Official Title: Pragmatic Approach to Chronic Kidney Disease Education in theDelta

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Study location: Up to 5 Harps Pharmacy sites in the Delta
(Specific sitesTBD after funding)

Background and Rationale

Over 350,000 adult Arkansans have chronic kidney disease (CKD) and 9 out of 10 (312,000) are unaware they have it. A "Know Your Kidney Number" (eGFR) poster (KYKN) campaign is being launched statewide to increase CKD awareness and detection. As awareness increases, the demand for patient education will increase. Educating patients has proven to be effective in delaying CKD progression and establishing optimal renal replacement therapy (RRT) when needed (1,2,3,4). CKD patient education has historically been provided by nephrology clinicians. Yet most patients are not referred to nephrology until they are nearing the need for RRT (5). Novel pragmatic approaches to reaching and educating patients earlier in their disease state and partnering with a broader pool of clinicians that can provide the education is needed (1,6). Most problems related to CKD start when kidney function is ~45 %, earlier education can empower patients to make changes to protect their kidney function earlier and plan for RRT (1,7,8).

UAMS developed and copyrighted the "CKD: What You Need to Know" patient education system. Research showed almost 90% of the attendees could choose a modality after either tele-education (TE) or face to face (FTF) education. Home modality choices doubled. Patients were able to make informed choices regardless of the modality of education. Of those starting RRT 47% started on a home modality or received a transplant. This compares to 10% nationally. Both transplant and home dialysis have better outcomes and are less costly compared to in-center hemodialysis (1,5).

Harp’s Pharmacy has a successful medication therapy management (MTM) program where pharmacists are provided time for patient-centered activities for patients with diabetes (DM), hypertension (HTN), the 2 leading causes for CKD, and heart failure (HF), the leading cause of death in CKD. Thirty six percent of patients with DM will develop CKD and hypertension can be both a cause and an effect of CKD (5). In this project they will use their MTM infrastructure to add CKD to their program in select pharmacies in the delta. The CKD tools build on and support actions that improve the underlying conditions that are already being addressed. The “CKD: What Your Need to Know” tools will be used with patients with known CKD or 2 of the 3 conditions covered by MTM and randomized into 1 of 3 education arms that offer various levels of support or a control arm.

Using non-nephrology clinicians to expand access to education earlier in their disease progress is essential. This project will inform how various levels of support provided by pharmacists and their staff using nephrology developed tools can effect patient choice allowing comparisons of support time and outcomes. Empowering patients to be proactive partners in their health care, through education and accountability, by choosing both their RRT and performance goals to protect their kidneys is key to improving outcomes. Demonstrating that non-nephrology clinicians can effectively educate and support these patients will provide models that other clinicians can use.

Minorities, especially in rural areas, are less likely to receive most kinds of care including evidence–based practices, home dialysis or transplantation (4,5). Developing patient-centered approaches to care such as this project can reduce disparities.

One-on-one outreach to educate and motivate patients and seek their feedback can strengthen commitment and adherence to medical regimens. Learning what to expect can promote self-management behaviors.

The AR Department of Health (ADH) Southeast (SE) region covers most of the Delta and was selected because it has the poorest outcomes for patients starting RRT. In 2017, new patients were predominately black (61%), less than half had seen a nephrologist prior to starting RRT, only 1.3% had seen a dietitian, most (92.3%) started hemodialysis using a catheter and 2.1% started on home peritoneal dialysis. Only 2.1% had no insurance (9). This data can be tracked annually to track impact.

The tools being used were developed by a multidisciplinary team of nephrology experts which are limited in the delta. Courses including train the trainer classes for pharmacies and 10 points of Care for CKD for clinicians will be conducted. Collaboration with local providers can both educate and promote community engagement.

