



***ABIM Chronic Kidney Disease (CKD) PIM™
Practice Improvement Module
Measures Catalogue***

**Chronic Kidney Disease (CKD) Measures Catalogue
May 2011**

TABLE OF CONTENTS

Introduction 3

Outcomes of Care 5

Processes of Care

Patient Evaluation..... 8

Diagnostic Testing..... 11

Treatment: Medication 17

Treatment: Other..... 21

Preventive Care 25

Coordination of Care 26

End of Life Care 28

Introduction

This catalogue provides information related to the American Board of Internal Medicine's Chronic Kidney Disease (CKD) Practice Improvement Module[®]. It is written in language that addresses the physician who might choose to complete this module, and it details the specifics of the module. Included is information regarding:

- **Purpose and structuring of the module**
- **Patient inclusion criteria**
- **Detailed description of the measures**

This PIM examines the care you provide to your patients by addressing key processes and outcomes of chronic kidney disease care based on recommendations of the National Kidney Foundation Kidney Disease Outcome Quality Initiative (NKF KDOQI), and Kidney Disease: Improving Global Outcomes (KDIGO).

The PIM is divided into three parts, with multiple sections in each part.

Part 1 -Performance Data

Provide baseline data about your practice's current performance by:

- Reviewing your charts
- Assessing your practice systems

The 68 chart review measures are summarized below. **ABIM requires a minimum of 25 chart reviews.** The practice systems assessment comprises questions covering various aspects of practice structure and protocols.

Patients can be **included** in this module if **all** of the following are true:

1. Patients are between the ages of 18 and 85 (inclusive);
2. Patient's GFR is $<30 \text{ mL/min/1.73 m}^2$ for three months or longer;
3. Management decisions regarding their chronic kidney disease are made primarily by providers in the practice;
4. They have been patients in the practice for at least one year; *AND*
5. They have been seen by the practice within the past 12 months.

Patients should be **excluded** from this module if any of the following are true:

1. They are on dialysis or have received a kidney transplant
OR
2. They have late stage cancer, are currently receiving chemotherapy, or are in hospice.

Part 2 - Quality Improvement (QI) Plan

Develop a plan for improving one aspect of your practice after reviewing the analysis of your current performance data. The analysis will include many aspects of care you provide to your patients. Ultimately, you will target only one of these to use in this quality improvement (QI) cycle.

Part 3 - Remeasurement

Remeasure your performance data after you have implemented your QI plan to see if you achieved your goal. Then, you will reflect on the process of developing and implementing a QI plan.

You may claim CME credit for completing this activity. The University of Pennsylvania School of Medicine designates this educational activity for a maximum of 20 *AMA PRA Category 1 Credit(s)*TM.

CKD - OUTCOMES OF CARE

Clinical Outcomes				
Measure Title	Description	Numerator	Denominator	Rationale
Most recent blood pressure < 130/80 mm Hg	Patients in the sample whose blood pressure measurement at the most recent visit was less than 130/80 mm Hg.	Number of patients in the sample whose blood pressure measurement at the most recent visit was less than 130/80 mm Hg.	Number of patients in the sample.	Studies show that reducing blood pressure in people with CKD reduces the rate of deterioration of their kidney function whether or not they have hypertension or diabetes. Randomized controlled trials conclusively demonstrate the benefit of lowering blood pressure to <140 mm Hg systolic and <80 mm Hg diastolic in patients. Epidemiologic studies show that the risk of CVD begins at blood pressures of >115/75 mm Hg. Experts have therefore agreed that <130/80 mm Hg is a reasonable target for blood pressure control in patients.
Hemoglobin \geq 10 g/dL in patients not receiving an ESA and Hemoglobin 10 to 12 g/dL in patients receiving an ESA	Patients in the sample not receiving an ESA whose most recent Hemoglobin value was greater than or equal to 10 g/dL or patients in the sample receiving an ESA whose most recent Hemoglobin value was greater than or equal to 10 and less than or equal to 12 g/dL.	Number of patients in the sample not receiving an ESA whose most recent Hemoglobin value was greater than or equal to 10 g/dL or patients in the sample receiving an ESA whose most recent Hemoglobin value was greater than or equal to 10 and less than or equal to 12 g/dL. Hemoglobin test must have been done within the specified abstraction period (for patients not receiving an ESA, it should be within 12 months of the visit date, with a three month grace period; for patients receiving an ESA, it should be within three months of the visit date, with a one month grace period).	Number of patients in the sample.	Multiple studies have shown that maintaining a hemoglobin \geq 10 g/dL results in improvement in quality of life. Several studies have shown a trend toward greater cardiovascular events in dialysis and nondialysis patients assigned to Hgb targets greater than 13.0 g/dL.
Hemoglobin > 12g/dL at time of last ESA administration (Overuse)	Patients in the sample whose hemoglobin was > 12g/dL at time of last ESA administration	Number of patients in the sample whose hemoglobin was > 12g/dL at time of last ESA administration.	Number of patients in the sample receiving ESA.	Studies have shown that a hemoglobin greater than 13g/dL is associated with increased mortality and frequency of cardiovascular events. The clinical recommendation regarding Hgb levels for CKD patients receiving ESA therapy is that

