



MODELS OF CARE: ADDRESSING CKD EARLY WITHIN PRIMARY CARE PRACTICE

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DISCLOSURES

- Work reported here was funded by the US National Institutes of Health grant R18DK110959 and Dr. Peralta's American Heart Association Established Investigator Award
- I have no other disclosures

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OUTLINE

- Why primary care practice is a good place to focus on early CKD care
- Barriers to CKD care in primary care practice
- What models of care have been tried in primary care
- Electronic Decision Support System (eCDSS): a Pilot Randomized Trial in Primary Care

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WHY PRIMARY CARE?

Global burden of chronic kidney disease			
CKD burden	Global number 1990	Global number 2016	Percent increase
CKD prevalence	147.6 million	275.9 million	86.9
CKD incidence	11.3 million	21.3 million	88.8
Death due to CKD	0.59 million	1.18 million	98
Global CKD DALYs	21.6 million	35.0 million	62.2

Jha and Modi, Kint 2018

- This is too many people to be managed by nephrologists
 - While the majority will not have progressive renal disease, large proportion are at high risk for cardiovascular disease
- When CKD, cardiovascular disease and diabetes travel together, high rate of morbidity
→ multi-morbidity is the realm of primary care

WHY IS CKD CARE NOT ALREADY A PROMINENT PART OF PRIMARY CARE?

- Up to 58% of patients in a large US primary care system lacked timely follow-up of an incident abnormal eGFR
- Better follow-up when there was an electronic flag associated with the abnormal result
- Worse follow-up for PCPs who were behind on their electronic in-basket tasks
- PCP's cited factors contributing to care gaps:
 - Work overload – panel size and volume of test and message follow-up
 - Role ambiguity when initial lab test was ordered by another physician
 - Lack of easy access to clear clinical guidelines during clinical care workflow

WHY IS CKD CARE NOT ALREADY A PROMINENT PART OF PRIMARY CARE?

- Case: 68 yo man with hypertension comes in for primary care follow-up
 - Chief complaint: new leg pain
 - Blood pressure 129/72
 - Labs done the week prior show $\text{eGFR}_{\text{cr}} = 55 \text{ mL/min/1.73m}^2$
- Ideal scenario: Address the patient's agenda (leg pain) & address the eGFR
 - Review past measures – new diagnosis? Needs a second measure to confirm diagnosis? Need to risk stratify with microalbumin, cystatin C?
- If diagnosis of CKD established
 - Review medications in relation to CKD (statin, bp meds, NSAIDS)
 - Counsel on NSAID avoidance
 - Order new labs / additional workup for cause of CKD as needed
 - Add diagnosis to problem list
 - Arrange for appropriate follow-up

CASE CONTINUED

- What if...
 - Medical Assistant routine screening uncovers a new positive screen for depression?
 - Leg pain is concerning for claudication?
 - His wife accompanies him to the visit and says she is worried about his memory?
- What else is the abnormal eGFR competing with at the next visit?
 - Patient/family agenda
 - New acute concerns
 - Follow-up on issues addressed at the prior visit
 - Review and discussion of preventative care (e.g., cancer screening, immunizations)

WHAT IS NEEDED TO RAISE THE PROFILE OF CKD IN PRIMARY CARE?

- Make the case that addressing CKD early can reduce morbidity and mortality
- Clear easy to use guidelines aimed at primary care, with emphasis on actionable recommendations

Sperati et al, PLOS One, 2019

- Support PCPs to address CKD
 - Team-based care (with nurse, pharmacist)
 - Multi-disciplinary care
 - Use of the electronic medical record to assist care delivery

WHAT DO WE KNOW ABOUT MODELS OF CARE FOR CKD?

- Systematic review found 9 RCTs of multidimensional models of care
 - Four model types:
 - nurse-led (n=3)
 - multidisciplinary specialist team (n=2)
 - pharmacist-led (n=1)
 - self-management (n=1)
 - Minimal improvement in eGFR decline (1 nurse led-study); no improvement in CV outcomes or mortality
 - Mixed results on BP control and on medication prescribing (ACEi, statins, etc.)

