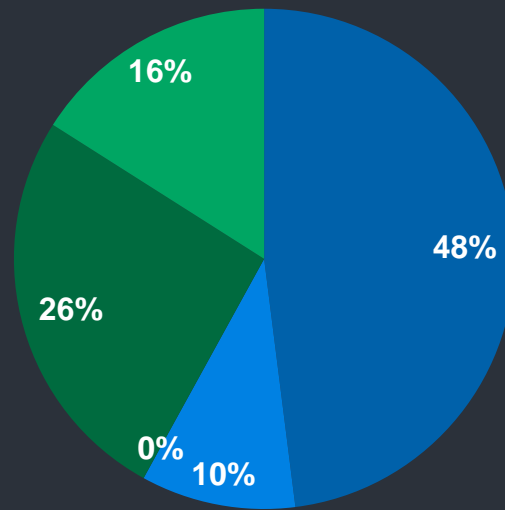
Risk Adjustment

CKD and ESRD are also expensive diseases

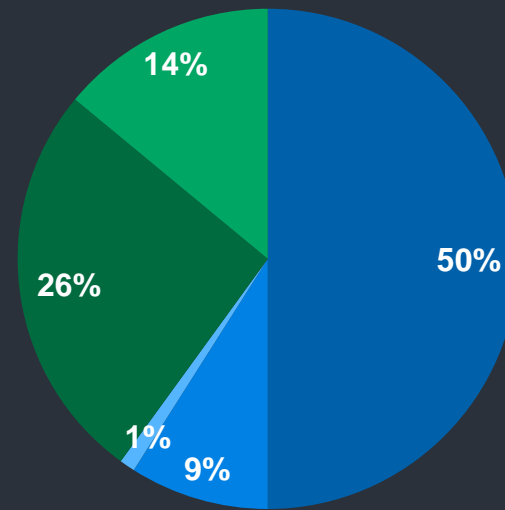
Stage 3
~\$4,500 PMPM



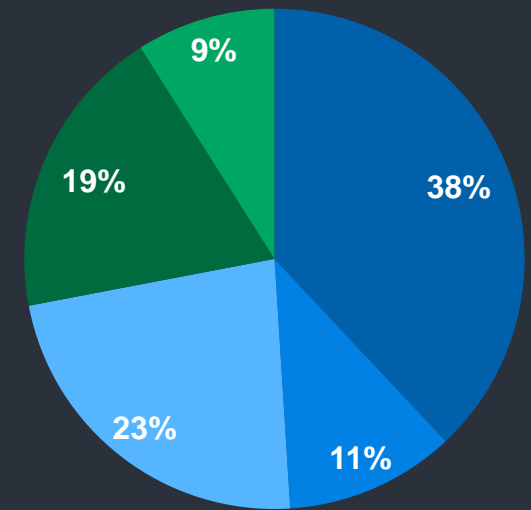
Stage 4
~\$5,500 PMPM



Stage 5
~\$5,500 PMPM



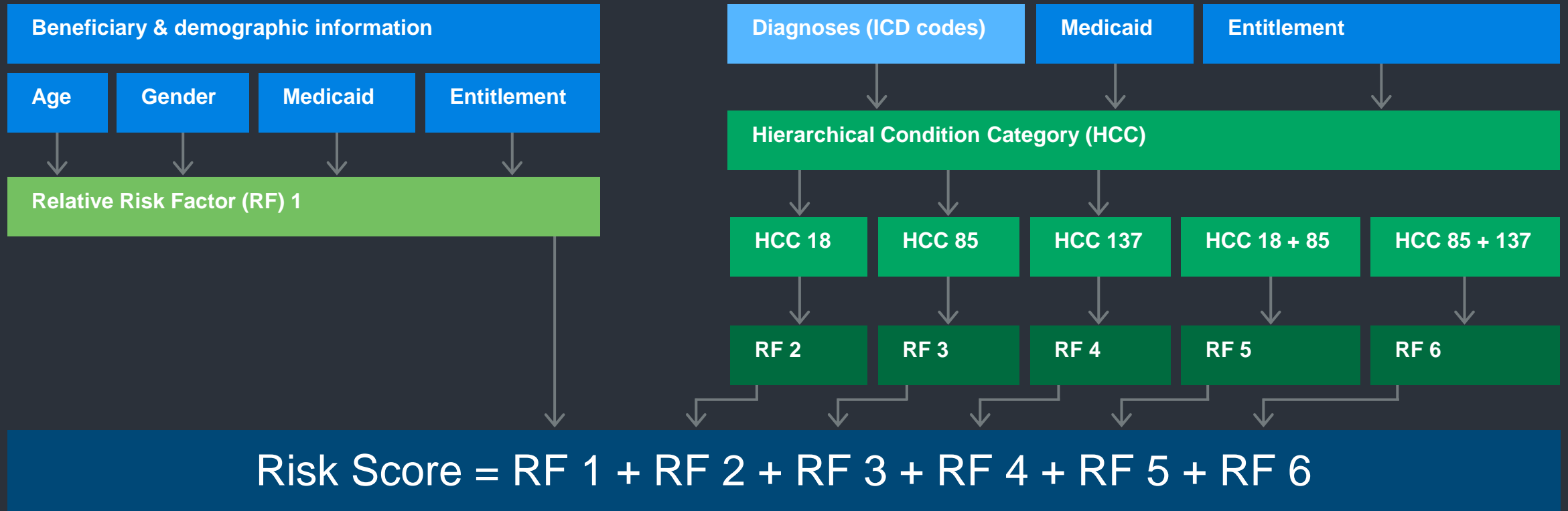
ESRD
~\$9,000 PMPM



Analysis of the 2016 Medicare FFS 5%
Sample and Milliman research