Harp pharmacists expressed randomization concerns. They report that many of their MTM subjects have multiple family members or friends enrolled in the study. This could confound randomization into various arms since these subjects are highly likely to compare and contrast the details of their intervention. It was decided that a cluster randomization schedule would be utilized with each cluster self-selecting a leader that would be enrolled in the study and be responsible for education of the other cluster members. All cluster members will undergo the same testing.

Specific Aims

The primary aim is to assess the effectiveness of pharmacists and their staff to educate CKD and high risk patients evaluating effectiveness through patient choice of RRT in each arm (e.g. home dialysis choice rate). Secondary aims include 1) Identify actions patients are willing to take to protect their kidney function using the CKD Action Plan that contains 10 performance goals based on international CKD guidelines that can slow CKD progression 2). Describe outcomes and methods used by peer leaders to educate cluster members using the same goals. 4) Compare costs (based on pharmacist and pharmacy associate time) with outcomes in each arm.

Study Design and Procedures

This study is a randomized control pilot study using non-nephrology clinicians to educate patients who are at high risk for CKD how to protect their kidneys and be ready for RRT if and when needed by utilizing nephrology developed educational tools.

Harp's pharmacists will screen patients in their MTM program and enroll them in familial or peer clusters consisting of 1 or more subjects and randomize them into 1 of the 4 study arms using a site specific randomization schedule. Each arm will receive pre and post testing and health literacy evaluation. Two education arms will use the 139 page CKD: What You Need to Know workbook including the CKD Action Plan as self-study tools and follow-up during regular MTM appointment. The 3 arms include 2 education arms and a control arm with various levels of intervention: Arm 1) case management model including pharmacist initiated discussion of workbook content and action plan reinforcement, Arm 2) brief introduction of the workbook and action plan reinforcement, Arm and Arm 3) the control group will receive a list of web-based CKD sites and a copy of the action plan with no additional intervention. Patient initiated CKD discussions will be tracked by both the pharmacist and staff by topic and time spent. Time spent by the pharmacist and staff will be calculated along with outcomes and compared in each group. Data collected upon enrollment will include year of birth, race, gender, county of residence, history of CKD, diabetes, hypertension and/or heart failure, patient reported blood pressure, AIC, eGFR and hemoglobin, smoking history, renal transplant history and if is under the care of or has been seen by a nephrologist in the past.

The CKD: What You Need to Know Workbook is 139 pages and includes:

- An Introduction
- 8 Chapters plus resources:
    1. Kidneys and Chronic Kidney Disease (CKD)
    2. Protecting Your kidneys and Slowing CKD Progression
    3. Your Choices for Dialysis and Transplantation
    4. Lab Results: What they mean & What you can control
    5. Chronic Kidney Disease & Eating Habits

6. Chronic Kidney Disease & Meds
7. Learning to Cope with Kidney Disease
8. Paying for Your CKD Treatment
9. CKD Action Plan
10. Web-based Resources
11. Kidney Talk: What do these words mean?
12. Resources

Each section ends with “Frequently Asked Questions”, “Test Your Knowledge” and has space for notes. Patient testimonies are found at the back of 6 chapters.

The workbook went through health literacy editing with a goal of a 5th grade reading level. The chapters ranged from 3rd to 7th grade levels. It was felt that it was important for subjects to learn or at least be exposed to words that were kidney related and frequently used by their health care providers. So the first time each of these words were used in the workbook they were red and the definition was in the kidney talk section on that page. Then the first time the word appeared in subsequent chapters the word was in red but no definition was on that page.

Subjects will be randomized into 1 of 2 education arms that offer various levels of support or a control arm using a site specific computer generated randomization schedule. Presumed monthly visits.

