

Addressing Chronic Kidney Disease in Texas

*The Report of
the Chronic Kidney Disease
Task Force*

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The Chronic Kidney Disease Task Force respectfully submits this report of their findings and recommendations in compliance with Health and Safety Code, Chapter 98, amended by House Bill 2055 (81st Texas Legislature, 2009).

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Addressing Chronic Kidney Disease in Texas is a report of the Chronic Kidney Disease Task Force and does not necessarily represent the views of the Texas Department of State Health Services.

Executive Summary

The Problem

Chronic kidney disease (CKD) is a serious public health problem associated with increasing prevalence rates, rising healthcare costs, and high rates of mortality from co-morbid conditions.

In the US, based on 2008 data, the United States Renal Data System (USRDS) reports:

- An estimated 33 million Americans, 16 percent of the population, have kidney disease;
- Approximately 550,000 patients are undergoing dialysis or have had a kidney transplant to sustain life;
- In 2008, 88,620 people died of kidney failure; and
- Medicare costs reached \$59.4 billion and almost \$26.8 billion respectively for CKD and End-Stage Renal Disease (ESRD) in 2008.

In Texas, based on 2008 data, the End-Stage Renal Disease Network reports:

- Almost 44,000 Texans are receiving dialysis or have had a kidney transplant;
- The ESRD incidence rate in Texas exceeds the national rate;
- ESRD prevalence rates tripled from 1990 to 2008; and
- In 2008, 6,058 dialysis patients died.

The number of new cases of CKD and patients on dialysis continue to escalate, yet many Texans remain unaware that they are at risk. Early detection and management of CKD can delay disease progression and decrease complications and co-morbidities, but CKD remains under-diagnosed. Diabetes and hypertension are the leading causes of kidney disease, yet fewer than 20 percent of Medicare patients with diabetes are screened for CKD.

Addressing Chronic Kidney Disease in Texas

House Bill 2055 (81st Texas Legislature, 2009) amended Health and Safety Code, Chapter 98 to extend the Chronic Kidney Disease Task Force (Task Force) through September 1, 2011. The Task Force was directed to develop:

1. A cost-effective plan for prevention, early screening, diagnosis, and management of CKD for the state's population; and
2. A plan for surveillance and data analysis to assess the impact of CKD in Texas.

In addressing the legislative charges, the Task Force conducted a thorough review of the literature and available datasets to describe the CKD burden, and to identify best practice strategies to reduce the burden. Three priority issues were identified:

- Lack of awareness, recognition, and treatment of CKD;
- Under-utilization of evidence-based clinical practice guidelines, and
- Lack of state level data on CKD incidence, prevalence, and costs in the stages that precede ESRD.

The Task Force applied evidence-based public health strategies to an adapted Kidney Disease Outcomes Quality Initiative (KDOQI) care model to address CKD from pre-disease through kidney failure. Strategies include:

- Data, surveillance, and applied research to:
 - Measure and monitor trends in the CKD burden,
 - Target interventions to high-risk populations, and
 - Identify cost-effective interventions and strategies;
- Health communications related to public, patient, and healthcare professional education and outreach;
- Policy, environmental, and systems changes at state and community levels; and
- Partnering with state chronic disease programs, and national, state, and local agencies.

Recommendations

Priority 1: Increase awareness of primary prevention and early detection to control disease progression.

The Task Force recommends the following strategies to increase awareness among the Texas population on prevention, early detection, treatment, and management of CKD, its risk factors, and co-morbidities, to reduce disease burden and increase quality of life:

- ▶ Continue and expand the highly successful ESRD Prevention Campaign, *Love Your Kidneys*, through recurring appropriations in successive biennium's.
- ▶ Continue to coordinate CKD and ESRD prevention activities with Department of State Health Services (DSHS) chronic disease programs and Councils.
 - Use data to identify opportunities for joint interventions that advance primary prevention and early detection of chronic diseases;

- Work together to address issues related to access-to-care, disparities, and continuity of care;
 - Combine budgets to deliver primary prevention health messages through media campaigns; and
 - Support and merge, where appropriate, state plans to address the burden of chronic diseases.
- ▶ Continue to partner with national, state, and local organizations to leverage shared goals and objectives, provide consistent messaging to Texans regarding the importance of prevention and early detection of CKD, expand audience reach, and contain costs associated with statewide education and outreach activities.

Priority 2: Increase the use of clinical practice guidelines for screening, detecting, diagnosing, treating, and managing CKD, its co-morbidities, and complications across healthcare systems.

The Task Force recommends the following strategies to encourage the use of nationally recognized clinical practice guidelines for CKD in physician practices, hospitals and clinics, and through insurers and healthcare plans.

- ▶ Advance the Task Forces' professional education initiative designed to encourage use of clinical practice guidelines in healthcare systems. Work with volunteer based regional speakers' bureaus, and through agency partners to expand audience reach and contain costs.
- ▶ Continue to partner with national, state, and local organizations, academic centers, and the medical community to improve quality care measures.
- ▶ Develop evidence-based minimum standards of care and standing delegation orders for use in primary care settings.
- ▶ Work with DSHS chronic disease programs and Councils to merge clinical practice guidelines across respective disease states.
- ▶ Advance public policy and systems changes to improve early detection and care of patients at risk for kidney disease through advocacy.

Priority 3: Enhance data and surveillance systems to include CKD data collection and state oversight, to better assess the prevalence and incidence of CKD in Texas, and to effectively address the burden.

The Task Force recommends the following strategies to provide important state-level data on CKD, its precursors, populations at risk, physician practice patterns, costs, and best practices to address CKD at all stages, from pre-disease through kidney failure:

- ▶ Conduct CKD screening and education demonstration projects throughout the state, in order to:
 - Yield population-based data, representative of all Texans, to identify the number of people with CKD at each stage;
 - Compare population cohorts for evidence of disparities and population trends;
 - Provide cost-effective CKD screening to Texans, using evidence-based screening protocols and adhering to established quality standards;
 - Present opportunities to educate patients and the general public on the importance of prevention, early detection, treatment, and management of disease burden;
 - Identify costs associated with CKD and its precursors, including projected costs over the next ten years; and
 - Inform public policymaking, including allocation of resources.

CKD screening and demonstration projects will also afford the state opportunities to:

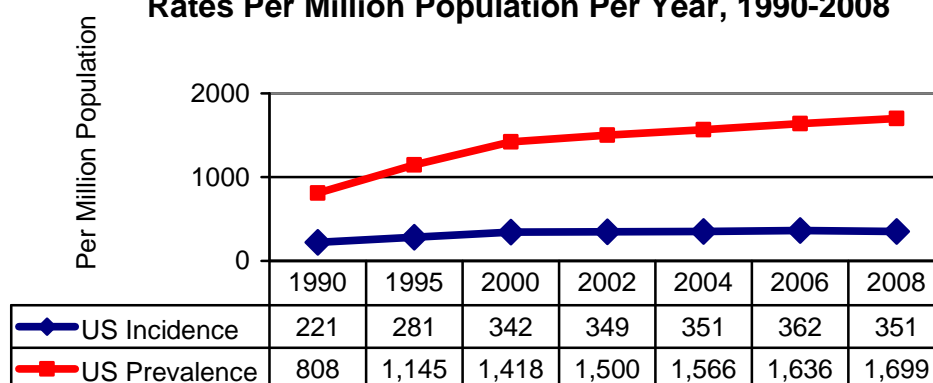
- Conduct longitudinal studies for continued surveillance of CKD prevalence, trends, and healthcare costs;
 - Develop and refine best practices to address the CKD burden; and
 - Measure the impact of statewide interventions designed to decrease the burden of CKD in Texas.
- ▶ Assimilate and analyze Behavioral Risk Factor Surveillance System (BRFSS) data on CKD, its risk factors, and co-morbidities to target population-based interventions to reduce the incidence and prevalence of CKD and ESRD. Use data over successive years to identify trends, refine intervention strategies, measure the impact of interventions, compare findings and practices of other states, and inform public policymaking, including allocation of resources.

Chronic Kidney Disease: A Public Health Threat

Overview

Chronic kidney disease (CKD) is a serious public health problem associated with increasing prevalence rates, rising healthcare costs, and high rates of mortality from co-morbid conditions. In the United States (US), the estimated prevalence of CKD reached 33 million by December 31, 2008, 16 percent of the US population.^{1,2} Individuals with end-stage renal disease (ESRD), when kidneys fail and life can only be sustained by dialysis or transplant, totaled 547,982 during the same period in the US.³ Medicare costs for CKD rose to \$59.4 billion and ESRD Medicare expenditures totaled \$26.8 billion.⁴

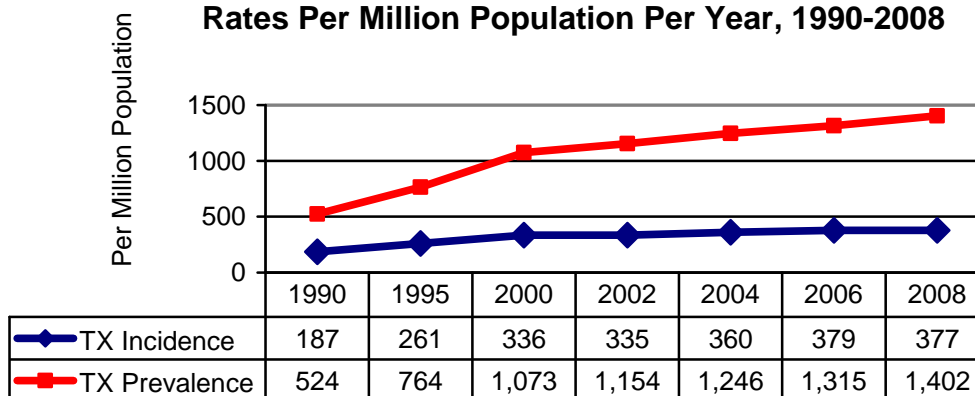
Figure 1: US ESRD Incidence and Prevalence Rates Per Million Population Per Year, 1990-2008



Data Source: 2010 USRDS Atlas

The US incidence rate of ESRD increased by 55 percent in the decade between 1990 and 2000, but since that time has shown a leveling effect. US ESRD prevalence rates doubled in the 18 year period from 1990 to 2008, with the largest growth seen between 1990 and 2000 when rates increased by 76 percent.³

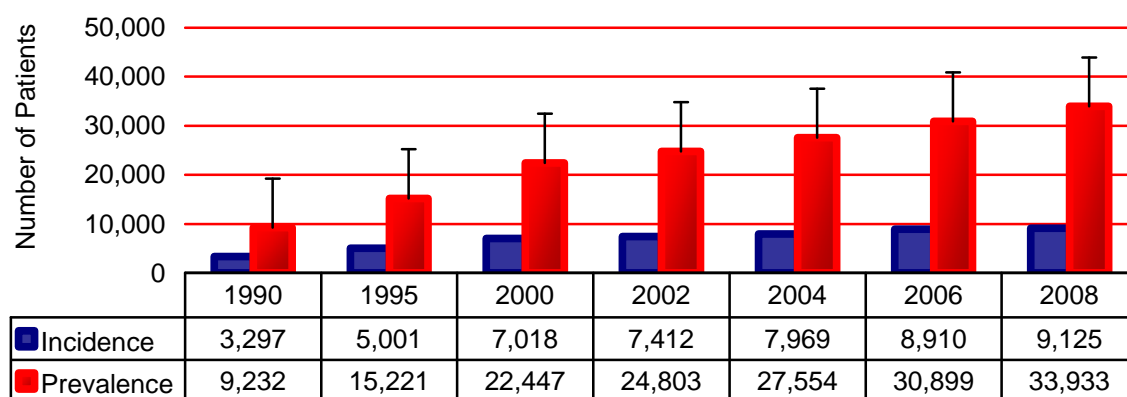
Figure 2: Texas ESRD Incidence and Prevalence Rates Per Million Population Per Year, 1990-2008



Data Source: 2009 ESRD Network 14 Report

Texas has experienced more rapid growth in its ESRD population. Incidence rates (the number of newly diagnosed cases of a disease during a specific time period) have doubled since 1990. In 2008, the incidence rate of ESRD in Texas at 377 per million population exceeded the US rate of 351 per million population. ESRD prevalence rates nearly tripled during the same time period. The total number of ESRD patients being treated with dialysis (the prevalence) increased six fold during the 24 year period from 1985 to 2009.⁵

**Figure 3: Texas Dialysis Incidence and Prevalence by Year
1990-2008**



Data Source: ESRD Network of Texas Annual Reports 1999-2009

Epidemiology Challenges

The US ESRD population is tracked through the Centers for Medicare and Medicaid Services (CMS) from their first service date and by treatment modality. Demographic data, including gender, age, and ethnicity, as well as, data on precursors and co-morbid illnesses are available from CMS, and from regional ESRD networks under contract with CMS. In this report, data are assimilated from the ESRD Network of Texas, Inc., #14 to report incidence and prevalence rates of ESRD patients in Texas. Data incorporated from the Texas Behavioral Risk Factor Surveillance System (BRFSS) are used to estimate prevalence of associated risk factors and co-morbidities for CKD and ESRD.