■ Inpatient ■ Outpatient ■ Dialysis ■ Professional/Other ■ Rx

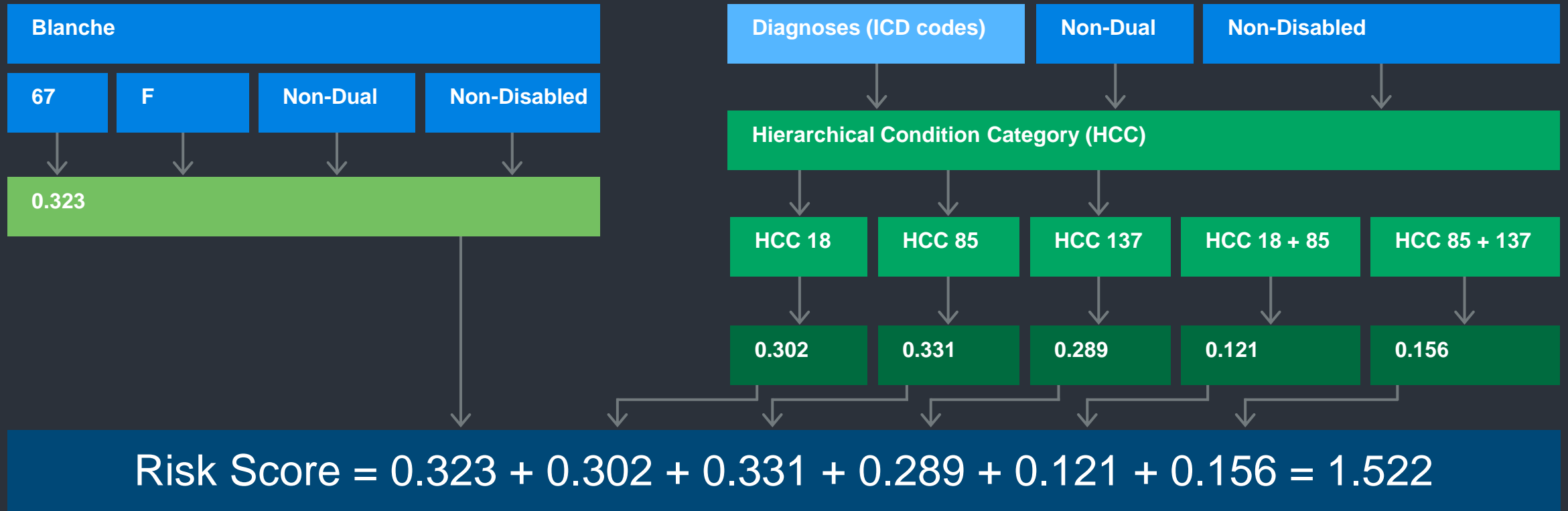
CMS's risk adjustment model



Source: Milliman illustration

Source: <https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Announcement2020.pdf>

Risk score illustration



Source: Milliman illustration

Risk Score Factors: <https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Announcement2020.pdf>