Study Arm	Handouts	Visit 1*	Visit 2	Visit 3	End of Study June 2022
Testing		Pre-test		Post-Test	Evaluation
1: Case Study Model	Workbook Action Plan (V1) Label reading Exercise (V2)	Pharmacist initiated review of workbook and assist with Action Plan goal selection	Action Plan Reinforcement. Discuss Chapters 1-4. Provide “Label Reading Exercise”	Action Plan Reinforcement. Discuss Chapters 5-8 and resources. Review results of Label exercise	Open conversations from each party for all arms after evaluation
2: Minimal Instruction	Workbook Action Plan	Briefly explain handouts with focus on Action Plan.(5-10 minutes)	Action Plan Reinforcement. Answer patient’s questions.	Action Plan Reinforcement. Answer patient’s questions.	As Above
3: Control	Resource List Action Plan	Answer patient’s questions.	Answer patient’s questions.	Answer patient’s questions.	As Above

*On first visit, education arms subjects will be asked to read 1 chapter of the workbook weekly. All subjects will receive a CKD Action Plan and be asked to set individual goals.

Secondary outcome data collected at each visit include both self-reported and/or pharmacist or physician confirmed blood pressure and AIC, eGFR, hemoglobin. Patient and/or pharmacist initiated CKD conversation and topics including CKD action plan goal progress. The action plan has 1 knowledge goal related to CKD cause, eGFR and trend and 10 performance goals based on international guidelines and best practices including AIC goal of 7 or less, blood pressure goal of less than 140/90, exercise goal of 30 minutes 5 times a week, medications that may need to be avoided (ex: ibuprofen) or may need to be taken (ex: Statin) if you have CKD and DM or over 50 years old), smoking cessation, kidney friendly diet (may need to modify salt, phosphorus and/or protein intake and be edema free [may require monitoring and adjust salt and water intake], home monitoring of blood pressure, blood sugar and weight, weight management and anemia (goal hemoglobin above 10g/dL)

Study Population

High Risk Subjects will be identified from the Harps MTM program or others having multiple known medical problems (CKD, HTN, DM or heart disease). Know Your Kidney Number Posters which will be available statewide by the time the study starts will be posted in the pharmacy. Even though they are not study specific, they provide pertinent CKD information that could motivate subjects to want to learn more about how to protect their kidneys. Study Patient information Sheets will be available for interested parties.

A total of 100 clusters of 1 or more people from familial or peers groups will be enrolled. The actual number of subjects will depend on the volume of clusters with more than 1 person. This would include approximately 1/3 of the Harps MTM subjects that have both DM and HTN.

Inclusion Criteria

- Adults (any gender)>18 years old
- Enrolled in Harp's MTM program
- Has Known CKD or 2 of the 3 conditions covered in MTM (DM, HTN and Heart Failure)
- Not on dialysis

Exclusion Criteria

- unable to read or speak English
- history of significant cognitive dysfunction unless qualified caregiver is the one being educated
- not personally independent or without any social support

Risks and Benefits

A risk to study participants is the potential for loss of confidentiality of study data.

Measures to protect the confidentiality of study data will be implemented as described in the Data Handling and Recordkeeping section below.

Potential benefits include the education received can motivate changes that can protect their kidney function, slow CKD progression and empower them to become more active in their health care.

Ongoing monitoring of international guidelines will be done to ensure education goals remain current.

Data Handling and Recordkeeping

All data received from Harps will be de-identified prior to being sent to UAMS. UAMS study tools will be de-identified. At randomization, the subject will receive a study number including: Harps site #, enrollment #, study arm #, subject initials, and # of people in cluster. In clusters with more than 1 person, the leader will be 1, the 2nd person will be 2, the 3rd 3. The cluster members initials will not be used, they will link to the leader.

Example the first cluster in the study consists of 2 people at site 3 lead by John Doe and randomized to study arm 2. The study number would be 3.1.2.JD.1 for the leader and 3.1.2.JD.2 for the 2nd person.

Data sent to UAMS Research Team. Data can be submitted in REDCap or on Paper.

After Visit 1	Intake Sheet including that includes demographics and medical history, Pre-Test, List of Meds	
After Final Visit	Data Collection Sheet 1, Post-test, Program Evaluation & List of Meds	

EOS: death, start of dialysis or transplantation.