Clinical Outcomes				
Measure Title	Description	Numerator	Denominator	Rationale
				Hgb levels should generally be in the range of 11.0 to 12.0 g/dL. Additionally, these patients should also have their Hgb level checked at least monthly. The initial ESA dose and the ESA dose adjustments should be determined by the patient's Hgb level, the target Hgb level, the observed rate of increase in Hgb level, and clinical circumstances.
Serum phosphorus in normal range (3.0-5.5 mg/dL), tested within six months of visit	Patients in the sample whose most recent serum phosphorus was in normal range (3.0-5.5 mg/dL).	Number of patients in the sample whose most recent serum phosphorus was in normal range (3.0-5.5 mg/dL). Phosphorus measurement must have been done within the specified abstraction period (within six months of the visit date, with a one month grace period).	Number of patients in the sample.	A number of different observational studies in dialysis patients have demonstrated an association between elevated serum phosphorus and mortality, cardiovascular events, and hospitalization. The relative risk of mortality increased with serum phosphorus levels >6.5 mg/dL. Serum phosphorus levels <2.5 mg/dL may be associated with abnormalities in bone mineralization such as osteomalacia. Serum phosphorus should be checked at least annually in patients with eGFR < 45 ml/min/1.73 m ² and at least every six months if abnormal.
Serum bicarbonate < 20 mEq/L, tested within six months of visit	Patients in the sample whose most recent serum bicarbonate measurement was < 20 mEq/L.	Number of patients in the sample whose most recent serum bicarbonate measurement was < 20 mEq/L. Serum bicarbonate measurement must have been done within the specified abstraction period (within six months of the visit date, with a one month grace period).	Number of patients in the sample.	Low serum bicarbonate levels have been associated with changes in bone histomorphometry among populations with differing glomerular filtration rates (GFRs). Patients with CKD are susceptible to developing acidosis. Acidosis may cause increased risk for bone disease as well as multiple other complications (i.e., cardiovascular disease and malnutrition). It is presumed that correction of serum bicarbonate leads to prevention of bone disease and preservation of bone buffering.

Clinical Outcomes				
Measure Title	Description	Numerator	Denominator	Rationale
Serum LDL cholesterol <100 mg/dL, tested within 12 months of visit	Patients in the sample whose most recent LDL cholesterol level was <100 mg/dL.	Number of patients in the sample whose most recent LDL cholesterol level was <100 mg/dL. LDL measurement must have been done within the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	Continuing evidence shows that lowering LDL in patients with CKD may retard the progression of kidney disease. It has been recommended that the levels of LDL be measured every year.
Serum HDL cholesterol >= 40 mg/dL for men; >= 50 mg/dL for women, tested within 12 months of visit	Patients in the sample whose most recent HDL cholesterol level was >= 40 mg/dL for men and >= 50 mg/dL for women.	Number of patients in the sample whose most recent HDL cholesterol level was >= 40 mg/dL for men and >= 50 mg/dL for women. HDL measurement must have been done within the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	Strong epidemiological evidence links low levels of serum HDL cholesterol to increased CHD morbidity and mortality. Epidemiological studies consistently show low HDL cholesterol to be an independent risk factor for CHD. A low HDL level correlates with the presence of other atherogenic factors. Prospective studies have shown that a high HDL cholesterol is associated with reduced risk for CHD.
Serum triglycerides < 150 mg/dL, tested within 12 months of visit	Patients in the sample whose most recent triglyceride level was <150 mg/dL.	Number of patients in the sample whose most recent triglyceride level was <150 mg/dL. Triglyceride measurement must have been done within the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	Many prospective epidemiological studies have reported a positive relationship between serum triglyceride levels and incidence of CHD. Elevated triglycerides are widely recognized as a marker for increased risk for CHD.
Hemoglobin A1C > 9.0% (poor control), tested within six months of visit	Patients in the sample with diabetes whose most recent A1C level was greater than 9.0%, reflecting poor glucose control. In this measure, lower percentages are better.	Number of patients in the sample with diabetes whose most recent A1C level was greater than 9.0%, OR who did not have A1C measurement done or documented during the specified abstraction period (within six months of the visit date, with a one month grace period).	Number of patients in the sample with diabetes.	Although aggressive control of glucose to near normal levels may not be appropriate for all patients, including those who are frail, have a history of severe hypoglycemia, or who have longstanding and severe cardiovascular disease, most experts agree that all patients can benefit from glucose control that lowers A1C to < 9%, a level above which patients are at high risk for complications related to hyperglycemia.