At present, there is no comparable registry or national surveillance system to track earlier stages of CKD, before dialysis or transplantation. CKD data are estimated from large population studies, most notably the National Health and Nutrition Examination Surveys (NHANES). NHANES is a continuous survey of the health and nutritional status of Americans conducted by the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC). Data from NHANES consist of

two year representative samples of non-institutionalized US civilian residents aged 20 years and older. Data are collected using a protocol approved by the NCHS Research Ethics Review Board, which includes a standardized in-home interview followed by a physical examination, and laboratory tests.⁶ In this report, NHANES 1999-2006, Medicare IC-9-CM claims, and Thomson Reuters MarketScan data, as reported by the United States Renal Data System (USRDS), are used to estimate the prevalence of CKD in the US. CKD is defined and classified into stages by the presence of a marker of kidney damage for three or more months:

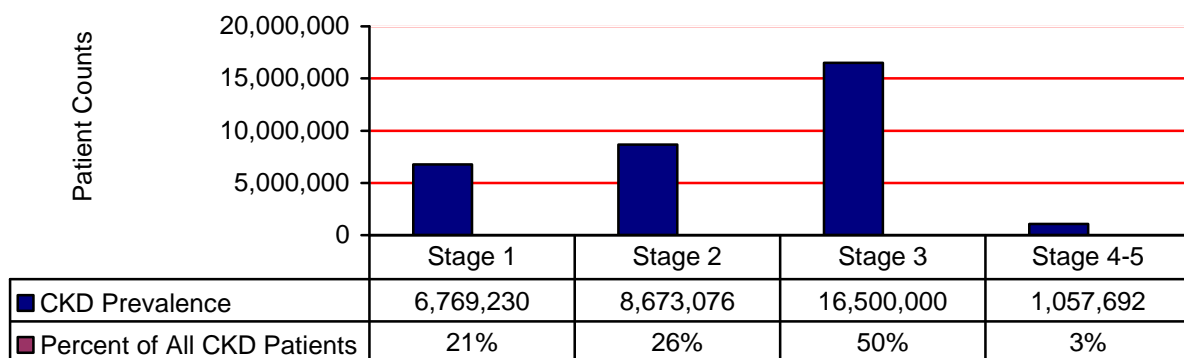
- A urine albumin-to-creatinine ratio (ACR) greater than 30 mg of urinary albumin per gram of urinary creatinine with or without decreased GFR; or
- A glomerular filtration rate (GFR) less than 60 mL per minute per 1.73 m², with or without kidney damage.⁷

GFR is estimated using the creatinine-based 4-variable Modification of Diet in Renal Disease (MDRD) study equation. A spot urine ACR is used to detect albuminuria.

CKD Stages

- 1 GFR \geq 90, ACR \geq 30 mg/g
- 2 GFR 60-89, ACR \geq 30 mg/g
- 3 GFR 30-59
- 4 GFR 15-29
- 5 GFR $<$ 15

Figure 4: US CKD Prevalence by Stage, NHANES 1999-2006



Data Source: 2010 USRDS Atlas

The metaphor of an iceberg is commonly used when describing the epidemiology of the early stages of CKD. This is because the highly visible ESRD population represents only a small fraction of the whole population with CKD. Despite the surveillance limitations, data on the different stages of CKD among NHANES study participants, when applied to a single creatinine-based eGFR and the MDRD equation, show that 21,

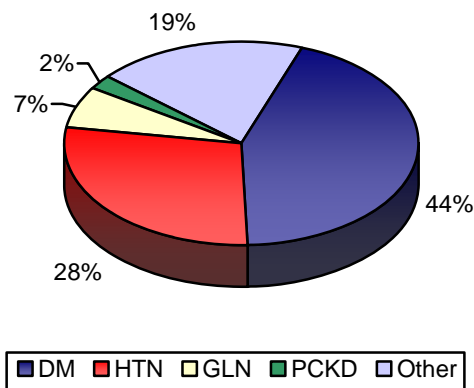
26, 50, and three percent of the CKD population, respectively, have CKD stages 1, 2, 3, and 4-5, excluding dialysis patients.¹

CKD prevalence trends upward from stage 1 to 3 and then declines sharply. In most cases, early CKD will not progress to ESRD because patients are more likely to die prematurely from cardiovascular events and other co-morbid conditions.^{8,9}

Risk Factors, Co-morbidities, and Complications

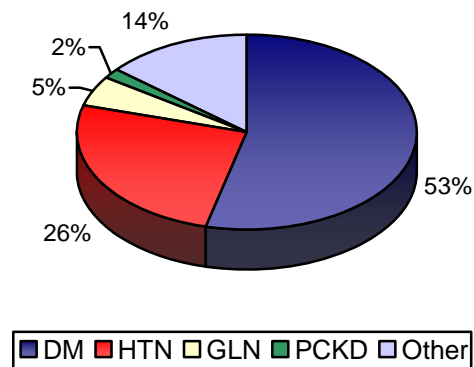
Any assessment of the CKD burden must be viewed within the context of its relationship to other chronic diseases.

Figure 5: US ESRD Incidence by Primary Diagnosis, 2008



Data Source: 2010 USRDS Atlas

Figure 6: Texas ESRD Incidence by Primary Diagnosis, 2008



Data Source: 2009 ESRD Network 14 Report

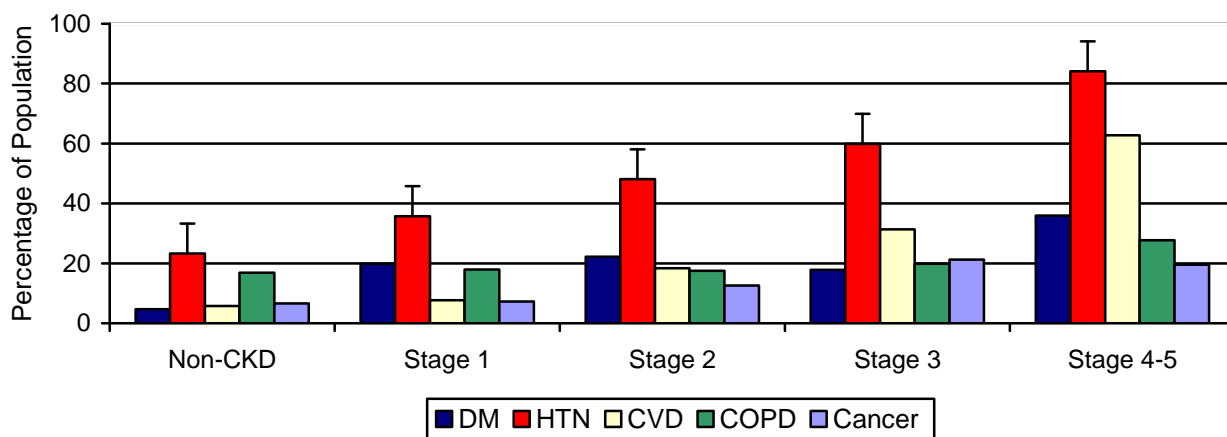
DM: diabetes HTN: hypertension GLN: glomerulonephritis PCKD: polycystic kidney disease

Diabetes (44 percent) and hypertension (28) are well established risk factors for CKD and ESRD. Together, they account for 72 percent of all new ESRD cases in the US.³ In Texas, ESRD incidence data indicate that 53 percent of new cases are secondary to diabetes, and another 26 percent are related to hypertension. Combined, these account for 89 percent of the new cases.⁵

CVD, diabetes, hypertension, and CKD share complex causal relationships, where each may be caused by or a complication of one or all of the other respective diseases. This is partly explained by the many risk factors they share, such as obesity, older age, dyslipidemia, metabolic syndrome, smoking, race/ethnicity, and family history. As a result, they often exist together, increasing the severity of disease, presenting more complex clinical management, and escalating healthcare costs. Chronic obstructive

pulmonary disease (COPD), anemia, hepatitis C, infections, cancer, connective tissue disorders, and prior hip fracture are also more common in individuals with CKD than in those without CKD.

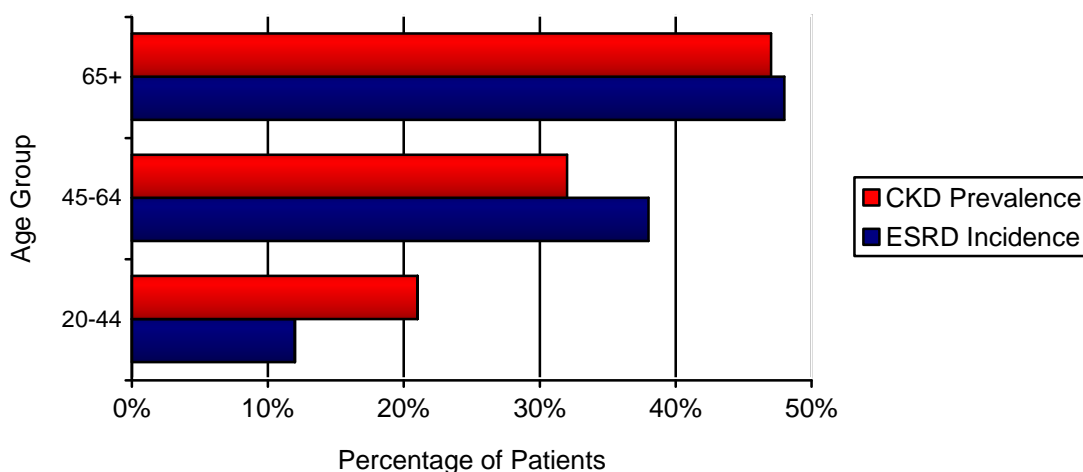
**Figure 7: Prevalence of Comorbidities by CKD Stage
NHANES 1999-2006**



Data Source: 2010 USRDS Atlas

Diabetes and hypertension are more common in persons with CKD than those without. There is a trend towards higher prevalence estimates with declining eGFR and rising CKD stage, with co-morbidity burdens especially marked in patients in stages 4-5. Cardiovascular disease (CVD) is also observed as a predictor and an outcome of CKD.¹⁰⁻¹² Among those with an eGFR of ≤ 30 to 15, CKD stage 4, 84 percent have hypertension and 63 percent have CVD as a co-existing condition, compared to 23 and six percent, respectively, in those without CKD.¹

**Figure 8: US CKD Prevalence and ESRD Incidence by Age
2008**

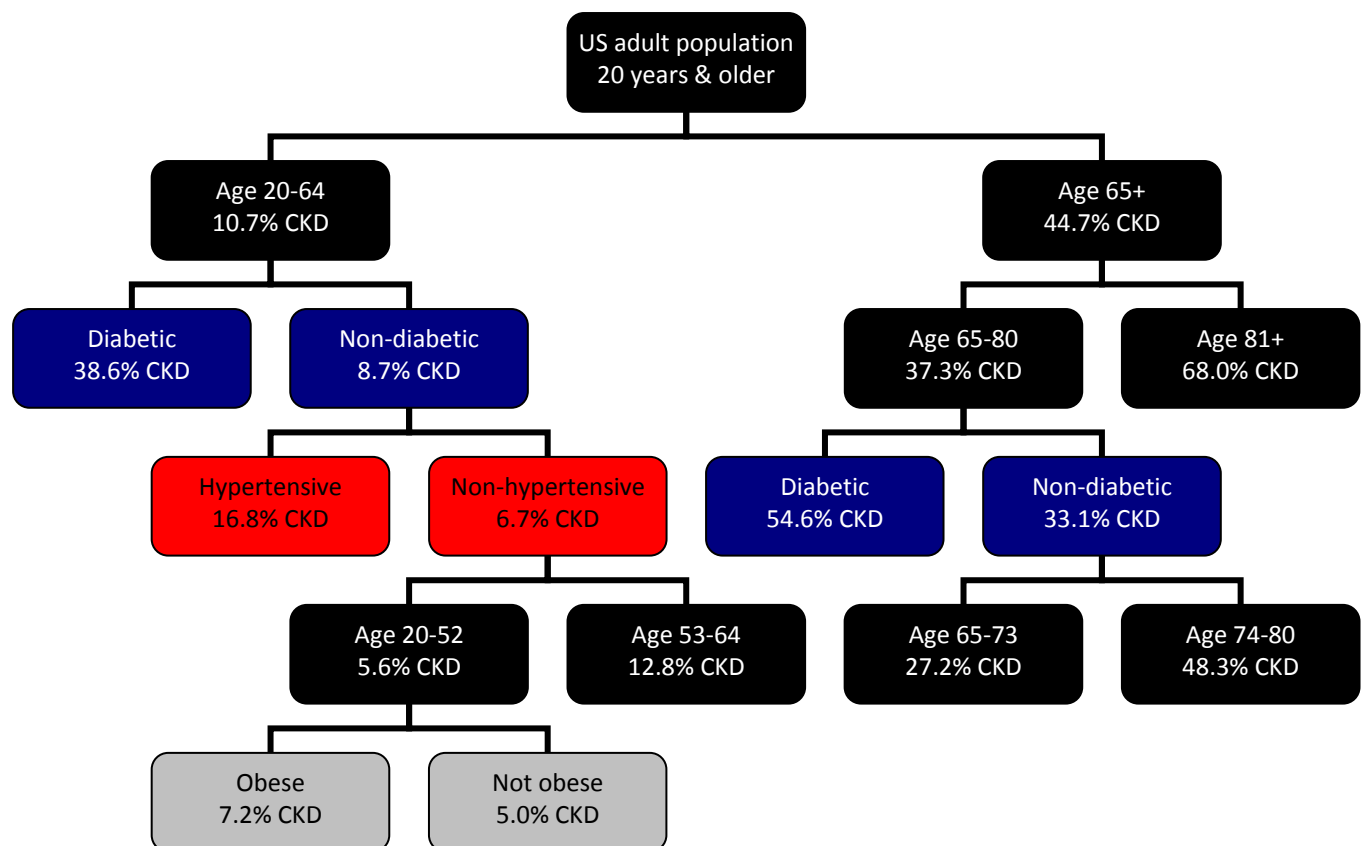


Data Source: 2010 USRDS Atlas

Certain demographic factors influence individual risk and outcomes of CKD. Prevalence of CKD and the initiation of ESRD increase with age. Forty-seven percent of US patients who have CKD in the stages that precede ESRD are age 65 and older. Almost half of newly diagnosed ESRD cases are also age 65 and above.^{2,3}

Age further interacts with co-morbid conditions, including diabetes, hypertension, and obesity. In the following classification tree, the USRDS demonstrates key predictors of CKD within the NHANES 1999-2004 study population. Age is shown as the number one predictor of CKD status. In the 20 to 64 age group, the next indicator of CKD prevalence is diabetic status, followed by hypertensive status, and obesity. Age remains the primary predictor in the 65 and older group, with diabetic status shown as a secondary contributor to CKD prevalence within this population.¹³