Nicoll et al, Nephrology, 2018

WHAT DO WE KNOW ABOUT MODELS OF CARE FOR CKD?

- Compared with usual primary care, a wrap-around intervention in a multidisciplinary CKD clinic (PCP, NP, dietician, PT, psychologist, pharmacist, Thai traditional physician)
 - Decreased mortality, and a trend toward decreased CV outcomes
 - No impact on rates of ESRD, rapid renal progression, or 50% eGFR decline

Aiumtrakul et al, Kidney Dis, 2019

- PSP-CKD a cluster randomized trial of nurse-led panel management in 23 primary care practices compared with 23 usual care primary care practices in UK
 - No difference in CKD progression
 - Intervention group with higher rates of CKD documentation and higher rates of BP control

Major et al, JASN, 2019

WHAT DO WE KNOW ABOUT MODELS OF CARE?

- Joint Asia Diabetes Evaluation (JADE): Pragmatic trial allowing PCPs to utilize available registry and tools within the registry during their usual clinical care
 - Compared registry alone to registry plus nurse follow-up
 - Both groups showed increase in proportion of patients with at goal HbA1C, LDL cholesterol, and blood pressure
 - Equal rates of diabetes related complications, including incident CKD
- Tutino et al, Diabetic Medicine, 2016
- Barriers to participation in the registry for non-RCT participating practices
 - MD workload
 - Extra work to input data into registry electronic platform
 - Registry outside of usual workflow

Chan et al, Diabetes Res and Clin Practice, 2014



WHAT DO WE KNOW ABOUT MODELS OF CARE?

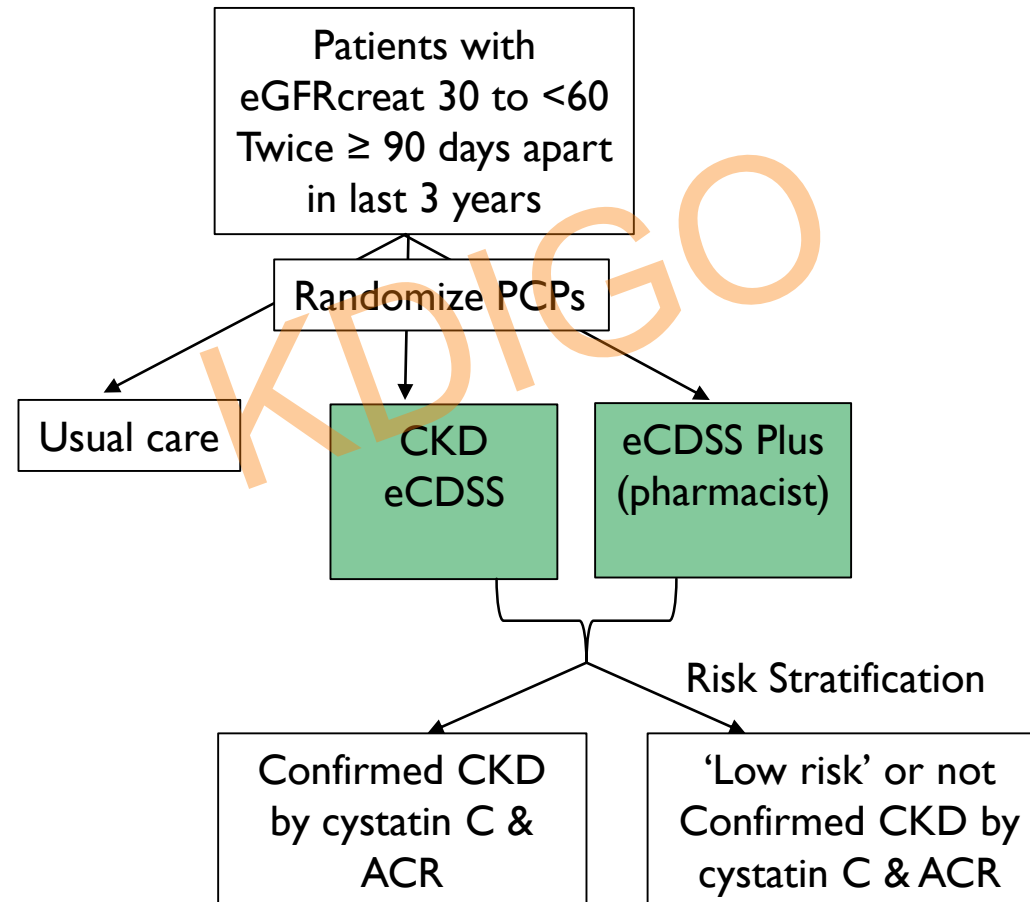
- So far no substantial impact on kidney disease progression
- Multidisciplinary wrap-around care has an impact on mortality, possibly through cardiovascular disease – may not be scalable
- Panel management approaches providing tools to use within clinical work and/or nurse support to strategize quality improvement within a practice can have an impact on disease control/management
- Successful approaches will need to consider MD workload and provide assistance within the context of usual clinical workflow