Data will be stored in the UAMS Research office with access limited to study personnel only. UAMS-maintained computers and servers will be used to maintain databased information.

The Principal Investigator will carefully monitor study procedures to protect the safety of research subjects, the quality of the data and the integrity of the study.

At the conclusion of the study, the data will be maintained and later destroyed in accordance with UAMS policy which is for seven years after final reporting or publication of a project, or longer if required by a sponsor or regulation. Any data from subjects who opt out will not be kept for future use.

Multisite Research

Harps district director and research coordinator will be responsible for the education and oversite of each of their sites and not be responsible to UAMS IRB oversight. UAMS will supply the educational tools for both pharmacist, their staff and study subjects. This will include the CKD: What You Need to

Know workbook, slide sets, CKD action plan, Label reading exercise, Web-based resource list, data collection sheets, pre and post tests and program evaluation. UAMS staff will participate in the initial education of Harps staff and future education, as requested. UAMS will make the 10 points of CKD Care for Primary Care Providers (PCPs) available to both Harps staff and local PCPs, as requested.

Harps oversight staff and UAMS research staff will have monthly web-based or face to face meetings, with additional communication as needed. Reporting requirements are the same for each site and outlined in the data section above. A central site may be selected by Harps when the sites are selected and serve as a model or mentoring site.

Data Analysis

Study arms will be compared by RRT choice using logistic regression that includes covariates found to differ between the groups. Results will be reported in terms of odds ratios and their 95% confidence intervals. Each group will be compared on the ability to choose a modality by the end of their 2nd or 3rd MTM visit, depending on their study arm and at the end of the study (June 2022) by comparing pre and post testing and program evaluation answers. To ensure balance in patient characteristics across clusters chi-square or Fisher’s exact test, as appropriate, will be used to evaluate categorical measures, whereas two-sample t-test or Wilcoxon rank test, as appropriate, will be used for continuous measures.

The primary study aim is the ability of the participants to choose a dialysis modality by the end of their second or third visit, depending on their study arm. Descriptive statistics will be used to examine the trend in the patients’ ability to choose a dialysis modality, level of interest in kidney transplant, the selection of a possible donor and having enough information to decide across the two assessment periods.

Home dialysis (HOD) is underutilized in management of End Stage Renal Disease (ESRD) and there is a near universal agreement amongst nephrologists and professional societies for improving its rates with a target of around 30-40% of the prevalent ESRD population. Patients, when provided with comprehensive early CKD education, have repeatedly indicated their preferences at similar rates (around 30-40%) for HOD. Despite these findings, the rates of HOD are on the decline. The ADH SE region’s HOD rate for incident ESRD patients is less than 3%, AR rate is 11%, the national rate in 10% and the pilot study using the CKD: What you Need to Know rate was 44% for the 68 subjects needing to start RRT by the end of the study and an addition 3 % were able to get pre-emptive transplants.

It is likely that the lack of patient awareness and education play a critical role in the low incident HOD rates. The factors that contribute to this lack of patient awareness and education include the fact that comprehensive education programs require time- and resource consuming processes, needs multidisciplinary expertise, and are only partially compensated by the current reimbursement standards in the nation. Hence, only limited medical universities and few nephrology practices provide these programs. With over 300,000 Arkansans unaware they have CKD and close to 50,000 more having CKD but little access to proper education, expanding the pool of clinicians and sites that can deliver comprehensive nephrology developed patient education to a larger patient population over a wider geographical area in a cost effective manner has the potential to improve patient outcomes and save health care dollars. It is estimated that HOD saves as much as $19,000 per patient per year compared to in-center hemodialysis (). Demonstrating that non-nephrology clinicians can effectively educate and support these patients will provide models that other clinicians can use. Increased access to local CKD patient education can improve outcomes for minorities, especially in rural areas, who are less likely to receive most kinds of care including evidence–based practices, home dialysis or transplantation. Developing patient-centered approaches to care, such as this project, can reduce disparities.