CKD - PROCESSES OF CARE

Patient Evaluation				
Measure Title	Description	Numerator	Denominator	Rationale
Height	Patients in the sample with height documented.	Number of patients in the sample who have height documented.	Number of patients in the sample.	It is recommended that the physical examination should include the height, weight and body mass index. Accurate measurements of height and weight are important to determine signs of malnutrition.
Weight from most recent office visit documented	Patients in the sample with weight documented from most recent office visit.	Number of patients in the sample who have weight documented from most recent office visit.	Number of patients in the sample.	It is recommended that the physical examination should include the height, weight and body mass index. Accurate measurements of height and weight are important to determine signs of malnutrition. Additionally, increased weight may indicate volume overload.
Weight from last three visits documented	Patients in the sample with weight documented at each of the last three office visits.	Number of patients in the sample with weight documented at each of the last three office visits.	Number of patients in the sample, excluding patients who have had less than three office visits.	Serial weights are important in assessing both volume status and adequacy of nutrition. Weight should be documented at every visit.
Blood pressure measured at most recent visit	Patients in the sample whose blood pressure (systolic / diastolic) was measured at the most recent visit.	Number of patients in the sample whose blood pressure (systolic/diastolic) was measured at the most recent visit.	Number of patients in the sample.	Recent research has shown that during office visits, approximately 20% to 30% of CKD patients do not have their blood pressure measured. Patients with CKD should have their blood pressure measured at each office visit so that changes can be identified and treatment initiated as soon as it is necessary. Blood pressure control is important in slowing the progression of chronic kidney disease. By slowing the progression of the disease, quality of life is

Patient Evaluation				
Measure Title	Description	Numerator	Denominator	Rationale
				improved for the patient, and it results in a longer period of time before a patient requires renal replacement therapy.
Blood pressure measured at last three office visits	Patients in the sample whose blood pressure (systolic/diastolic) was measured at the last three office visits.	Number of patients in the sample whose blood pressure (systolic/diastolic) was measured at the last three office visits.	Number of patients in the sample, excluding patients who have had less than three office visits.	Recent research has shown that during office visits, approximately 20% to 30% of CKD patients do not have their blood pressure measured. Patients with CKD should have their blood pressure measured at each office visit so that changes can be identified and treatment initiated as soon as it is necessary. Blood pressure control is important in slowing the progression of chronic kidney disease. By slowing the progression of the disease, quality of life is improved for the patient, and it results in a longer period of time before a patient requires renal replacement therapy.
Most recent blood pressure $\geq 130/80$ mm Hg with documented blood pressure management plan of care	Patients in the sample with most recent blood pressure measurement $\geq 130/80$ mm Hg who were reported as having a documented blood pressure management plan of care.	Number of patients in the sample with most recent blood pressure measurement $\geq 130/80$ mm Hg who were reported as having a documented blood pressure management plan of care.	Number of patients in the sample whose most recent blood pressure measurement was $\geq 130/80$ mm Hg, regardless the date of the blood pressure measurement.	Patients with CKD should have their blood pressure measured at each office visit so that changes can be identified and treatment initiated as soon as it is necessary. Blood pressure control is important in slowing the progression of chronic kidney disease. Patients with chronic kidney disease should have a target blood pressure of $<130/80$. Treatment of high blood pressure in CKD should include identification of target blood pressure levels, nonpharmacologic therapy, and specific antihypertensive agents for the prevention of progression of kidney disease and development of cardiovascular disease.
CKD diagnosis documented	Patients in the sample with a chart documentation of current diagnosis of CKD.	Number of patients in the sample who were reported as having current diagnosis of CKD documented.	Number of patients in the sample.	Identification and diagnosis of CKD is important to optimize clinical management recommendations for this complex patient population. All individuals with $GFR < 60$ mL/min/1.73 m ² for three months are classified as having chronic kidney disease, irrespective of the presence or absence of kidney damage.