ELECTRONIC DECISION SUPPORT TO IMPROVE MANAGEMENT OF CHRONIC KIDNEY DISEASE IN PRIMARY CARE: A PILOT PRAGMATIC RANDOMIZED TRIAL

Dr. Leah Karliner and Dr. Carmen Peralta, co-PIs

- Multidisciplinary team: primary care, nephrologists, pharmacist, informaticist
- Goals for EHR embedded intervention development
 - Make it part of primary care workflow
 - Highlight specific recommendations and tasks
 - Confirm the diagnosis and risk-stratify with triple marker tests (creatinine, cystatin-C, microalbumin)
 - Management of microalbuminuria
 - Management of elevated potassium
 - Evidence based management of hypertension and lipids in CKD
 - Provide resources for patient education
 - What is CKD; NSAID avoidance
 - Potassium diet management
 - Refer the highest risk patients to nephrology

STUDY DESIGN: SINGLE ACACEMIC PRIMARY CARE PRACTICE



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Primary Feasibility Outcomes: Triple Marker Testing, BPA acceptance, CKD Awareness

Primary Process Outcome: Use of statins, ACEi/ARB

Primary Clinical Outcome: BP levels

ELECTRONIC CLINICAL DECISION SUPPORT SYSTEM eCDSS

- Best Practice Alert (BPA) – available above the medication list in real-time during the patient's visit once the triple marker labs were resulted
- Smart set – combination of general and tailored recommendations and orders to be signed during the visit

CKD Not CONFIRMED: LOW RISK

CKD Recommendations

CKD Action Required (1)

CKD is not confirmed in this patient by recent Cr, cystatin C, or albuminuria.

ⓘ Your patient can be considered as having no CKD per international guidelines. Repeat creatinine, cystatin C, and albuminuria in 6 months. If results are stable repeat annually.

✓ Accept (3)

Order

Do Not Order

Cystatin C with eGFR

Order

Do Not Order

Creatinine, Serum / Plasma

Order

Do Not Order

Albumin (Microalbumin), spot urine

✓ Accept (3)



CKD CONFIRMED

CKD Recommendations

CKD Action Required (1)

Your patient has CKD and they are at high risk for progression and/or complications.

ⓘ Blood Pressure Control

Patients with CKD should have sustained BP <140/90. Consider lower targets in persons with albumin to creatinine ratio ≥300 mg/g.

✓ Accept (1)

Open SmartSetDo Not Open

Personalized CKD RecommendationsPreview

✓ Accept (1)

SMART SET RECOMMENDATIONS

- General:
 - Blood pressure goal
 - NSAID minimization
 - Patient education materials related to CKD
- Tailored based on:
 - Presence of albuminuria
 - Potassium history
 - If age ≥ 50 and if they are on a statin or not
 - If meets criteria for very high risk & needs a referral to nephrology

SMART-SET EXAMPLE: K+ <5, ACR >30

Personalized CKD Recommendations ^

✓ From BestPractice

Your patient has CKD and they are at high risk for progression and/or complications.