**Figure 9: USRDS Risk Classification Model
NHANES 1999-2004**



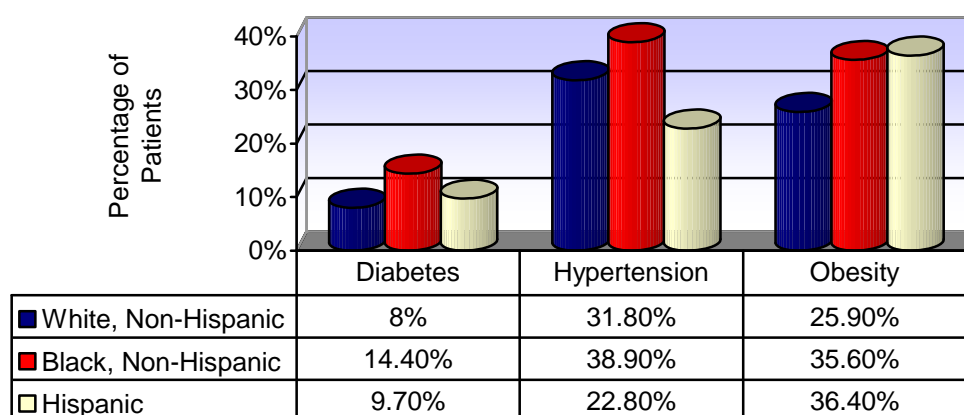
Source: NHANES 1999-2004, 2008 USRDS Atlas

Race and ethnicity also play a role in the initiation and prognosis of CKD and ESRD. US CKD prevalence rates are higher among minority populations, particularly African

Americans, Hispanics and Native Americans. Non-Hispanic African Americans experience early CKD at rates similar to non-Hispanic whites, but African Americans are 3.6 times more likely than Whites to progress to kidney failure, at an earlier age, and more rapid rate. From 1996 to 2008, the number of Hispanics with ESRD has more than doubled. Native Americans are 1.8 times more likely than Whites to develop kidney failure.¹⁴⁻¹⁶

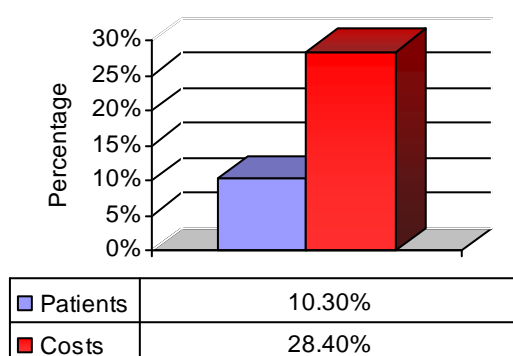
This is well illustrated in the Texas population, where African Americans, who make up only 12 percent of the state's population, have the highest prevalence of diabetes and hypertension in Texas at 14 and 39 percent. Hispanics have a higher prevalence of diabetes than non-Hispanic whites, and a higher rate of obesity than both African Americans and Whites.

Figure 10: Prevalence of Diabetes, Hypertension, and Obesity in Texas by Race/Ethnicity, 2009



Data Source: Texas Behavioral Risk Factor Surveillance System, 2009

Figure 11: CKD Patients and Costs in Medicare Population, 2008



Data Source: 2010 USRDS Atlas

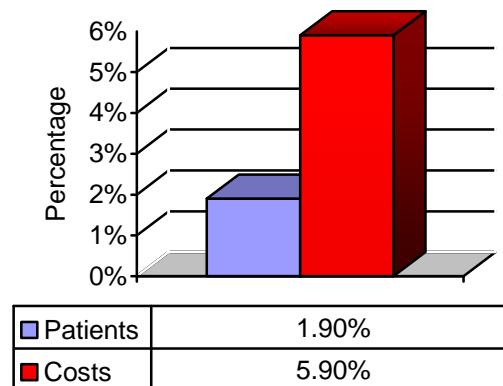
Financial Burden

CKD and ESRD impose a tremendous public health burden, costing the US healthcare system billions of dollars each year. In 2008, costs for CKD patients with Medicare as the primary payer exceeded \$59 billion. Medicare spending for ESRD reached almost \$27 billion during the same year. While CKD patients represent only 10.3 percent of the general Medicare population, they use 28.4 percent of the Medicare budget.^{1,2} CKD costs as a percentage of the Medicare budget have almost tripled since 1993.

In 2008, ESRD represented 1.9 percent of the overall Medicare budget. Yet ESRD costs represented 5.9 percent of the overall Medicare budget. Medicare expenditures reached \$26.8 billion and non-Medicare spending reached \$12.7 billion, bringing the total cost of ESRD care in the US to \$39.5 billion in 2008.¹⁷

Per patient per year (PPPY) spending in the Medicare ESRD population increased 7.3 percent from 2007 to 2008, representing the largest single year increase since 1992.

Figure 12: ESRD Patients and Costs in Medicare Population, 2008



Data Source: 2010 USRDS Atlas

As reported in the 2010 USRDS Annual Data Report, Medicare alone spent an average of \$66,000 PPPY in 2008, ranging from \$26,668 for transplant patients to \$77,506 for hemodialysis patients.¹⁷

Determining total healthcare costs for CKD before ESRD is more challenging as limited data are available for non-Medicare patients. In contrast to ESRD patients, the CKD population lacks a patient registration system to accurately define the number of cases and associated costs. 2008 Medicare data, however, demonstrate certain trends in CKD spending that may be seen in other payer populations. For example:

- Healthcare expenditures increase significantly as CKD progresses in severity. Costs for Medicare CKD patients in stages 3 to 5 are 14 percent higher than those in stages 1 to 2.
- Costs during the transition period to ESRD rise sharply with the most striking increase occurring within the first month of dialysis. In the Medicare population, per patient per month (PPPM) costs for dialysis initiation are \$15,000 compared to \$1,190 PPPM in stage 3 to 4 patients without ESRD or other co-morbid conditions.
- The high level of interaction between CKD and other major chronic diseases, including diabetes, hypertension, and CVD, creates a cost multiplier effect. Costs for Medicare patients with CKD, diabetes, and CVD are four times greater than those who have CKD alone.

CKD in Texas

Texas is estimated to have the third largest number of CKD patients and the second highest expenditures for CKD in the US.¹⁸ The 2008 incidence rate of ESRD in Texas exceeded the national rate. The high prevalence of risk factors and co-morbid conditions associated with CKD, certain sociodemographic factors, and problems with access-to-care make Texas highly vulnerable to high rates of disease initiation and progression.

Table 1: Comparison of CKD Risk Factors in US and Texas Populations, 2009

Risk Factor	US	Texas
Diabetes	9.1%	9.3%
Obesity	28.3%	29.5%
Physical Inactivity	50.8%	51.9%
Hypertension	29.3%	29.1%
CVD	7.7%	6.5%
High blood cholesterol	38.0%	40.9%
No health insurance	15.3%	25.2%

Data Source: Texas Behavioral Risk Factor Surveillance System, 2009

Texans have a higher percentage of diabetes, obesity, and high blood cholesterol when compared to US rates, and are less physically active. Texas has a fast growing Hispanic population, where obesity and diabetes are highly prevalent.¹⁹

Texas is further challenged by its many problems surrounding access to healthcare. Texas has the highest percentage of uninsured individuals in the US. Overall, 26.1 percent of Texans are uninsured, shifting significant costs to local and state resources.²⁰ Of its 254 counties, 119 have been designated as Health Professional Shortage Areas (HPSA) by the US Department of Health and Human Services.²¹ Primary care physicians and specialists, including nephrologists, are largely clustered in major metropolitan areas, such as Houston, Dallas, and San Antonio. Patients living in rural areas often have to travel far to seek healthcare, without the benefit of public transportation.

While physician shortage, geographic expanse, and lack of healthcare coverage are beyond the purview of this report, it is important to understand these limitations. Analyses of demographic trends, particularly as they relate to high risk populations, are central to public health planning. Additionally, the lack of reliable incidence, prevalence, and cost data for CKD, nationally and in Texas, presents a challenge to crafting fiscally responsible solutions to the burden of CKD in Texas.

Addressing the Burden of Chronic Kidney Disease

National Efforts

In 2002, the National Kidney Foundation (NKF) published the Kidney Disease Outcomes Quality Initiative (KDOQI) Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification. The guidelines provide a uniform definition of CKD, a classification system for disease stage and severity, and a clinical action plan to address CKD at each stage.^{7, 22} The KDOQI guidelines followed guidelines published in 1993 and 1995, which focused on treatment methods for dialysis patients. The 2002 guidelines concentrate on early detection and evidence-based approaches to delay CKD disease progression.

The internationally recognized guidelines brought increased attention to the problem of CKD in the stages that precede ESRD, and prompted action from national health organizations. NKF, CDC, and the National Kidney Disease Education Program (NKDEP, an initiative of the National Institutes of Health) have taken the lead in efforts to increase awareness of CKD and encourage adherence to clinical practice guidelines among healthcare practitioners and systems. Since 2005, several states have joined efforts to address the burden of CKD, including Alabama, Arkansas, Delaware, Illinois, Kentucky, Maryland, Michigan, New York, North Carolina, Pennsylvania, South Carolina, Utah, Washington, West Virginia, Wisconsin, and Texas. All of these states are represented on the National Association of Chronic Disease Directors CKD Council.

Texas Actions

In 2007, the 80th Texas Legislature passed House Bill (HB) 1373, which amended Health and Safety Code, Chapter 98, and established the Chronic Kidney Disease Task Force (Task Force). Members appointed by the governor represent nephrologists, primary and pediatric care physicians, transplant surgeons, renal dietitians and treatment coordinators, health plans, laboratories, medical schools, NKF, ESRD Network 14, the Texas Renal Coalition (TRC), and DSHS. Additionally, two state senators were appointed to the Task Force by the lieutenant governor, and two state representatives were appointed by the speaker of the house. The Task Force was directed to study the problem of CKD, report findings, and make recommendations for a cost-effective plan for early screening, diagnosis and treatment of CKD for the state's population. Task Force findings and recommendations are detailed in its 2009 report: *Addressing Chronic Kidney Disease in Texas*.²³

Summary of Task Force Findings, 2009

- CKD is a major public health threat in the US and in Texas;
- Diabetes, hypertension, and CVD are precursors to CKD and ESRD; CKD increases problems associated with diabetes and hypertension, and accelerates heart disease, often resulting in death before progression to ESRD;
- CKD affects the population disproportionately, with African Americans, Hispanics, Native Americans, and Asian/Pacific Islanders at highest risk;
- Prevention and management of risk factors can reduce the incidence of CKD and ESRD;
- Early detection, treatment, and control can slow disease progression;
- Clinical practice guidelines for screening, management, and treatment of CKD are underutilized;
- CKD is under-recognized, under-diagnosed, and under-treated; and
- State level data on the stages of CKD that precede ESRD are not available.

The Task Force framed its 2009 recommendations around these objectives:

- Encourage early screening and detection of CKD to delay disease progression.
- Provide physician and other healthcare provider education related to the importance of:
 - Primary prevention of chronic diseases as the foundation for addressing CKD and ESRD;
 - Early recognition, diagnosis, and treatment of CKD;
 - A multidisciplinary approach to patient care among primary care, nephrology, and other specialty physicians; and
 - Educating patients on renal replacement options in a timely manner to improve outcomes and decrease complications.
- Use clinical practice guidelines, based on the published KDOQI guidelines and other medically recognized strategies, through systems: physician practices, insurers and health plans, laboratories, medical associations, medical and nursing schools, and agency partners.
- Apply guidelines that will result in annual measurement of urinary protein creatinine ratio and eGFR on all patients with diabetes, hypertension, CVD, and/or a family history of kidney disease, followed by timely intervention and disease management.
- Improve surveillance systems to include CKD data collection and state oversight, to better assess the prevalence and incidence of CKD in Texas, and to more effectively address the burden.
- Use evidence-based public health methods to facilitate timely and coordinated prevention and care.

Table 2: Summary of CKD Task Force Recommendations, 2009

Public Health Strategy	Recommendation
Data and Surveillance	<ul style="list-style-type: none"> • The State should study the feasibility and effectiveness of a public screening demonstration project that would <ul style="list-style-type: none"> ▪ yield population-based data representative of all Texans in order to estimate the prevalence of CKD by stage and identify those at risk, ▪ provide cost-effective screening to Texans, using evidence-based screening protocols and adhering to recognized standards of care, ▪ increase awareness of CKD risk factors and complications, and ▪ provide opportunities to educate patients and the general public on the importance of prevention, early detection, treatment, and management to decrease disease burden. • Incorporate CKD surveillance into existing surveillance programs, such as the BRFSS.
Health Communications – professional education	<ul style="list-style-type: none"> • Require one hour of continuing education on chronic disease prevention, treatment, and control for licensed physicians, physician assistants, nurses, pharmacists, and dietitians. The Task Force recommended the inclusion of this education in medical and nursing school curricula. • Require one hour of continuing education specific to ESRD treatment modalities for nephrologists and other specialists who treat patients with CKD and ESRD, on an annual basis. Arteriovenous (AV) fistula should be presented as the recommended access option for patients who elect hemodialysis. • Educate clinical professionals in Texas laboratories to promote calculation and reporting of eGFR with all serum creatinine determinations for individuals 18 years and older.
Policy Change	<ul style="list-style-type: none"> • Texas laboratories should automatically calculate and report eGFR with all serum creatinine determinations for individuals 18 years and older.
Health Communications – public education and outreach	<ul style="list-style-type: none"> • Continue and expand the ESRD Prevention Campaign throughout the state through recurring appropriations. • Continue to integrate and coordinate CKD and ESRD prevention education and initiatives into existing DSHS programs and Councils. • Continue to partner with organizations to leverage shared goals and objectives, and to provide consistent messages to Texans regarding the importance of prevention and early detection of CKD.

The Task Force also asked to be reinstated through the next biennium, so it may continue its efforts toward decreasing the burden of CKD in Texas.

Outcomes of the 81st Texas Legislature

Four pieces of legislation related to CKD were passed during the 81st Texas Legislative session and signed into law by the Governor in 2009. The legislation mirrored Task Force recommendations presented in its 2009 report: *Addressing Chronic Kidney Disease in Texas*.