Patient Evaluation				
Measure Title	Description	Numerator	Denominator	Rationale
CKD stage documented	Patients in the sample with a chart documentation of current stage of CKD.	Number of patients in the sample who were reported as having stage of CKD documented.	Number of patients in the sample.	Staging of CKD may facilitate the application of clinical practice guidelines (CPG), clinical performance measures, and quality improvement efforts to the evaluation and management of CKD.
Medications reviewed at most recent office visit	Patients in the sample who were reported as having current medications reviewed at most recent office visit.	Number of patients in the sample who were reported as having current medications reviewed at most recent office visit.	Number of patients in the sample.	A number of drugs can be associated with chronic kidney damage, so a thorough review of the medication list (including prescribed medications, over-the-counter medications, "nontraditional" medications, vitamins and supplements, herbs, and drugs of abuse) is vital. Severe kidney impairment may alter volume of distribution and protein binding, prompting dosage adjustments. In patients with CKD, medications that are renally excreted may require a lower initial dose or an increase in the interval between doses.

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
eGFR assessment, within six months of visit	Patients in the sample who were reported as having eGFR assessment during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample who were reported as having eGFR assessment during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	Estimated glomerular filtration rate (eGFR) has become the “gold standard” test for the measurement of kidney function. A variety of different prediction equations have been developed including the MDRD (4- and 6-variable) and Cockcroft-Gault Formulas. While estimates of eGFR may be unreliable at the extremes of age, muscle mass and weight, and at eGFR levels above 60 ml/min/1.73m ² , eGFR is reasonably accurate measure of true GFR in most patients with moderate or more severe CKD.
UPC ratio or UACR, tested within six months of visit	Patients in the sample who had testing for UPC ratio or UACR done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample who had testing for UPC ratio or UACR done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	Protein excretion in the urine is an indicator of abnormal kidney function and should be assessed in all patients with CKD. Proteinuria is not only a marker of kidney damage, it is also a guide to the differential diagnosis, prognosis, and therapy of chronic kidney disease.
Hemoglobin, tested as per guidelines	Patients in the sample not receiving ESA who were reported as having hemoglobin testing done during the 12 month period prior to the visit date, with a three month grace period, OR patients in the sample receiving ESA who were reported as having hemoglobin testing done during the three month period prior to the visit date, with a one month grace period.	Number of patients in the sample not receiving ESA who were reported as having hemoglobin testing done during the 12 month period prior to the visit date, with a three month grace period, OR patients in the sample receiving ESA who were reported as having hemoglobin testing done during the three month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	Observational studies show that (in the absence of ESA therapy) the natural history of anemia in patients with CKD is a gradual decline in Hgb levels over time. The recommendation is that patients be evaluated at least annually. Hemoglobin is the preferred test for evaluation of anemia. A complete blood count can help determine whether anemia is present, how severe the anemia is and whether the patient would benefit from treatment. Patients receiving an

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
				ESA should have their hemoglobin level checked at least monthly.
Documented plan of care to reduce hemoglobin in patients receiving an ESA and with Hemoglobin ≥ 13 g/dL	Patients in the sample receiving an ESA and with the most recent Hemoglobin value greater than or equal to 13g/dL who were reported as having a documented plan of care to reduce hemoglobin.	Number of patients in the sample receiving an ESA and with the most recent Hemoglobin value greater than or equal to 13g/dL who were reported as having a documented plan of care to reduce hemoglobin.	Number of patients in the sample receiving an ESA and with the most recent Hemoglobin value greater than or equal to 13g/dL. .	Studies have shown that a hemoglobin greater than 13 g/dL is associated with increased mortality and frequency of cardiovascular events. The clinical recommendation regarding Hgb levels for CKD patients receiving ESA therapy is that Hgb levels should generally be in the range of 11.0 to 12.0 g/dL. Additionally, these patients should also have their Hgb level checked at least monthly. The initial ESA dose and the ESA dose adjustments should be determined by the patient's Hgb level, the target Hgb level, the observed rate of increase in Hgb level, and clinical circumstances.
Serum ferritin, tested per guidelines	Patients in the sample receiving an ESA who were reported as having serum ferritin testing done during the six month period prior to the visit date, with a one month grace period, OR patients in the sample with anemia who were not receiving an ESA and who were reported as having serum ferritin testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample receiving an ESA who were reported as having serum ferritin testing done during the six month period prior to the visit date, with a one month grace period, OR patients in the sample with anemia who were not receiving an ESA and who were reported as having serum ferritin testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample with anemia. Anemia is defined as a documented diagnose of anemia, or if their most recent hemoglobin is < 13 g/dL for men and < 12 g/dL for women, or hemoglobin has been < 10 g/dL in the last 12 months.	Serum ferritin level is the only available blood marker of storage iron. It is recommended that hemoglobin, ferritin, and TSAT be tested together because the combination provides important insight into external iron balance and internal iron distribution. Iron status tests provide reasonable markers to detect iron deficiencies.