Blood Pressure Control

Patients with CKD should have sustained BP <140/90. Consider lower targets in persons with albumin to creatinine ratio ≥300 mg/g.

▼ Recommendations

Review prescription and OTC NSAID use and counsel patient on NSAID minimization

▼ Albuminuria / Potassium Management

This patient has albuminuria

- Consider adding/maximizing ACEI/ARB and recheck K+ in 2 weeks

☐ lisinopril (PRINIVIL,ZESTRIL) 10 mg tablet
Disp-30 tablet, R-1

☐ losartan (COZAAR) 25 mg tablet
Disp-30 tablet, R-1

✓ Potassium, Serum / Plasma ■

Lab Collect, Routine, Expected: 9/8/2017, Expires: 8/25/2018

P Container details: Light green top preferred, Gold top acceptable
Resulting Agency - UCSF LAB

▼ Patient Instructions

✓ AVS - General CKD Education

✓ AVS - General CKD Diet Education

✓ AVS - NSAID Minimization

HIGH RISK REASONS FOR REFERRAL TO NEPHROLOGY

- SBP >150 with 3 agents including a diuretic
- Confirmed eGFR<30
- K⁺ >5.5 in the past
- ACR >300mg/g
- Polycystic kidney disease (PKD)
- At high risk of progression to ESRD based on KFRE equation >3%

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SMART-SET EXAMPLE: K+ >5.5, NOT ON STATIN, ACR >30

Personalized CKD Recommendations ^

✓ From BestPractice

Your patient has CKD and they are at high risk for progression and/or complications.

Blood Pressure Control

Patients with CKD should have sustained BP <140/90. Consider lower targets in persons with albumin to creatinine ratio ≥300 mg/g.

▼ Recommendations

Review prescription and OTC NSAID use and counsel patient on NSAID minimization

▼ Nephrology Referral

☒ Ambulatory referral to Nephrology

Internal Referral, Routine, NEPHROLOGY PARN, Nephrology

☐ eConsult to Nephrology (from Primary Care)

▼ Cardiovascular Risk Reduction

If CKD and age ≥50, guidelines recommend statin

☒ atorvastatin (LIPITOR) 20 mg tablet

Take 1 tablet (20 mg total) by mouth Daily.