1. **HB 2055** amends Health and Safety Code, Chapter 98, and continues the CKD Task Force through August 31, 2011 to address two legislative charges:
 - Develop a cost-effective plan for prevention, early screening, diagnosis and management of chronic kidney disease for the state's population; and
 - Develop a plan for surveillance and data analysis to assess the impact of chronic kidney disease in the state.
2. **HB 2330** relates to laboratory tests measuring kidney function, and requires:
 - A laboratory that performs a serum creatinine test on a person 18 years of age or older to calculate and report results of the person's eGFR or results of an equivalent calculation measuring kidney function; and
 - A physician requesting a serum creatinine test to provide to the laboratory all relevant clinical information needed to calculate the person's eGFR or to perform an alternative equivalent calculation.

In addition to HB 2055 and 2330, two riders were attached to the State's General Appropriations Act for Fiscal Years (FY) 2010 – 2011.

3. **Rider 74. End Stage Renal Disease Prevention Program.** Allocates funds during the 2010-11 biennium for a statewide program to decrease the number of new cases of ESRD cases in Texas. The rider provides for continuation of the *Love Your Kidneys* campaign that was developed, conducted, and evaluated during the 2008-09 biennium. The program will outreach to at-risk individuals and physicians to increase awareness, early detection, and treatment of chronic kidney disease.
4. **Rider 96. Kidney Disease Study.** Allocates funds during the 2010-11 biennium for a study to be conducted by Texas Tech University Health Sciences Center

(TTUHSC) in consultation with the CKD Task Force. The study will address CKD and its precursors, including but not limited to diabetes and hypertension, and will:

- a. Identify statistically significant subgroups who are at risk and recent patterns of change within these subgroups;
- b. Identify costs associated with CKD and its precursors, including projected costs over the next ten years; and
- c. Develop hypotheses and conclusions to help direct public health efforts.

Addressing CKD in Texas: CKD Task Force Plans for the 2010-2011 Biennium

Legislative Charge 1: Develop a cost-effective plan for prevention, early diagnosis, treatment, and management of CKD for the state's population.

Methods:

In addressing this charge, the Task Force conducted a thorough review of the literature and available datasets. These were used to describe the CKD burden, and to identify evidence-based strategies to reduce the burden. Findings were consistent with those identified in the previous Task Force report, with issues related to:

- Lack of awareness, recognition, and treatment of CKD;
- Underutilization of evidence-based clinical practice guidelines; and
- Lack of state level data on the incidence, prevalence, and costs of CKD in the stages that precede ESRD.

The Task Force defines its objectives around these issues, expands on recommendations detailed in its 2009 report, recognizes the KDOQI Clinical Guidelines for CKD as the standard for clinical care, and continues its public health approach across healthcare systems to ensure timely and thorough prevention and care.

Goals/Objectives

The Task Force adapted its goal from Healthy People 2020: *Reduce the Rate of New Cases of ESRD in Texas*. Progress toward this goal can be measured annually from ESRD Network of Texas data. Supporting objectives include:

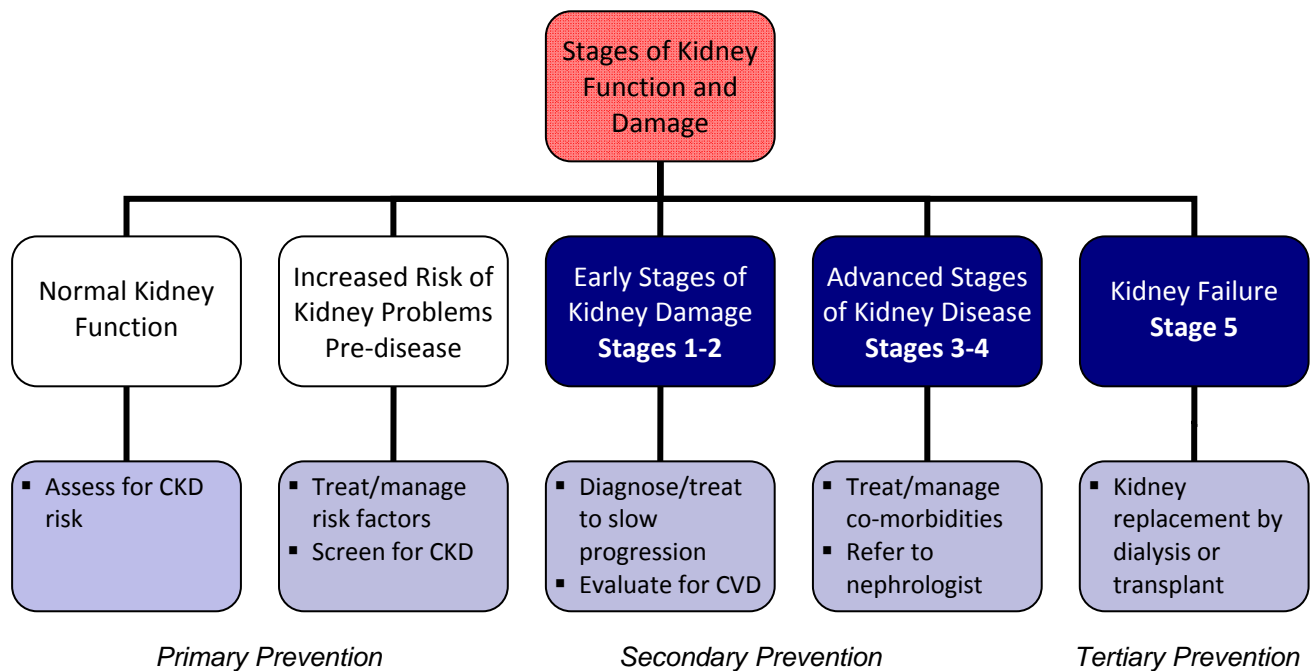
1. Increase awareness among patients and the public about risk factors for CKD and the importance of getting tested.
2. Increase knowledge of primary care physicians and other healthcare providers on prevention, recognition, and the importance of testing at-risk patients in order to:
 - a. Increase the proportion of persons with diabetes who receive education and screening (CKD HP 2020-8, modified).
 - b. Increase the proportion of persons with hypertension who receive education and screening.
 - c. Increase the percentage of hospital patients with diabetes who are screened for CKD (CKD HP 2020-11, modified).

- d. Increase the proportion of CKD patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy (CK HP 2020-3).²⁴
3. Use clinical practice guidelines for screening, detecting, diagnosing, treating, and managing CKD, its co-morbidities, and complications through healthcare systems: physician practices, insurers and health plans, laboratories, medical associations, medical and nursing schools, and agency partners.
4. Improve surveillance systems to include CKD data collection and state oversight, to better assess the prevalence and incidence of CKD in Texas, and to more effectively address the burden.

Approach

In this adapted care model, the progression of CKD from pre-disease to initiation to declining kidney function is shown. Basic clinical actions are listed for each stage. Primary, secondary, and tertiary prevention strategies are used according to the presence or absence of disease and its severity.

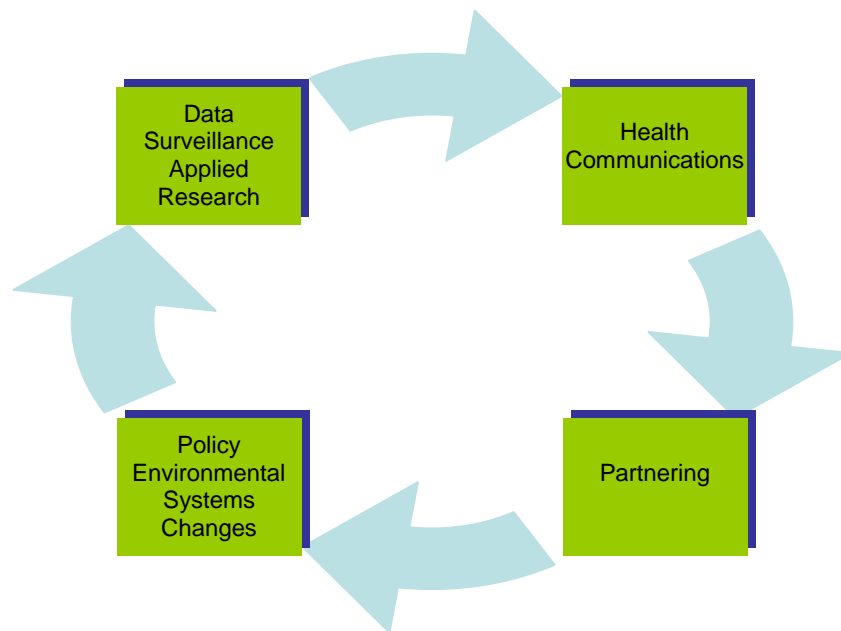
Figure 13: Adapted KDOQI Clinical Care Model



Source: NKF K/DOQI Clinical Care Guidelines for CKD

Next, the Task Force identifies and applies public health strategies to support clinical actions.

Figure 14: Adapted Public Health Model to Address CKD in Texas²⁵



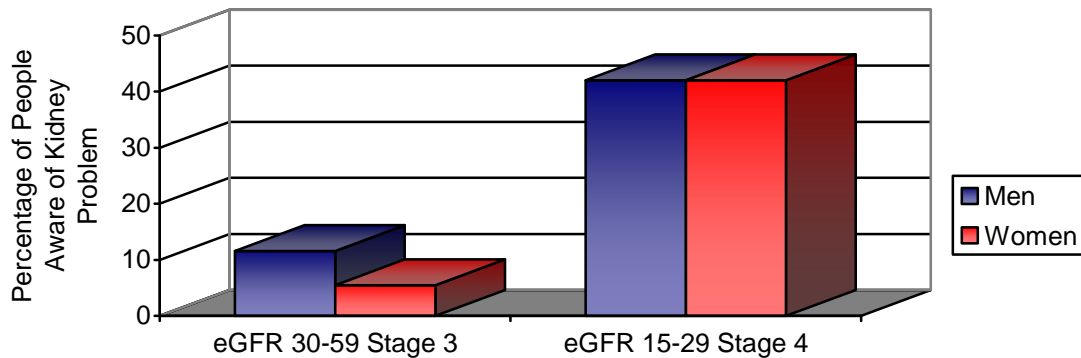
Public Health Strategies

1. Data, surveillance, and applied research to:
 - Measure and monitor trends in the burden of CKD and associated risk factors;
 - Target interventions to high-risk populations; and
 - Identify evidence-based, cost-effective interventions and strategies.
2. Health communications related to public, patient, and healthcare professional education and outreach.
3. Promotion of policy, environmental, and systems changes at the state and community levels.
4. Partnering:
 - Integration of state chronic disease programs.
 - Alliance with national, state, and local partners.

Priority 1: Increase awareness of primary prevention and early detection to control disease progression.

CKD is common, harmful, and expensive, yet many Americans remain unaware that they are at risk or have kidney damage. Self reports from the NHANES 1999-2004 study revealed a general lack of awareness of kidney disease.

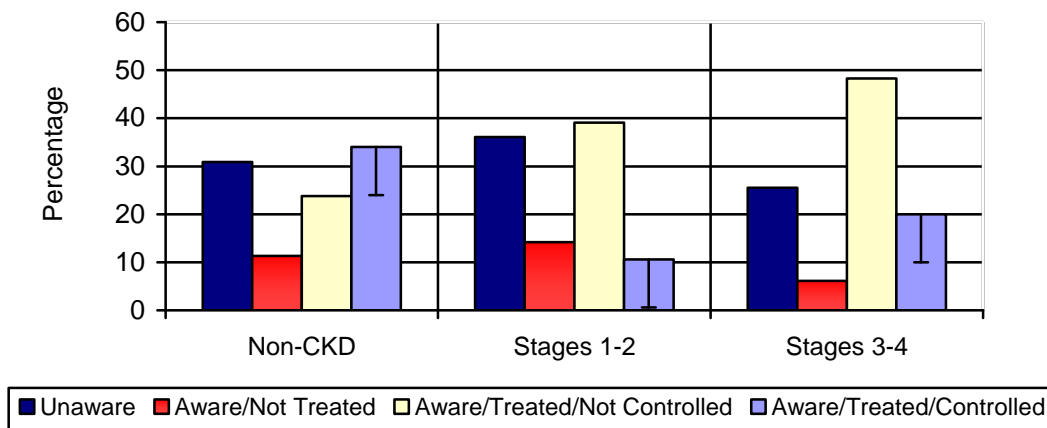
**Figure 15: Self Reported Awareness of CKD
NHANES 1999-2004**



Data Source: NHANES, 1999-2004

When participants were asked if they had ever been told by a doctor or other healthcare professional that they had weak or failing kidneys, less than 10 percent of participants with moderately decreased function, stage 3, reported being told they had kidney problems. Awareness of disease state was highest among patients with severe kidney disease, stage 4, but of that group, only 42 percent knew they had the condition. (26)