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
Tsat, tested as per guidelines	Patients in the sample receiving an ESA who were reported as having T _{sat} testing done during the six month period prior to the visit date, with a one month grace period, OR patients in the sample with anemia who were not receiving an ESA and who were reported as having T _{sat} testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample receiving an ESA who were reported as having T _{sat} testing done during the six month period prior to the visit date, with a one month grace period, OR patients in the sample with anemia who were not receiving an ESA and who were reported as having T _{sat} testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample with anemia. Anemia is defined as a documented diagnose of anemia, or if their most recent hemoglobin is < 13 g/dL for men and < 12 g/dL for women, or hemoglobin has been <10 g/dL in the last 12 months.	TSAT is a measure of the adequacy of iron supply for erythropoiesis. It is recommended that hemoglobin, ferritin, and TSAT be tested together because the combination provides important insight into external iron balance and internal iron distribution. Iron status tests provide reasonable markers to detect iron deficiencies.
Hemoglobin A1C, tested within six months of visit	Patients in the sample with diabetes who had A1C testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample with diabetes who had A1C testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample with diabetes.	Studies have repeatedly shown that out-of-control diabetes results in complications from the disease. Hemoglobin A1C is thought to reflect average glycemia over several months, and has strong predictive value for diabetes complications. Patients with stable glycemia well within target may do well with testing only twice per year, while unstable or highly intensively managed patients (e.g., pregnant type 1 women) may need testing more frequently.
Serum calcium, tested within six months of visit	Patients in the sample who had serum calcium testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample who had serum calcium testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	As kidney function declines, there is a progressive deterioration in mineral homeostasis, with a disruption of normal serum and tissue concentrations of phosphorus and calcium. The laboratory diagnosis of CKD-MBD includes the use of laboratory testing of serum PTH, calcium, and phosphorus. Serum phosphorus, calcium, and intact PTH should be checked at least annually in patients with eGFR < 45 ml/min/1.73 m ² and at least every six months if abnormal.

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
Serum phosphorus, tested within six months of visit	Patients in the sample who had serum phosphorus testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample who had serum phosphorus testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	As kidney function declines, there is a progressive deterioration in mineral homeostasis, with a disruption of normal serum and tissue concentrations of phosphorus and calcium. The laboratory diagnosis of CKD-MBD includes the use of laboratory testing of serum PTH, calcium, and phosphorus. Serum phosphorus, calcium, and intact PTH should be checked at least annually in patients with eGFR < 45 ml/min/1.73 m ² and at least every six months if abnormal.
Serum bicarbonate, tested within six months of visit	Patients in the sample who had serum bicarbonate testing done during the six-month period prior to the visit date, with a one-month grace period.	Number of patients in the sample who had serum bicarbonate testing done during the six-month period prior to the visit date, with a one-month grace period.	Number of patients in the sample.	Patients with CKD are susceptible to developing acidosis. Acidosis may cause increased risk for bone disease as well as multiple other complications (i.e., cardiovascular disease and malnutrition). Since the serum bicarbonate level can fluctuate over days or weeks, frequent monitoring is warranted.
Serum potassium, tested within six months of visit	Patients in the sample who had serum potassium testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample who had serum potassium testing done during the six month period prior to the visit date, with a one month grace period.	Number of patients in the sample.	Disorders of potassium homeostasis (both high and low potassium levels) may result in preventable morbidity and mortality. Potassium levels should be checked periodically in patients with kidney disease.

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
Serum intact PTH, tested within 12 months of visit	Patients in the sample who had serum intact PTH testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample who had serum intact PTH testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample.	Renal osteodystrophy is a complex and multifaceted disease process that begins early in the course of chronic kidney disease (CKD) and is a major, long-term complication associated with high rates of morbidity. Experimental and clinical research has shown an increased risk for hyperparathyroidism (HPTH) with hypocalcemia and hyperphosphatemia that often accompanies CKD. HPTH reflected by high immunoreactive parathyroid hormone (iPTH) levels may exist in the face of normal serum calcium and phosphorus. Serum phosphorus, calcium, and intact PTH should be checked at least annually in patients with eGFR < 45 ml/min/1.73 m ² and at least every six months if abnormal.
Serum 25-hydroxyvitamin D (calcidiol), tested within 12 months of visit	Patients in the sample who had serum 25-hydroxyvitamin D (calcidiol) testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample who had serum 25-hydroxyvitamin D (calcidiol) testing done during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample.	Beginning in CKD stage 3, the ability of the kidneys to appropriately excrete a phosphate load is diminished. This leads to an impairment in the conversion of 25(OH)D to 1,25(OH) ₂ D reducing intestinal calcium absorption and increasing PTH. Vitamin D deficiency and insufficiency may have a role in the pathogenesis of secondary hyperparathyroidism (HPT). Studies have shown that there is an association of low 25(OH)D levels with mortality.
Serum LDL cholesterol tested within 12 months of visit	Patients in the sample who had LDL cholesterol testing done during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who had LDL cholesterol testing done during the specified abstraction period (within 12 months of the visit date, with a	Number of patients in the sample.	Continuing evidence shows that lowering LDL in patients with CKD may retard the progression of kidney disease. It has been recommended that the levels of LDL