Disp-90 tablet, R-3

Print

▼ Patient Instructions

☒ AVS - General CKD Education

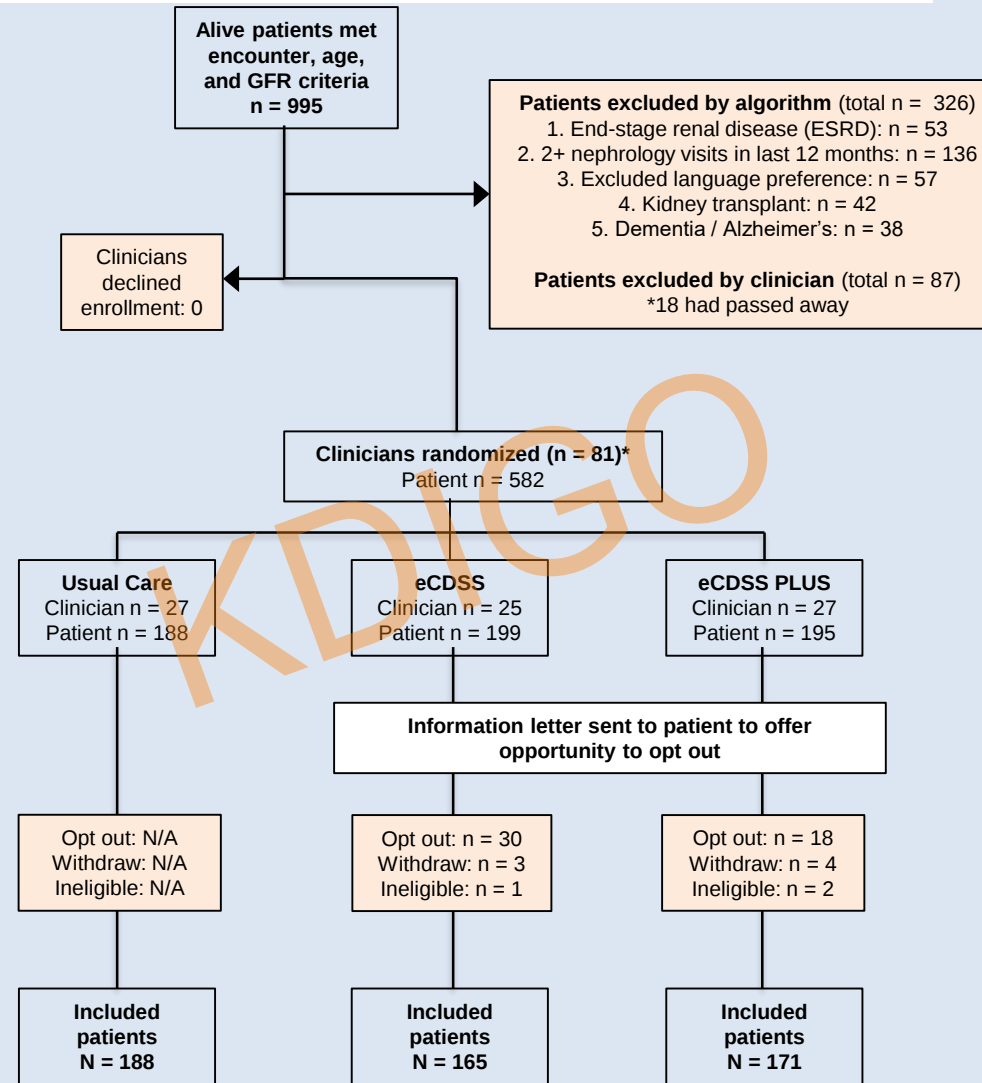
☒ AVS - General CKD Diet Education

☒ AVS - NSAID Minimization

eCDSS PLUS: CLINICAL PHARMACIST CALL

- 2 weeks after patient visit in which eCDSS smart-set launched
- Reinforced CKD-specific recommendations and any medication changes made at visit
- Medication adherence assessment and counseling for anti-hypertensives, diuretics, statins
- Documented telephone encounter in electronic medical record and route to PCP

Flow Diagram of Participant Selection



*Two clinicians who were randomized did not ultimately participate because their eligible patients either were excluded or opted out.

LESSONS LEARNED

- Using clinical data stored in the electronic medical record, we were able to identify patients requiring risk stratification for their presumed stage 3 CKD
- Through risk stratification we were able to identify patients with low risk CKD who did not need disease management, and those with risk for adverse CV outcomes and/or CKD progression who did need disease management
- PCPs participated at high rates in the intervention by clicking the eCDSS and signing related orders, including for patient education materials to be placed in the patient after visit summary
- PCPs considered the intervention to be low burden

REMAINING QUESTIONS

- Can we use the EHR to encourage primary care based risk stratification of CKD?
- How does use of the EHR to alert PCPs to a patient's CKD during a visit compare to use of panel management strategies? Or is a combination best?
- How can the nephrology community work with primary care to implement actionable treatment and prevention strategies in feasible ways in primary care?

THANK YOU

CKD eCDSS Team

- Leah Karliner, MD
- Lowell Lo, MD
- Sarita Pathak, MPH
- Carmen Peralta, MD
- Andrew Robinson, BS
- Rebecca Scherzer, PhD
- Marilyn Stebbins, PharmD
- Jennifer Livaudais-Toman, PhD

Funding

US NIH grant R18DK110959 (Karliner and Peralta)
AHA Established Investigator Award (Peralta)

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