**Figure 16: Awareness, Treatment and Control of Hypertension by
CKD Stage, NHANES 1999-2006**



Data Source: 2010 USRDS Atlas

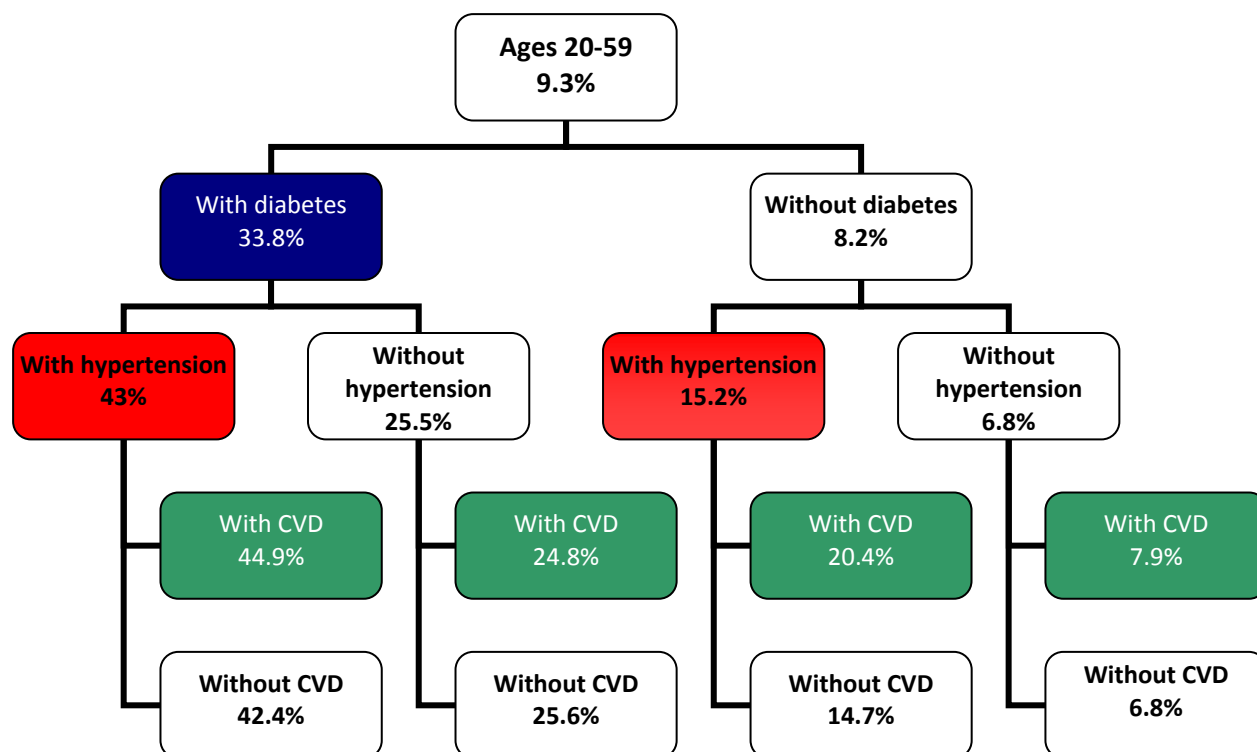
For those with established CKD, many remain unaware of co-morbid conditions. Analysis of data from NHANES 1999-2006 demonstrates the level of awareness of hypertensive patients with and without CKD. Eighty percent of stage 3 to 4 patients have hypertension, but only 20 percent are aware of their condition and receiving adequate treatment. Among patients with earlier stages of CKD, 64 percent of patients have hypertension and only 11 percent are successfully being treated.¹ The observed

lack of awareness and recognition confer lost opportunities for disease prevention and control.

Public Health Strategy: Data and surveillance to define problem and identify high risk population groups.

Large population studies, such as NHANES, not only estimate disease prevalence and trends, but also identify certain population groups that are at highest risk and may best benefit from interventions. For the overall CKD population, the likelihood of CKD increases with age is greater in non-Hispanic blacks and Hispanics than non-Hispanic whites, and is greater in individuals with diabetes, hypertension, or CVD. Since age is the primary predictor of CKD status in populations age 60 and older, Collins et. al¹¹ took a closer look at the 20 to 59 age group in NHANES 1999-2004 study participants. This determined the effects of co-existing disease states among those with evidence of CKD. The branching diagram which follows demonstrates the multiplicative effects of co-morbid conditions on CKD prevalence. For each branch, the diagram shows the percentage of study participants with CKD, stages 1 through 5.

Figure 17: US Risk Classification Model, Age 20-59, NHANES 1999-2004



Data Source: NHANES 1999-2004

Separating participants by diabetic status shows a significantly higher prevalence of CKD for those with diabetes, 33.8 percent, than those without diabetes, 8.2 percent. Further separating participants with diabetes by hypertensive status demonstrates a higher prevalence of CKD in those with both diabetes and hypertension at 43 percent, compared to those with diabetes alone, 25.5 percent. For non-diabetic participants, the presence of hypertension is seen as an independent predictor of higher CKD prevalence, where 15.2 percent of non-diabetic participants with hypertension have CKD compared to 6.8 percent of non-diabetic participants without hypertension. Presence of CVD in non-diabetic patients affected those with hypertension more than those with no history of hypertension.¹¹

Public Health Strategy: Health messaging targeted to high-risk populations and healthcare providers to increase awareness of CKD, and the importance of early detection to prevent and control disease progression.

In designing a public health program to increase awareness and early detection of CKD in the general population, targeting high risk groups has been shown to be of benefit.^{11, 27-29} The public health message should be simple, immediate, and prompt action to seek healthcare. The *Love Your Kidneys* campaign has shown great success in increasing awareness of risk factors and the importance of getting tested for kidney disease. Launched in 2008, the campaign is a product of the DSHS ESRD Prevention Program and the TRC. Funds were appropriated to DSHS from the 2008-09 General Appropriations Act (80th Texas Legislature, 2007) to develop a program to decrease the incidence of ESRD in Texas. DSHS contracted with a social marketing company to design a multi-media campaign targeted to Texans who are at greatest risk of developing CKD. Messaging is simple, urgent, and has a specific call to action; *if you have diabetes, high blood pressure, heart disease, or a family history of kidney problems, you need to get tested for kidney disease. Call your doctor today.* Using data from BRFSS, communities with high rates of diabetes, hypertension, CVD, and obesity, as well as large African American and Hispanic populations, were targeted as campaign sites. Selection and placement of media were based on best value for greatest reach, popular media outlets for target populations, and the ability to earn extra value for media buys through public relations. In its first the *Love Your Kidneys* campaign ran in 24 Texas counties. This grew to 116 counties by 2010. Campaign components include television, cable, and radio public service announcements (PSA's), kidney health messages on frequently visited consumer websites, advertisements in minority publications, signage in grocery stores and pharmacies, literature tailored to at-risk populations, and the interactive English and Spanish language lovekidneys.com website.

To assess the effectiveness of the ESRD Prevention Campaign, *Love Your Kidneys*, DSHS contracted with the University of Texas Medical Branch (UTMB) in 2008 to measure the impact of airing PSA's through traditional media outlets in the initial campaign markets: Lubbock, Laredo, Harlingen-McAllen, and Brownsville. UTMB focused the evaluation on three short term expected outcomes of the campaign: 1) exposure to PSA's; 2) impact on awareness; and 3) change in behavior.

The evaluation tool was developed based on a literature review on CKD, expert consultation on assessing PSA's, and incorporation of campaign goals. To reduce respondent burden and encourage participation in the evaluation, the survey was kept brief and did not collect any identifying information. The twenty-two item questionnaire assessed:

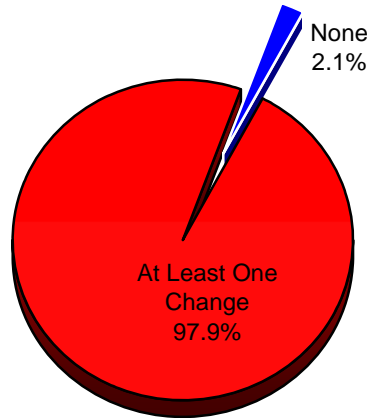
- a. Exposure to PSA's;
- b. Perception of like/dislike of PSA's;
- c. Awareness of risk factors associated with CKD;
- d. Change in behavior as a result of the PSA's;
- e. Relationships to others who are also at risk; and
- f. Basic demographics of the study population.

The evaluation tool is included in this report as Appendix C. It was also translated into Spanish for Spanish-speaking individuals. Subjects were recruited from four Community Diabetes Projects (CDPs) that contracted with the Texas Diabetes Prevention and Control Program: Proyecto Juan Diego in Brownsville, Gateway Community Health Center in Laredo, Community Health Center of Lubbock, and Migrant Health Promotion in Weslaco. Participants were recruited in clinics and education classes, and by going door to door in the communities.

In order to account for a potentially high number of non-responders typically associated with anonymous survey data collection and obtaining the required sample needed to detect differences, 700 surveys were distributed across the sites. A total of 515 individuals at risk for CKD, 73.5 percent, completed surveys, which more than meets the sampling requirement for statistical analyses.

Approximately one-half (48 percent) of the surveyed individuals reported seeing or hearing the PSA's, with an average exposure of 2.26 times per participant. Exposure to the PSA's had a significant impact on participants. Nearly all of the respondents who saw or heard the PSA's (97.9 percent) reported a change in their awareness of risk factors, knowledge of the disease, or behaviors.

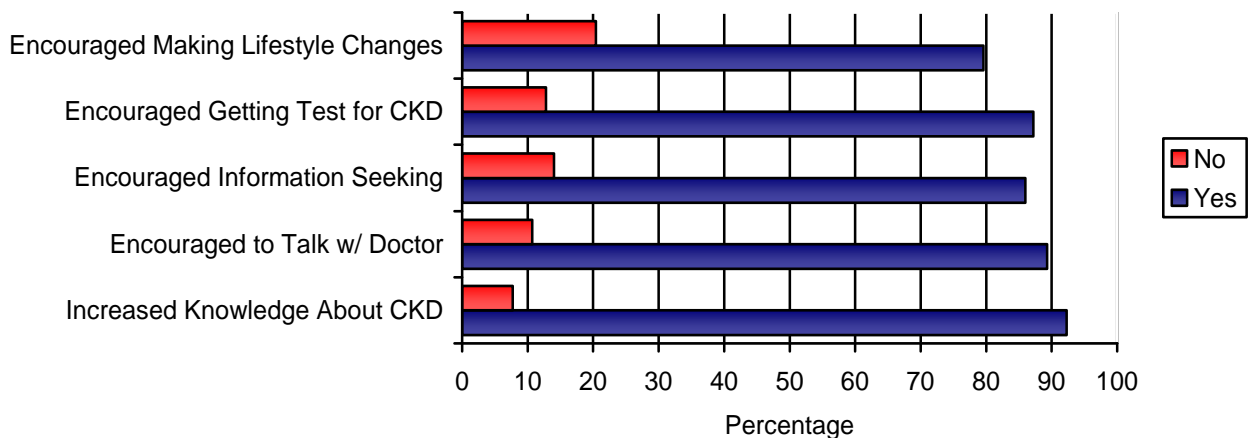
Figure 18: PSA Impact on Awareness, Knowledge, or Behavior



Data Source: 2008 ESRD Awareness Campaign Evaluation

Exposure to PSA's had a striking impact on the self-reported behaviors of the respondents. Those who saw or heard the PSA's reported an average of five awareness or behavior change intentions.

Figure 19: PSA Impact on Knowledge and Attitudes



Data Source: 2008 ESRD Awareness Campaign Evaluation

Based on its successful execution in FY 2008 and 2009, funds were allocated from the 2010-11 General Appropriations Act (81st Texas Legislature, 2009) to continue and expand the *Love Your Kidneys* campaign through the next biennium. Markets were selected and tiered to create the greatest impact in areas with the highest prevalence of risk factors, and to reach the most people within the confines of funding. In FY 2011,

Many cost savings and added value have resulted from the DSHS collaboration with an advertising agency that specializes in public education campaigns. Their long standing relationships with media vendors allow for the lowest market value cost rates to promote campaigns. The projected costs are based on national sales projections. The savings provided to the program are put back into media placements, allowing for additional exposure to messages. Each year, DSHS receives a report detailing the added value provided by the broadcast vendors in the form of no-cost media spots. In 2009, the report indicated that in purchased target markets, television, cable, and radio vendors ran 5,915 media spots at no charge, garnering approximately 10.2 million impressions valued at \$251,462. In 2010, the report indicated that an additional 10,129 spots ran at no charge, gaining approximately 9.8 million impressions valued at \$279,070.

Figure 20: Impact of the *Love Your Kidneys* Social Marketing Campaign Poster Presentation



Public Health Strategy: Partnering to leverage shared goals, provide consistent messaging, expand reach, and contain costs.

Further cost savings are realized by joining efforts with other organizations that share similar goals. *The Texas Campaign for Kidney Health* is a partnership of kidney related agencies and organizations working together to decrease the incidence and medical consequences of CKD and ESRD. Through a focus on prevention, early detection, treatment and management, our collective goal is to help at risk patients and providers prevent or slow the progression of the disease and improve patient outcomes. DSHS, TMF Health Quality Institute, the TRC, NKF, ESRD Network of Texas, and the CKD Task Force are partners in this campaign. *Love Your Kidneys* and its dual program component, *Save Their Kidneys*, provide the theme and messaging for collaborative education and outreach activities. In 2009, for example, campaign partners teamed together to develop the *Diabetes Educators Lesson Plan – Save Their Kidneys!* for use by health educators to demonstrate the close relationship between diabetes and CKD. The program includes a lesson plan, a kidney quiz, which may be used for pre- and post-test comparisons, fact sheets on diabetes and kidney disease, and instructions for a hands-on patient activity to demonstrate the effects of diabetes on kidney function, and how to detect early damage. The lesson plan is designed to be used along with the Diabetes Empowerment Education Program (DEEP) program, currently being used and promoted by Texas Diabetes Program regional CDPs in several regions across the state.

A faith-based tool kit for use in congregations was also developed in 2009. As an influential voice in the community, the pastor has opportunities to educate the community about good healthcare and preventive measures in order to change unhealthy lifestyle patterns. The tool kit provides lesson plans, educational materials on diabetes and kidney disease, and important health messages urging at-risk parishioners to get tested for kidney disease. The faith-based tool kit and the diabetes educator lesson plans are two among many resources developed and used statewide under the *Texas Campaign for Kidney Health* to increase awareness of CKD, its risk factors, and the importance of early detection. The resources are available at no cost to the state.

In addition to forging relationships with local and national organizations, partnering with other chronic disease programs, such as the DSHS diabetes, CVD, cancer control, and obesity programs has proven beneficial. In 2010, the respective programs joined efforts to develop and present a conference that strategically aligned DSHS program resources. The goal was to increase program effectiveness and efficiency while retaining the integrity of individual program objectives. *Building Bridges: Improving Health Through Program Integration* targeted public health professionals and the medical community to demonstrate common themes and trends across diseases, and the

benefits of combining efforts to address these issues. Program content cut across all chronic disease programs and included topics such as: using data to identify opportunities for integrated interventions, issues related to access-to-care, disparities, care coordination and integrated healthcare, collaborative media messaging, disease self management application across programs, and integration of clinical practice guidelines to treat chronic diseases as one interactive disease state.