Diagnostic Testing				
Measure Title	Description	Numerator	Denominator	Rationale
		three month grace period).		be measured every year. It has been recommended that all patients with CKD should be evaluated for dyslipidemias annually. The assessment of dyslipidemias should include a complete fasting lipid profile with total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), and triglycerides.
Serum HDL cholesterol tested within 12 months of visit	Patients in the sample who had HDL cholesterol testing done during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who had HDL cholesterol testing done during the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	It has been recommended that all patients with CKD should be evaluated for dyslipidemias annually. The assessment of dyslipidemias should include a complete fasting lipid profile with total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), and triglycerides.
Serum triglycerides tested within 12 months of visit	Patients in the sample who had triglyceride testing done during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who had triglyceride testing done during the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	It has been recommended that all patients with CKD should be evaluated for dyslipidemias annually. The assessment of dyslipidemias should include a complete fasting lipid profile with total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), and triglycerides.

Treatment: Medication				
Measure Title	Description	Numerator	Denominator	Rationale
ACE inhibitor or ARB	Patients in the sample with hypertension and proteinuria who are currently receiving ACE inhibitor or ARB.	Number of patients in the sample with hypertension and proteinuria who are currently receiving ACE inhibitor or ARB. Proteinuria is defined as UACR > 300 mg/g or UPC ratio > 200 mg/g.	Number of patients in the sample with hypertension and proteinuria (proteinuria is defined as UACR > 300 mg/g or UPC ratio > 200 mg/g).	Numerous randomized, controlled clinical trials have demonstrated that the use of angiotensin converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) as antihypertensive therapy is effective, and may help slow the progression of chronic kidney disease (CKD). These drugs help control hypertension and decrease proteinuria. ACE inhibition has also been shown to reduce mortality and cardiovascular events in patients with pre-existing coronary artery disease and patients with diabetes mellitus and at least one other coronary artery disease risk factor. The mortality benefit conferred by ACE inhibitors may be greater for patients with elevated serum creatinine compared to those with normal renal function. Patients with CKD are considered to be in the highest category for cardiac risk and are thus likely to derive benefit from ACE inhibition. ARBs have also been shown to reduce progression of chronic kidney disease in subjects with type II diabetes mellitus.
Statin or other lipid-lowering drug	Patients in the sample who are potentially eligible for treatment with a statin or other lipid-lowering drug, and who are currently receiving this therapy. Patients were considered potentially eligible for treatment with a statin or other lipid-lowering drug if the chart documented that they had elevated LDL cholesterol or are	Number of the patients in the sample who potentially eligible for treatment with a statin or other lipid-lowering drug, and who are currently receiving this therapy. Patients were considered potentially eligible for treatment with a statin or other lipid-lowering drug if the chart documented that they had elevated LDL cholesterol or are	Number of the patients in the sample potentially eligible for treatment with a statin or other lipid-lowering drug. Patients were considered potentially eligible for treatment with a statin or other lipid-lowering drug if the chart documented that	Patients with CKD have increased coronary heart disease (CHD) risk (greater than 20% per 10 years) and should be considered to be in the highest risk category for atherosclerotic cardiovascular disease (ACVD). Multiple clinical trials demonstrated significant effects of pharmacologic (primarily statin) therapy on CVD outcomes in subjects with CHD and for primary CVD