Build-up of risk score – illustrative example, CKD Stage 4

Non-institutional, non-dual, non-disabled females age 67 – 2021 Payment Year

		Rose Has undiagnosed CKD Stage 4	Blanche Diagnosed with CKD Stage 4	Dorothy Diagnosed with ESRD
Age/Gender	Female, 67	0.323	0.323	0.647
Conditions	Diabetes w/ Chronic Complications (HCC 18)	0.302	0.302	0.093
	Congestive Heart Failure (HCC 85)	0.331	0.331	0.084
	CKD Stage 4 (HCC 137)	n/a	0.289	n/a
	Diabetes w/ CHF (Diabetes_CHF)	0.121	0.121	-
	CHF w/ Renal (HCC85_gRenal_v24)	n/a	0.156	n/a
	Total Raw Risk Score	1.077	1.522	0.824
	Parameters			
	Normalization Factor /	1.097	1.097	1.079
	MA Coding Pattern Differences x	0.941	0.941	1.000
	Final Risk Score	0.924	1.306	0.764
Payment	4 Star Payment Rate for Cook County, IL	\$1,044.12	\$1,044.12	\$8,045.96
	Risk-Adjusted Rate	\$964.60	\$1,362.27	\$6,144.46

Risk score factors: <https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Announcement2020.pdf>

Normalization and MA coding pattern adjustments: <https://www.cms.gov/files/document/2021-announcement.pdf>

Payment rates: <https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Ratebooks-and-Supporting-Data>

The need for coding optimization

What it is?

Accurately coding existing conditions



Why it is important?

Conditions lead to revenue; avoid audit risk



Illustrative example – CKD Stage 4

Missing conditions		Conditions captured	
Rose	0.323	Blanche	0.323
Diabetes	0.302	Diabetes	0.302
CHF	0.331	CHF	0.331
CKD Stage 4	--not coded--	CKD Stage 4	0.289
Disease Interaction*	0.121	Disease Interaction*	0.277
Total RAF	1.077	Total RAF	1.522
PMPM Payment	\$965	PMPM Payment	\$1,362
Annual Payment	\$11,580	Annual Payment	\$16,344

*Additional risk score added automatically when certain diseases are coded together.
 RAF – Risk Adjustment Factor; PMPM – Per member per month
 Source: Milliman illustration

↑
+41%

Risk score timing and diagnoses included

Complete timeline for payment year 2021

Beneficiary Level File released in March/April



Typical timeline for 2021 risk adjustment submissions and payments

Payment type	2019						2020						2021						2022																	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
Initial	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	X	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Mid-year							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	X	■	■	■	■	■						
Interim Final							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					X	
Final							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	???

- Diagnosis period
- Diagnosis run-out
- Payment
- X Mid-year restatement payment
- X Final settlement payment

Payment based on 7/1/2019 through 6/30/2020 diagnoses submitted through 9/2020

Payment based on 1/1/2020 through 12/31/2020 diagnoses submitted through 3/2021

Payment based on 1/1/2020 through 12/31/2020 diagnoses submitted through 1/31/2022

Ultimate final based on diagnoses submitted through 8/1/2022

HPMS Payment Notice: <https://www.hhs.gov/guidance/sites/default/files/hhs-guidance-documents/final%202019%202020%202021%20annual%20payment%20run%20memo.docx> 05.22.2019_4.pdf

Considerations for Medicare Advantage

CKD and ESRD patient differences

	Chronic Kidney Disease	End Stage Renal Disease
MA revenue	County-specific benchmark rate based on a general MA population, shared savings with CMS	State capitation rate based specific to ESRD patient
MA risk adjustment	Using Part C HCC model, CKD 3-5 receive additional payments (>1.2)	Using ESRD HCC model, clustering around 1.0
Costs	Associated with multiple chronic conditions, more costly than average but under diagnosed/treated	Very expensive to treat with dialysis, Rx, and most likely managing other chronic conditions
Challenges for plans	<ul style="list-style-type: none"> ▪ Manage condition, appropriate care ▪ Appropriate Dx coding ▪ Slow progression to ESRD 	<ul style="list-style-type: none"> ▪ Manage condition, appropriate care ▪ Appropriate Dx coding ▪ Provider contracting ▪ At home dialysis, transplants

Source: CMS and Milliman illustration

ESRD In Medicare Advantage



Beneficiaries with ESRD were allowed to actively enroll in Medicare Advantage plans as of January 1, 2021

- What considerations are plans making?
 - Increase in ESRD prevalence in their plans (shifting from Traditional Medicare to Medicare Advantage)
 - Level of risk score coding in ESRD traditional Medicare Population
 - Contractual terms with Dialysis providers
 - Managing care for ESRD population
 - Benefit designs
 - Coverage of medications attractive to ESRD beneficiaries
- CMS did not change plan reimbursement for ESRD patients for 2021, but continues to analyze the issue
- Why would ESRD beneficiaries make the switch to MA? CMS expects approximately 83K to switch to MA.



Thank you

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