CKD occurs as part of a complex disease cluster with diabetes, hypertension, CVD, obesity, and other chronic diseases. Treatment of any one of these conditions implies assessment and management of the others. As in public health initiatives, clinicians must avoid treating silos of care, and recognize the need to treat the whole system.

Priority 2: Implement clinical practice guidelines for screening, detecting, diagnosing, treating and managing CKD, its co-morbidities, and complications across healthcare systems.

Early detection and management of CKD can delay disease progression and prevent and decrease complications and co-morbidities, yet CKD remains under-diagnosed and under-treated.^{1, 8, 12} NKDEP reports that most practices screen fewer than 20 percent of their Medicare patients with diabetes for kidney problems. Also, less than one-third of people with identified CKD are prescribed an angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocking agent (ARB), the recommended standard of care for patients with diabetes and proteinuria or hypertension. Treatment among primary care physicians and specialists remains fragmented. Referral to a nephrologist is generally not timely. Patient education of kidney replacement options is limited and comes late, leading to a higher incidence of emergency dialysis and a shorter survival rate from dialysis initiation.²⁸ Additionally, pre-emptive transplantation is only practiced in a minority of patients, reducing survival rates of transplantation, and increasing the number of patients who return to CKD and ESRD.

Public Health Strategy: Health messaging targeted to primary care physicians and practices, nephrologists, and other specialists who treat patients with CKD.

The *Love Your Kidneys* campaign includes a complementary program called *Save Their Kidneys*, targeted to primary care physicians and specialists. Program components include:

- Print advertisements and advertorials in medical publications;
- Direct mailings to healthcare providers throughout Texas with the most current information about CKD;
- Physician tools and patient education resources;

- Professional exhibits and materials for dissemination at statewide meetings, conferences, and programs; and
- A specially designed website containing clinical practice guidelines for each stage of care from pre-disease through kidney failure.

Save Their Kidneys messaging is simple, clear, and includes a call to action; *help your patients make the connection between risk factors and the likelihood of developing kidney disease. Test your patients who are at risk for CKD.*

Figure 21: Save Their Kidneys Message to Primary Care Providers



Help high-risk patients save their kidneys.

Determine risk:

- Diabetes
- Hypertension
- Cardiovascular disease
- Family history of diabetes, hypertension or CKD

Do three simple tests:

- Spot urine albumin-to-creatinine ratio to determine albuminuria
- Serum creatinine applied to MDRD equation to estimate GFR
- Blood pressure measurement

Save Their Kidneys prompted the Task Force to develop a multifaceted professional education and outreach program. Like *Save Their Kidneys*, its objective is to advance application of the NKF's KDOQI Clinical Practice Guidelines for CKD. Topics address clinical actions and strategies at each stage of CKD care. Messaging is consistent across all information channels, which include:

- CME accredited webinars;
- Presentations at conferences and statewide programs;
- Grand rounds presentations;
- Online library of resources and webinars;
- Distribution of materials at professional conferences;
- One-on-one consultations with physician practices regarding coordinated systems of care and patient education;
- Regional speakers bureaus across the state; and

- Development of standing orders for patients with diabetes and hypertension in the prevention and control of CKD

Public Health Strategy: Partnering to leverage shared goals, provide consistent messaging, expand reach, and contain costs.

The CKD Task Force, TMF Health Quality Institute, and DSHS' ESRD Prevention Program joined efforts to develop and present a webinar targeted to primary care physicians and their staff. *Save Their Kidneys: The Role of PCPs in Addressing CKD* describes the magnitude of the problem of CKD in the US and Texas. Next, it prompts step-by-step actions to detect, manage, and treat CKD. The importance of co-management and timely referral to nephrology are also covered in this one hour CME accredited course. More than 100 participants viewed the webinar in December 2009. Seventy-eight individuals completed a course evaluation. The webinar received an overall rating of excellent by 64 percent of participants (Appendix D). The course continues to be available on the TMF Quality Institute website.

Save Their Kidneys: The Role of PCPs in Addressing CKD was the first in a series of webinars developed by TMF Health Quality Institute, DSHS, and the CKD Task Force. Most recently, the Task Force and TMF Health Quality Institute presented *Use of ACEI and ARBs in Patients with Chronic Kidney Disease*. The January 27, 2011 webinar garnered an audience of 252 healthcare professionals. Successive programs will address specific topics in the clinical management of CKD.

All educational activities presented by the Task Force in partnership with TMF Health Quality Institute, and implemented through regional professional volunteers, bear no cost to the state.

Public Health Strategy: Advancing public policy and systems changes to improve early detection and care of patients at risk for kidney disease.

Broad-based complementary public health efforts can be effective in preventing the primary risk factors that contribute to the development of CKD, especially when these approaches are combined with policy and environmental change interventions. DSHS' diabetes, CVD, and obesity programs have employed a number of primary prevention initiatives designed to mitigate risk factors associated with these diseases. *The Partnership for a Healthy Texas*, for example, involves 40 organizations working together to develop and promote programs that prevent and treat obesity in Texas. The Partnership's recommendations surround environmental changes to increase access to healthy foods, and integrate physical activity into daily life. *Walk Texas* is a community-based program designed to reduce conditions and complications associated with physical inactivity. The program engages local coalitions, work sites, the media, and

individuals to plan and conduct local walking events. The state provides planning guides and various handouts and tools to support implementation of local events. The relative success and sustainability of these community-based programs lies in the ability to engage and empower community members to create their own healthy environments. Primary prevention through lifestyle and environmental changes is fundamental to chronic disease prevention.

Disease management programs offered through health insurance plans provide an opportunity to improve health outcomes and reduce medical care costs. Disease management is a system of coordinated, sequential activities ranging from medical appointment reminders, to self-management classes, to home visits by licensed clinical specialists who help educate and motivate patients. Diabetes and CVD management programs were seen in health plans as much as ten years ago. Over the last several years, there has been an increase in the number of healthcare plans offering education and self-management classes for individuals with CKD. The Task Force continues to work with the State Association of Health Plans to encourage CKD patient education, and to promote increased physician use of clinical practice guidelines among their members.

The Task Force encourages application of quality assurance measures for CKD care by CMS and other payers. Members are working with the National Committee for Quality Assurance (NCQA) to include nephropathy screening for individuals with hypertension as a Healthcare Effectiveness Data and Information Set (HEDIS) measure. The Task Force has joined efforts with TMF Health Quality Institute in an initiative to promote improvements in quality care measures. Texas is one of ten states selected by CMS to provide on-site technical assistance to physician practices and to collaborate with partners in order to: 1) identify high risk patients; 2) use evidence-based clinical practice guidelines to monitor, treat, and slow disease progression; 3) provide patient education; and 4) improve quality performance measures. The project is designed to improve three performance measures as they relate to:

1. Timely testing for urine microalbuminuria to identify early kidney disease due to diabetes;
2. Prescription of ACE inhibitors and/or ARBs to slow progression of CKD in patients with diabetes and hypertension; and
3. Increased use of AV fistula as the first choice for individuals who elect hemodialysis.

Progress toward these goals can result in identifying at-risk patients earlier, delaying disease progression, and reducing the high costs of treatment. Increased use of AV

fistula for hemodialysis patients alone will result in considerable cost savings. PPPY total costs are much higher for patients with a catheter or graft, at \$90,110 and \$79,337, compared to patients with an AV fistula at \$64,701.¹⁷ Additional costs are realized with decreased incidence of infections and hospitalizations due to problems with catheters and grafts.

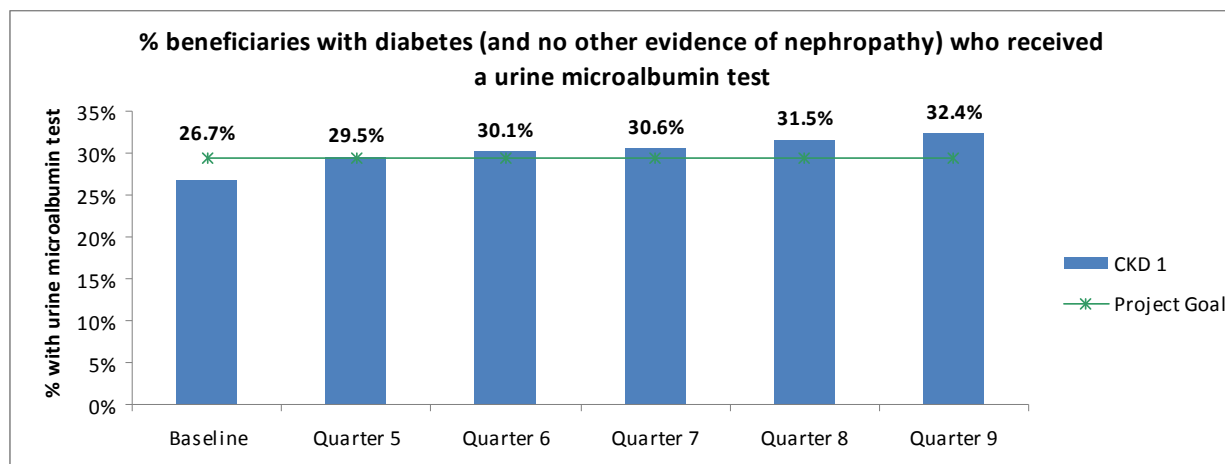
Specific measures, including baseline data, progress reported to date, and project goals are summarized in the chart below.

Table 3: Campaign for Kidney Health Quality Improvement Project

		Baseline		Progress	Goal
		12/31/07		03/13/10	07/31/11
Measure		beneficiaries	rate	rate	rate
CKD 1	% of Medicare beneficiaries with diabetes who are tested for microalbuminuria	57,986	26.7%	32.4%	29.4%
CKD 2	% of Medicare beneficiaries with diabetes, CKD, and hypertension who have a prescription for ACEI or ARB	16,629	79.0%	78.5%	80.3%
CKD 3	% incident hemodialysis patients with an AV fistula in place	1,466	38.3%	39.5%	41.0%

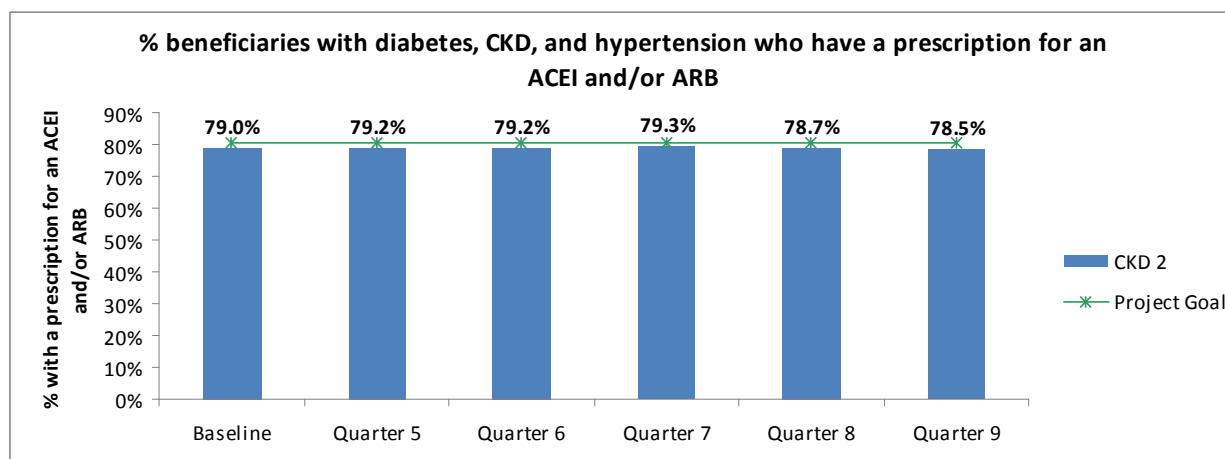
The series of graphs that follow show progress towards goals over time from baseline in 2007 through March 31, 2010.

Figure 22: Medicare Beneficiaries with Diabetes Who Received Microalbumin Test 2007-2010



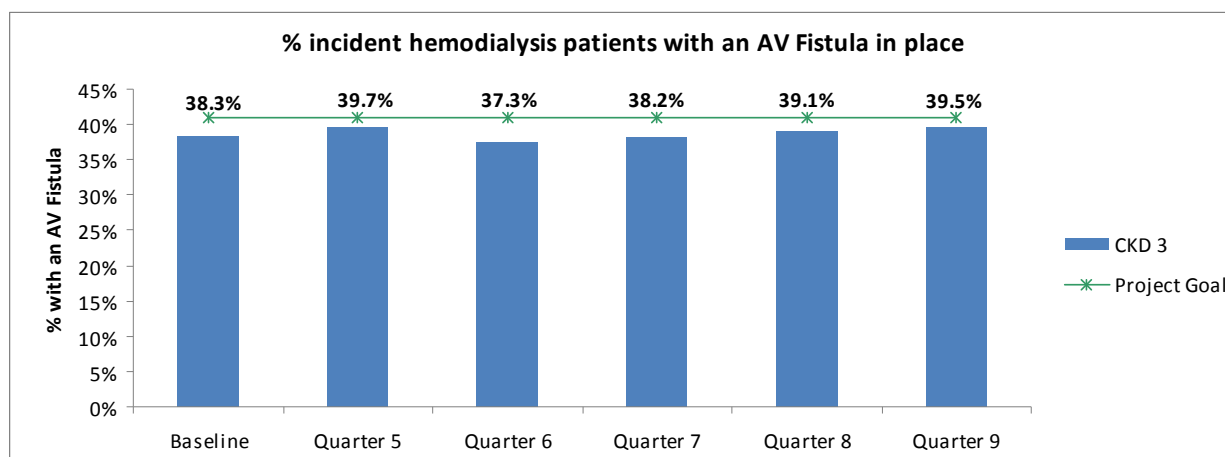
Data Source: TMF Health Quality Institute

Figure 23: Medicare Beneficiaries with Diabetes, CKD, and Hypertension Who Have a Prescription for ACEI and/or ARB, 2007-2010



Data Source: TMF Health Quality Institute

Figure 24: Medicare Beneficiaries Receiving Hemodialysis Who Have an AV Fistula in Place, 2007-2010



Data Source: TMF Health Quality Institute

In addition to environmental and systems changes, advocacy for public policy changes can facilitate the implementation of recognized care standards. Passage of HB 2330 (81st Texas Legislature, 2009) mandates that laboratories evaluating a serum creatinine sample on an individual 18 years or older must also calculate and report the individual's eGFR. Physicians must provide demographic information on the patient in order for the calculation to be made. This act provides for opportunistic screening of patients and can help identify those at pre-disease and initiation phases. Its success as a tool for early detection and treatment is in part dependent on provider awareness of the legislative mandate and implementation processes. The Task Force includes in its professional education initiative several opportunities to educate and inform healthcare practitioners and laboratory professionals on the application and interpretation of screening methods for detecting CKD.