Secondary outcomes will be compared in all clusters. Because randomization seldom results in samples that are balanced on all baseline characteristics, information on control variables relevant to choice of dialysis mode will be collected, including age, gender, baseline intent to start home based dialysis, whether currently being followed by a nephrologist, patient engagement measured by the percent of visits where CKD patient initiated discussion took place and self-reported and provider confirmed outcomes listed in study plan. Pharmacists and staff time will be compared between arms and linked to costs to support each intervention arm. Tests appropriate for the measure will be used when comparing baseline characteristics between the research arms.

The sample size was based on what was appropriate for what could be reasonably be accomplished in the time frame with the available funding. Power based on the primary aim was a secondary consideration. A population of 100 clusters could result in a much larger population of subjects depending on the size of the clusters. Utilizing clusters to essentially train peer educators and describe their training methods, as well as, the outcomes of each of their cluster members can inform future research involving CKD peer educator led CKD patient education programs.

Ethical Considerations

This study will be conducted in accordance with all applicable government regulations and University of Arkansas for Medical Sciences research policies and procedures. This protocol and any amendments will be submitted and approved by the UAMS Institutional Review Board (IRB) to conduct the study.

This study meets the criteria for exempt review and does not require formal consent of the subjects. However, a Patient Information Sheet explaining the study will be provided to interested parties. After discussion with Harp's pharmacist, verbal consent will be obtained and completion of the pre-test will be evidence of consent. UAMS will receive no HIPAA data on subjects. All data will be de-identified as outlined above and a HIPPA waiver has been requested.

Dissemination of Data

Results of this study may be used for presentations, posters, or publications. The publications will not contain any identifiable information that could be linked to a participant.

The study will be listed on clinicaltrials.gov in accordance with the Clinical Journal of the American Society of Nephrology requirements. The final, anonymized dataset will be made publicly available by request to the PI.

References

1. Andrea M Easom, Ashutosh M Shukla, Dumitru Rotaru, Songthip Ounpraseuth, Sudhir V Shah, John M Arthur, Manisha Singh, Home run—results of a chronic kidney disease Telemedicine Patient Education Study, *Clinical Kidney Journal*, , sfz096, https://doi.org/10.1093/ckj/sfz096

2. Shukla AM, Easom A, Singh M et al. Shah. Effects of a comprehensive predialysis education program on the home dialysis therapies: a retrospective cohort study. Perit Dial Int 2017; 37:542–547

3. Neil N, Guest S, Wong L et al. The financial implications for Medicare of greater use of peritoneal dialysis. Clin Ther 2009; 31: 880–888

4. Waterman AD, Browne T, Waterman BM et al. Attitudes and behaviors of African Americans regarding early detection of kidney disease. Am J Kidney Dis 2008; 51: 554–562

5. 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.

6. Szczech LA, Stewart RC, Su H-L,DeLoskey RJ, Astor BC, et al. (2014) Primary Care Detection of Chronic Kidney Disease in Adults with type-2 Diabetes: The ADD-CKD Study (Awareness, Detection and Drug Therapy in Type 2 Diabetes and Chronic Kidney Disease). PLoS ONE 9(11): e110535. doi:10.1371/journal.pone. 0110535

7. Weis L, Metzger M, Haymann J-P, Thervet E, Flamant M, et al. (2013) Renal Function Can Improve at Any Stage of Chronic Kidney Disease. PLoS ONE 8(12): e81835. doi:10.1371/journal.pone.0081835

8. Hobby, G, Easom, A, Singh, M. Meeting Treatment Challenges of Chronic Kidney Disease. The Journal of Arkansas Medical Society 2018 (9). https://afmc.org/download/849/2018/86686

9. ESRD Network 13. Customized 2728 Data Report by ADH Regions, (2018). Available on request from AR CKD Advisory Committee.