Treatment: Medication				
Measure Title	Description	Numerator	Denominator	Rationale
	on LDL-lowering medication, or if their most recent LDL cholesterol was 100 mg/dL or higher.	on LDL-lowering medication, or if their most recent LDL cholesterol was 100 mg/dL or higher.	they had elevated LDL cholesterol or are on LDL-lowering medication, or if their most recent LDL cholesterol was 100 mg/dL or higher.	prevention. A higher frequency of adverse events has been reported with statin therapy in patients with CKD so careful monitoring is warranted. Lower statin doses may be necessary to reduce the risk of myopathy.
Aspirin	Patients in the sample potentially eligible for antiplatelet/anticoagulant therapy who are currently receiving this therapy. Patients were considered potentially eligible if they were male patients age 45 and over, or female patients age 55 and over, excluding patients who have medical contraindications	Number of patients in the sample potentially eligible for antiplatelet/anticoagulant therapy who are currently receiving this therapy. Patients were considered potentially eligible if they were male patients age 45 and over, or female patients age 55 and over, excluding patients who have medical contraindications.	Number of male patients age 45 and over, and female patients age 55 and over in the sample, excluding patients who have medical contraindications.	One large meta-analysis and several clinical trials demonstrate the efficacy of using aspirin as a preventive measure for cardiovascular events, including stroke and myocardial infarction. The net benefit of aspirin depends on the initial risks for stroke and gastrointestinal bleeding. Thus, decisions about aspirin therapy should consider the overall risk for stroke and gastrointestinal bleeding. The optimum dose of aspirin for preventing cardiovascular disease events is not known. Primary prevention trials have demonstrated benefits with various regimens, including dosages of 75 and 100 mg/d and 100 and 325 mg every other day. A dosage of approximately 75 mg/d seems as effective as higher dosages. The risk for gastrointestinal bleeding may increase with dose.
Metformin (a marker of poor care)	Number of patients in the sample with diabetes who are currently receiving Metformin therapy. It is a marker of poor care.	Number of patients in the sample with diabetes who are currently receiving Metformin therapy. It is a marker of poor care.	Number of patients in the sample with diabetes.	Metformin should not be given to diabetic patients with CKD because it is cleared by the kidneys and may build up with even modest impairment of kidney function, putting patients at risk of lactic acidosis.

Treatment: Medication				
Measure Title	Description	Numerator	Denominator	Rationale
ESA	Patients in the sample potentially eligible for treatment with ESA who are currently receiving this therapy. Patients were considered potentially eligible for treatment with ESA if the chart documented that they had a hemoglobin <10 g/dL currently or in the last 12 months.	Number of patients in the sample potentially eligible for treatment with ESA who are currently receiving this therapy. Patients were considered potentially eligible for treatment with ESA if the chart documented that they had a hemoglobin <10 g/dL currently or in the last 12 months.	Number of patients in the sample with hemoglobin <10 g/dL currently or in the last 12 months.	As kidney function declines, the likelihood of anemia associated with EPO deficiency increases because the diseased kidneys are unable to produce sufficient quantities of EPO. In patients with CKD not requiring dialysis, untreated anemia increases cardiovascular risk, hospitalization, and all-cause mortality, and diminishes health-related quality of life. Heightened risk for progression of kidney failure has also been linked to untreated anemia of CKD. ESA agents will not work to their maximal potential in patients with iron deficiency anemia. Several interventional studies have shown that treating anemia of CKD with erythropoietic agents may reduce or reverse cardiac complications and retard the rate of CKD progression.
Iron supplements for patients with iron deficiency anemia	Patients in the sample with iron deficiency anemia who are currently receiving iron supplements.	Number of patients in the sample with iron deficiency anemia who are currently receiving iron supplements. Anemia is defined as a documented diagnose of anemia, or if their most recent hemoglobin is < 13 g/dL for men and < 12 g/dL for women, or hemoglobin has been <10 g/dL in the last 12 months. Iron deficiency is defined as serum ferritin < 100 ng/mL or T _{sat} < 20%.	Number of patients in the sample with iron deficiency anemia. Anemia is defined as a documented diagnose of anemia, or if their most recent hemoglobin is < 13 g/dL for men and < 12 g/dL for women, or hemoglobin has been <10 g/dL in the last 12 months. Iron deficiency is defined as serum ferritin < 100 ng/mL or T _{sat} < 20%.	Anemia is common in patients with advanced CKD and can lead to a variety of detrimental effects. In addition to the direct effects of anemia on performance and ischemic symptoms, it has also been suggested that mortality and major complications during end-stage renal disease (ESRD) are associated with anemia that develops early in the course of CDK. Correcting anemia before the initiation of renal replacement therapy (RRT) may improve health outcomes. Iron deficiency is treatable and failure to replete iron stores may result in resistance to erythropoietin.