Priority 3: Enhance data and surveillance systems to include CKD data collection and state oversight, to better assess the prevalence and incidence of CKD in Texas, and to more effectively address the burden.

Throughout this report, the Task Force uses information from the USRDS, NHANES, and the ESRD Network System to report estimated prevalence of CKD and ESRD. The USRDS analyzes a random sample of the Medicare population based on claims data to estimate CKD prevalence. It also collects and analyzes data from CMS on ESRD patients treated by dialysis or transplantation. NHANES is a national survey of the health and nutritional status of the US civilian non-institutionalized population. NHANES studies provide data to estimate CKD prevalence, risk factors, and patient

awareness of disease. CMS tracks ESRD patients from their first service date and through treatment by modality. State level incidence and prevalence data are available from ESRD Networks. Texas, however, lacks state level data on CKD incidence, prevalence, and costs in the stages that precede ESRD. In its 2009 report, the Task Force identified the lack of reliable data as a significant barrier to developing fiscally responsible solutions to the burden of CKD in Texas. The Task Force recommended the state study the feasibility and effectiveness of a public screening demonstration project to yield population-based data representative of all Texans. The Task Force further recommended that a question(s) related to kidney disease be incorporated into existing surveillance programs, such as the BRFSS. The continued need and importance of data related to earlier stages of CKD is further addressed in the Task Force plan for surveillance and data collection in Texas.

Legislative Charge 2: Develop a plan for surveillance and data analysis to assess the impact of CKD in Texas.

CKD Demonstration Project

The Texas Legislature allocated funds to DSHS from the 2010-2011 General Appropriations Act (81st Texas Legislature, 2009) for a CKD study to be conducted by Texas Tech University Health Sciences Center (TTUHSC) in consultation with the CKD Task Force. The study will address CKD and its precursors, including but not limited to diabetes and hypertension, and will:

- a. Identify statistically significant subgroups who are at risk and recent patterns of change within these subgroups;
- b. Identify costs associated with CKD and its precursors, including projected costs over the next ten years; and
- c. Develop hypotheses and conclusions to help direct public health efforts.

This legislation will provide for initial state-level data on the incidence and prevalence of CKD in the stages that precede ESRD in Texas. The Task Force has been working closely with TTUHSC to design a study that will describe the burden of CKD and help direct statewide efforts to address the burden. The purpose of the study is to:

- Yield prevalence data by CKD stage;
- Study costs of CKD care and estimate projected costs over the next 10 years;
- Examine risk factors for CKD, and trends and changes of risk factors as it pertains to the Texas population;

- Identify statistically significant subgroups who are at risk and recent patterns of change within these subgroups;
- Observe care practices;
- Observe when patients are referred to a nephrologist; and
- Develop public policy recommendations for CKD care in Texas.

Study Design

The Texas CKD demonstration project is a three-tiered, cross-sectional, point in time study of CKD patients being treated in nephrology clinics, in primary care clinics, and a random sampling of the general population.

- ***Tier 1*** identifies demographics of patients who are currently being treated for kidney disease. The study sample includes 1,000 randomly selected patients from nephrology clinics in Lubbock, Odessa, and Amarillo. This component of the study is designed to:
 - Observe population demographics;
 - Observe prevailing practice patterns;
 - Determine numbers of patients at each stage;
 - Observe the stage at which each patient was referred to nephrology; and
 - Determine costs of care, and compare costs at different stages.

As of October 31, 2010, data had been collected from 596 patients in the three clinic locations. Analyses are being performed by race, gender, etiology, and disease staging. Data collection and analyses will be completed by January 31, 2011.

CKD costs are being analyzed in TTUHSC nephrology clinics at the Lubbock campus using billing data from the past year. Total inpatient and outpatient costs are being tabulated using clinic and hospital data. As of September 30, 2010, data had been assimilated on 2,560 patients and are currently being analyzed. Analyses will include expenditures for each stage of CKD.

- ***Tier 2*** is a screening study to identify CKD prevalence by stage within primary care clinics located at TTUHSC campuses in Lubbock, Amarillo, and Odessa. The study will include a 1,000 patient sampling. Data will be collected from 365 consecutive patients at each site in an unselected manner. Data has been collected on over 260 patients as of October 31, 2010, and are categorized by etiology and ethnicity. The methodology includes assessing eGFR for all study patients, and the addition of microalbuminuria testing for patients with diabetes. When low eGFR and/or microalbuminuria are identified, patients will be advised to initiate therapy with

ACEI or ARBs. Data completion and analyses are targeted for completion in March 2011.

- **Tier 3** is a random sample general population screening of 2,000 individuals in Lubbock County and its rural surrounding areas. The purpose of this tier of the study is to:
 - Observe demographics;
 - Identify patients at risk for CKD;
 - Identify patients with kidney disease and the stage; and
 - Determine the incidence and prevalence of CKD in the general population.

TTUHSC has contracted with the University of North Texas Survey Research Center to recruit study participants through Random Digit Dialing in selected zip code areas. TTUHSC epidemiologists and statisticians estimate that 75,000 people will need to be contacted in order to recruit 2,000 subjects, of which 1,000 will be available for follow-up. Once fully recruited, study participants will come to the primary care clinic located at the TTUHSC Lubbock campus, sign an Internal Review Board (IRB) approved consent form, and be screened for kidney disease. Screening will include blood pressure measurement, weight, blood collection for serum creatinine measurement to calculate eGFR, and a urine sample to determine the presence of microalbuminuria. Participants will receive results of the eGFR and microalbumin tests on site. Patients with findings will be referred for further evaluation per standing orders. Patients will also receive their screening results and referral information, as needed, by mail. Participant recruitment is targeted for completion in March 2011. Screening will begin in May 2011.

TTUHSC will submit a detailed report of the study design, methodology, data collection and analyses, findings, and recommendations to the governor and Legislative Budget Board by January 31, 2010. The study increases opportunities to understand state-level data on the incidence and prevalence of CKD, its precursors and co-morbidities, demographics, treatment practices, and costs of care at each stage. Data and findings will help direct state efforts to strategically address all factors contributing to the CKD burden in Texas. Additionally, study results provide important baseline surveillance data from which successive studies may be conducted to inform medical and public health measures to control progression of CKD, its complications, and healthcare expenditures.

BRFSS

Due to the growing national prevalence of CKD, its relationship to other major chronic diseases, and its significant emphasis in the Healthy People 2010 and proposed 2020 objectives, the CDC 2011 BRFSS Modules will include a question specific to kidney disease. The question will be part of the core questionnaire administered by all states. The question is consistent with pre-tested question(s) used in the Michigan and North Carolina BRFSS Modules, as well as, the NHANES Questionnaire:

- Have you ever been told by a doctor or other healthcare provider that you have kidney disease, weak kidneys, or low kidney function? This does not include kidney stones, bladder infections or incontinence.
 - 1 Yes
 - 2 No
 - 3 Refused
 - 4 Don't know

The addition of this question to the 2011 CDC Core Questionnaire and the Texas BRFSS will yield important state and local level data on the prevalence of CKD in adults 18 years of age and older. It also allows for comparative data across states, and will provide a surveillance measure for tracking CKD prevalence in Texas over years.

CKD demonstration projects and adding kidney disease to the BRFSS questionnaire present significant opportunities for the state. Through these two major accomplishments, Texas will acquire information needed to plan, conduct, and evaluate its cost-effective plan to reduce the burden of CKD in Texas.

Recommendations

Priority 1: Increase awareness of primary prevention and early detection to control disease progression.

The Task Force recommends the following strategies to increase awareness among the Texas population on the prevention, early detection, treatment, and management of CKD, its risk factors, and co-morbidities, to reduce disease burden, and increase quality of life:

- Continue and expand the highly successful ESRD Prevention Campaign, *Love Your Kidneys*, through recurring appropriations in successive bienniums.
- Continue to coordinate CKD and ESRD prevention activities with DSHS chronic disease programs and Councils.
 - Use data to identify opportunities for integrated interventions that advance primary prevention and early detection of chronic diseases;
 - Work together to address issues related to access-to-care, disparities, and continuity of care;
 - Combine budgets to deliver primary prevention health messages through media campaigns; and
 - Support and merge, where appropriate, state plans to address the burden of chronic diseases.
- Continue to partner with national, state, and local organizations to leverage shared goals and objectives, provide consistent messaging to Texans regarding the importance of prevention and early detection of CKD, expand audience reach, and contain costs associated with statewide education and outreach activities.

Priority 2: Increase the use of clinical practice guidelines for screening, detecting, diagnosing, treating, and managing CKD, its co-morbidities, and complications across healthcare systems.

The Task Force recommends the following strategies to encourage the use of nationally recognized clinical practice guidelines for CKD in physician practices, hospitals and clinics, and through insurers and healthcare plans:

- Advance the Task Forces' professional education initiative designed to encourage use of clinical practice guidelines in healthcare systems through multiple education channels. Work with volunteer based regional speakers' bureaus, and through agency partners to expand audience reach and contain costs.
- Continue to partner with national, state, and local organizations, academic centers, and the medical community to improve quality care measures.
- Develop evidence-based minimum standards of care and standing delegated orders for use in primary care settings.
- Work with DSHS chronic disease programs and Councils to merge clinical practice guidelines across respective disease states.
- Advance public policy and systems changes to improve early detection and care of patients at risk for kidney disease through advocacy.

Priority 3: Enhance data and surveillance systems to include CKD data collection and state oversight, to better assess the prevalence and incidence of CKD in Texas, and to more effectively address the burden.

The Task Force recommends the following strategies to provide important state-level data, including CKD, its precursors, populations at risk, physician practice patterns, costs, and best practices to address CKD at all stages, from pre-disease through kidney failure:

- Conduct CKD screening and education demonstration projects throughout the state, in order to:
 - Yield population-based data, representative of all Texans, to identify the number of people with CKD at each stage;
 - Compare population cohorts for evidence of disparities and population trends;
 - Provide cost-effective CKD screening to Texans, using evidence-based screening protocols and adhering to established quality standards;
 - Provide opportunities to educate patients and the general public on the importance of prevention, early detection, treatment, and management of disease burden;
 - Identify costs associated with CKD and its precursors, including projected

- costs over the next ten years; and
 - Inform public policymaking, including allocation of resources.
- CKD screening and demonstration projects will also provide the state opportunities to:
 - Conduct longitudinal studies to provide continued surveillance of CKD prevalence, trends, and healthcare costs;
 - Develop and refine best practices to address the CKD burden; and
 - Measure the impact of statewide interventions designed to decrease the burden of CKD in Texas.
- Assimilate and analyze BRFSS data on CKD, its risk factors, and co-morbidities to target population-based interventions to reduce the incidence and prevalence of CKD and ESRD. Use data over successive years to identify trends, refine intervention strategies, measure the impact of interventions, compare findings and practices of other states, and inform public health policymaking, including allocation of resources.

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Appendices

Appendix A: Dictionary

ACE Inhibitor:	A medicine used to treat high blood pressure. ACE inhibitors keep the body from making the hormone angiotensin. ACE Inhibitors are often used to slow kidney damage.
Albuminuria:	More than normal amounts of the protein, albumin, in the urine.
Anemia:	The condition of too few red blood cells. If the blood is low on red blood cells, the body does not get enough oxygen.
Arteriovenous (AV) Fistula:	Surgical connection of an artery to a vein created in persons who will have hemodialysis. The AV fistula causes the vein to grow thicker to allow for repeated needle insertions.
Chronic Kidney Disease (CKD):	Progressive loss of kidney function over time, often resulting in kidney failure.
Co-morbidity:	The presence of one or more disorders (or diseases) in addition to a primary disease or disorder, or the effect of such additional disorders or diseases.
Creatinine:	A waste product from meat protein in the diet and from body muscle use. Creatinine is removed from the body from the blood by the kidneys. When kidneys do not work correctly, creatinine levels in the blood increase.
Demographics:	Characteristics of a population, including age, gender, race, ethnicity, income, and education.
Diabetes Mellitus:	A condition characterized by high blood sugar resulting from the body's inability to use sugar (glucose) efficiently.
Dialysis:	The process of cleaning wastes from the blood artificially, when kidneys fail.
End-Stage Renal Disease (ESRD):	Kidney failure. Treatment is necessary to replace the work of the kidneys.

Glomerulonephritis:	Inflammation of the glomeruli, where blood is filtered in the kidney.
Hemodialysis:	The use of a machine to clean wastes from the blood, once kidneys fail.
Hypertension:	Sustained high blood pressure.
Incidence:	The number of newly diagnosed cases of a disease during a specific time period.
Insulin:	A hormone that turns the sugars we eat into energy.
Kidneys:	The two bean shaped organs in the body that filter wastes from the blood.
Mortality:	The incidence of death in a population.
Peritoneal Dialysis:	Cleaning the blood by using the lining of the abdomen as a filter.
Prevalence:	The total number of cases of a disease in a given population at a specific time.
Renal:	Of the kidneys.
Renal Replacement Therapy:	Life-supporting treatments for kidney failure, including dialysis and transplantation.
Risk Factor:	A characteristic, condition, or behavior, such as high blood pressure or smoking, that increases the possibility of disease.
Surveillance:	Observing populations over time to identify trends that can inform public health policymaking, including the allocation of resources.
Transplant:	Replacement of a diseased organ with a healthy one.

Appendix B: Acronyms

ACEI:	Angiotensin Converting Enzyme
AV:	Arteriovenous
BRFSS:	Behavioral Risk Factor Surveillance System
CDC:	Centers for Disease Control and Prevention
CKD:	Chronic Kidney Disease
CMS:	Centers for Medicare and Medicaid Services
CVD:	Cardiovascular Disease
eGFR:	Estimated Glomerular Filtration Rate
ESRD:	End-Stage Renal Disease
HEDIS:	Healthcare Effectiveness Data and Information Set
HPSA:	Health Professional Shortage Area
K/DOQI:	Kidney Disease Outcomes Quality Initiative
NHANES:	National Health and Nutrition Examination Surveys
NKDEP:	National Kidney Disease Education Program
NKF:	National Kidney Foundation
PPPM:	Per Patient Per Month
PPPY:	Per Patient Per Year
TRC:	Texas Renal Coalition
USRDS:	United States Renal Disease System

You are being asked to participate in an evaluation of the End Stage Renal Disease Prevention Campaign (ESRDC) by completing a short survey. The purpose of this survey is to provide feedback to the Texas Department of State Health Services on its program to raise awareness about the prevention of end stage renal disease (ESRD) or chronic kidney disease (CKD) through a series of radio, television, and printed public service announcements (PSAs). The survey is completely anonymous and any information you give will be kept confidential.

Please complete the following survey.

1. Have you seen or heard the PSAs on end stage renal disease or chronic kidney disease?

- ☐ Yes ☐ No

2. Where did you see or hear about the program? (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Radio | <input type="checkbox"/> TV |
| <input type="checkbox"/> Shelf Talkers in Pharmacies | <input type="checkbox"/> Printed Advertisements |
| <input type="checkbox"/> Letter in the Mail | <input type="checkbox"/> Doctor/Clinic Office |
| <input type="checkbox"/> Friend/Relative | <input type="checkbox"/> Other: _____ |

3. Approximately how many times have you seen or heard the PSAs?

- | | |
|--------------------------------|---------------------------------------|
| <input type="checkbox"/> Once | <input type="checkbox"/> Twice |
| <input type="checkbox"/> Three | <input type="checkbox"/> Four or More |

Information about the TV and Radio Ads:

Recently there have been some TV and radio ads describing risk factors associated with chronic kidney disease.

4. Have you seen the TV ads?

- ☐ Yes ☐ No (If no, skip to question #9)

5. What do you recall about the message on TV? (check all that apply)

- ☐ A man in the bathroom opening a prescription bottle
☐ A man taking a finger-prick blood glucose test and reading the results
☐ A woman at home reading a post-card received in the mail
☐ A doctor's clipboard on a table with checkboxes
☐ Three art cards of red heart symbol and kidneys

6. Do you remember if you especially ☐ liked ☐ or disliked the TV message?

7. What did you like about the TV ad?

8. What did you dislike about the TV ad?

9. After hearing or viewing the PSAs, could you tell which of the following is a risk factor for chronic kidney disease (CKD)? (check all that apply)

- ☐ Diabetes
- ☐ High Blood Pressure
- ☐ Family History of CKD

10. Has your knowledge of ESRD or CKD increased?

- ☐ Yes
- ☐ No

11. Before hearing it on the radio or seeing the TV PSAs, did you know that chronic kidney disease is a possible complication or side effect of high blood pressure or diabetes?

- ☐ Yes
- ☐ No

12. Did the PSAs increase your awareness of this potential complication?

- ☐ Yes
- ☐ No

13. After hearing or viewing the PSAs, were you encouraged to talk to your doctor about kidney disease?

- ☐ Yes
- ☐ No

14. After hearing or viewing the PSAs, were you encouraged to seek out additional information about kidney disease other than talking with your doctor?

- ☐ Yes
- ☐ No

If so, what resources did/would you use? (check all that apply)

- ☐ Internet
- ☐ Reading articles/publications
- ☐ Talking with other people
- ☐ Other: _____

15. After hearing or viewing the PSAs, were you encouraged to get tested for kidney disease?

- ☐ Yes
- ☐ No

16. After hearing or viewing the PSAs, did you make lifestyle changes?

- ☐ Yes ☐ No

If so, what changes did you make? (check all that apply)

- ☐ Physical activities ☐ Diet
☐ Medication ☐ Testing
☐ Other: _____

17. Are you here in the clinic today because of the PSAs?

- ☐ Yes ☐ No

18. Do you know of anyone else that has diabetes or hypertension?

- ☐ Yes ☐ No

If so, is this person:

- ☐ A member of the household ☐ Relative outside of the home
☐ Friend or acquaintance ☐ Co-Worker
☐ Other: _____

19. Did you tell them about the PSAs?

- ☐ Yes ☐ No

20. What is the highest level of education you have completed?

- ☐ 8 years or less ☐ Some high school
☐ Graduated HS or GED equivalent ☐ Some college or trade/technical school
☐ Graduated college ☐ Obtained graduate or professional degree

21. Which of the following categories best describes your age?

- ☐ 18 – 25 ☐ 26 – 40
☐ 41 – 65 ☐ Over 65

22. Sex:

- ☐ Male ☐ Female

Thank you very much for your participation.

Appendix D

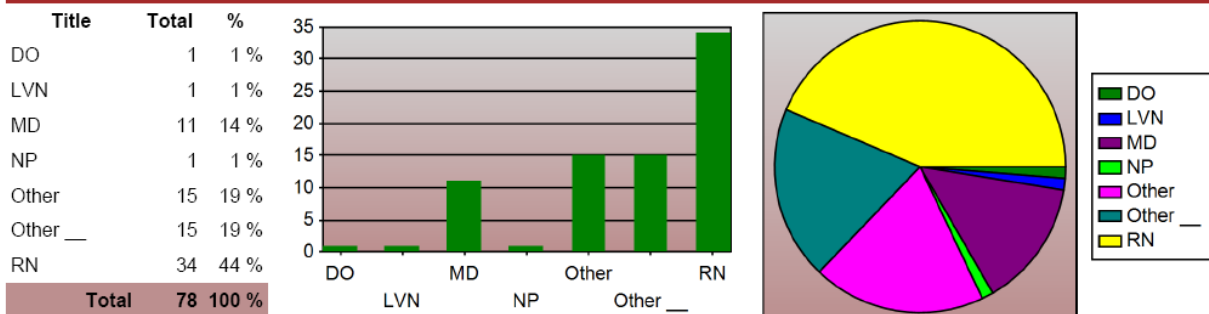
CNE CME Educational Activity Summary for ID: 1491

Save Their Kidneys! The Role of PCPs in Addressing CKD

To increase awareness and knowledge of the prevention, early detection, treatment and management of CKD using evidence-based guidelines.

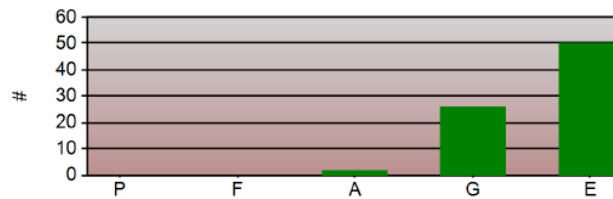
Type	Location	Date	Presenter
RILA	N/A	12/9/2009	1 James D. Lindley, MD

Title Summary



Overall Rating

Response	Total	%
Not Answered	0	
Poor	0	0 %
Fair	0	0 %
Average	2	3 %
Good	26	33 %
Excellent	50	64 %
Total	78	100 %

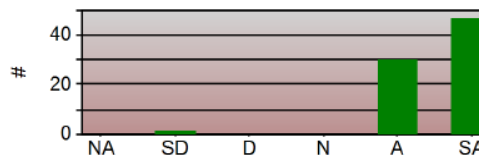


If percentages do not equal 100% it is because they have been rounded off!

CNE CME Educational Activity Summary for ID: 1491

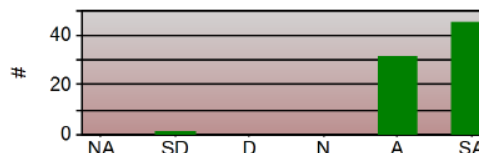
1. Describe the magnitude of the problem of CKD in the U.S. and Texas.

Response	Total	%
Not Answered	0	
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Disagree	0	0 %
Neutral	0	0 %
Agree	30	38 %
Strongly Agree	47	60 %
Total	78	100 %



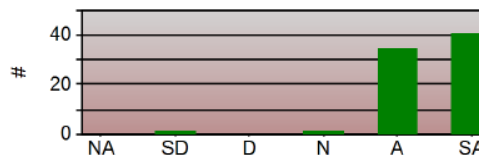
2. Identify key medical staff who can recognize and address the issue of early detection and intervention for kidney disease.

Response	Total	%
Not Answered	0	
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Disagree	0	0 %
Neutral	0	0 %
Agree	32	41 %
Strongly Agree	45	58 %
Total	78	100 %



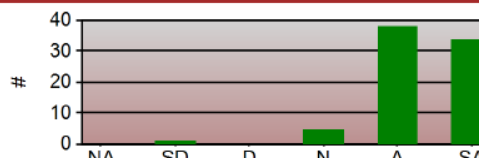
3. Apply and interpret screening methods for early detection of at-risk patients to identify CKD in its early stages.

Response	Total	%
Not Answered	0	
Strongly Disagree	1	1 %
Disagree	0	0 %
Neutral	1	1 %
Agree	35	45 %
Strongly Agree	41	53 %
Total	78	100 %



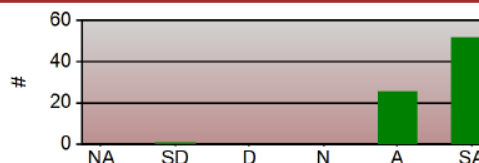
4. Develop clinical action plan to slow the progression of kidney disease

Response	Total	%
Not Answered	0	
Strongly Disagree	1	1 %
Disagree	0	0 %
Neutral	5	6 %
Agree	38	49 %
Strongly Agree	34	44 %
Total	78	100 %



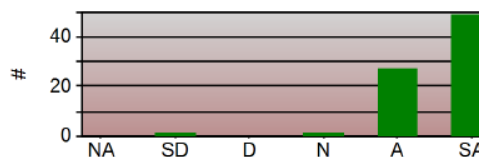
Content was relevant and applicable

Response	Total	%
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Disagree	0	0 %
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Strongly Agree	52	67 %
Total	78	100 %



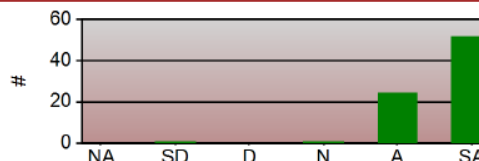
Organization of content promoted learning

Response	Total	%
Not Answered	0	
Strongly Disagree	1	1 %
Disagree	0	0 %
Neutral	1	1 %
Agree	27	35 %
Strongly Agree	49	63 %
Total	78	100 %



Handouts, slides, etc, clear & uestful

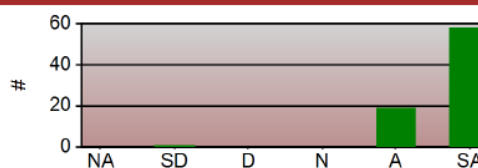
Response	Total	%
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Strongly Agree	52	67 %
Total	78	100 %



CNE CME Educational Activity Summary for ID: 1491

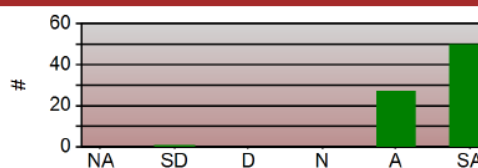
Content free of commercial bias

Response	Total	%
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Disagree	0	0 %
Neutral	0	0 %
Agree	19	24 %
Strongly Agree	58	74 %
Total	78	100 %



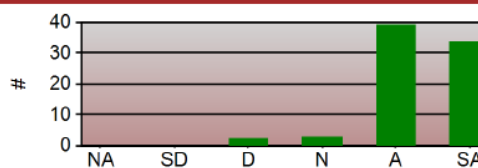
Level of material appropriate for stated audience

Response	Total	%
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Disagree	0	0 %
Neutral	0	0 %
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Strongly Agree	50	64 %
Total	78	100 %



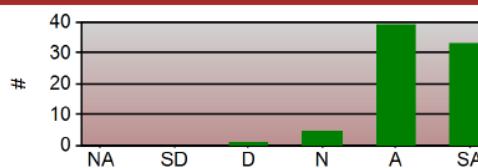
Time of Day Acceptable

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Not Answered	0	
Strongly Disagree	0	0 %
Disagree	2	3 %
Neutral	3	4 %
Agree	39	50 %
Strongly Agree	34	44 %
Total	78	100 %



Day of Week Acceptable

Response	Total	%
Not Answered	0	
Strongly Disagree	0	0 %
Disagree	1	1 %
Neutral	5	6 %
Agree	39	50 %
Strongly Agree	33	42 %
Total	78	100 %



Topics for Future Activities

✿ Saturday would be better for me.

✿ Immunizations

✿ Ultrafiltration
plasmapheresis

✿ non HDL cholesterol

✿ Weight loss for dialysis patients.

✿ As a quality improvement specialist, would like more strategies on how to address PCPs regarding the need for both screening tests, how they should modify their treatment plan based on result findings, what to do with patients who develop a mild cough on ACE/ARB (many times they say that is grounds for 'failed' tolerance - maybe the cough is more acceptable than the effects of not being on an ACE/ARB?). Also, PCPs sometimes feel they don't need to refer to Nephrology at Stage 3 - I hear all kinds of rationales: "I have them on an ACE already, so what else is nephrology going to do?", "the additional cost of specialty care is not necessary or may not be paid for" or "the uninsured or underinsured can't afford to go to nephrology".

I would like to have a broadened response to these arguments, because we know early referral will help patients understand the progression of CKD and help to motivate them to better lifestyle control to slow that progression. However, it is hard to convince PCPs of this need at stage 3.

✿ For the general population in our communities, what are the key messages?

✿ Eye disease and kidney health



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