Treatment: Medication				
Measure Title	Description	Numerator	Denominator	Rationale
Phosphate binders	Patients in the sample who are currently receiving phosphate binders.	Number of patients in the sample who are currently receiving phosphate binders.	Number of patients in the sample.	Treatment and prevention of bone disease in patients with CKD is directed at treating the elevated serum phosphorus with phosphate binders and dietary phosphate restriction, and providing the active form of vitamin D with a medication. Almost all patients with CKD will require dietary phosphorus restriction and/or phosphate binders to maintain serum phosphorus levels within the target range. Several prospective randomized, controlled trials have shown that therapy is safe and effective.
Alkalinization therapy	Patients in the sample who are currently receiving alkalinization therapy.	Number of patients in the sample who are currently receiving alkalinization therapy.	Number of patients in the sample.	Experimental studies in animals and clinical studies in patients with CKD have identified several potential adverse consequences of acidosis, including muscle wasting, induction of a catabolic state, exacerbation of renal osteodystrophy, and accelerating the progression of kidney disease. Correction of metabolic acidosis lessens renal osteodystrophy and improves protein metabolism.
Vitamin D supplement	Patients in the sample who are currently receiving Vitamin D supplement.	Number of patients in the sample who are currently receiving Vitamin D supplement.	Number of patients in the sample.	Vitamin D deficiency is a major complication in patients with CKD and facilitates the pathogenesis of hyperparathyroidism. Several studies have shown that administering active vitamin D leads to significant reduction in mortality in CKD patients. In all CKD patients receiving vitamin D therapy, continued surveillance is needed, and hypercalcemia must be avoided.

Treatment: Other				
Measure Title	Description	Numerator	Denominator	Rationale
Smoking-cessation counseling within past 12 months	Number of patients in this sample who are smokers and for whom smoking-cessation counseling or treatment was documented during the 12-month abstraction period or three months prior to the abstraction period.	Number of patients in this sample who are smokers and for whom smoking-cessation counseling or treatment was documented during the 12 month abstraction period or three months prior to the abstraction period.	Number of patients in this sample who are smokers.	A number of large randomized clinical trials have demonstrated the efficacy and cost-effectiveness of smoking cessation counseling in changing smoking behavior and reducing tobacco use. The routine and thorough assessment of tobacco use is an important step in smoking cessation counseling.
Smoking-cessation support: Brief advice	Patients in the sample who are smokers and who received brief advice as smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period.	Number of patients in the sample who are smokers and who received smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period, and whose type of smoking-cessation support is brief advice.	Number of patients in the sample who are smokers.	A number of large randomized clinical trials have found convincing evidence that smoking cessation interventions, including brief behavioral counseling sessions and pharmacotherapy are effective in increasing the proportion of smokers who successfully quit and remain abstinent for one year.
Smoking-cessation support: Support within practice	Patients in the sample who are smokers and who received support within the practice as smoking-cessation counseling or treatment during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who are smokers and who received smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period, and whose type of smoking-cessation support is support within the practice.	Number of patients in the sample who are smokers.	Studies have shown that lifestyle changes may take a concerted team effort and may require on-going support groups, repetitive contact, monitoring, and encouragement, are all methods to reinforce behavior change.
Smoking-cessation support: Referral to program	Patients in the sample who are smokers and who received referral to a program as smoking-cessation counseling or treatment during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who are smokers and who received smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period, and whose type of smoking-cessation support is referral to a program.	Number of patients in the sample who are smokers.	Research studies have shown that intensive tobacco dependence treatment is more effective than brief treatment.

Treatment: Other				
Measure Title	Description	Numerator	Denominator	Rationale
Smoking-cessation support: Medication	Patients in the sample who are smokers and who received medication as smoking-cessation counseling or treatment during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who are smokers and who received smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period, and whose type of smoking-cessation support is medication.	Number of patients in the sample who are smokers.	Seven first-line (FDA-approved) medications (bupropion SR, nicotine gum, nicotine inhaler, nicotine lozenge, nicotine nasal spray, nicotine patch, and varenicline) and two second-line (non-FDA-approved for tobacco use treatment) medications (clonidine and nortriptyline) as being effective for treating smokers. Each has been documented to increase significantly rates of long-term smoking abstinence. A number of large randomized clinical trials have shown that the combination of counseling and medication is more effective for smoking cessation than either medication or counseling alone.
Smoking-cessation support: Other	Patients in the sample who are smokers and who received some other smoking-cessation counseling or treatment during the 12-month period prior to the visit date, with a three month grace period.	Number of patients in the sample who are smokers and who received smoking-cessation counseling or treatment during the 12 month period prior to the visit date, with a three month grace period, and whose type of smoking-cessation support is other.	Number of patients in the sample who are smokers.	Research studies have shown that smoking cessation interventions delivered by any single type of health care provider, such as a physician or other clinician (e.g., nurse, psychologist, dentist, or counselor), or by multiple clinicians, increases abstinence rates. Psychosocial treatments and self help interventions have also been shown to be effective in smoking cessation therapy.
Smoking status and cessation support	Patients in the sample whose current smoking status is documented in the chart, and who, if they were smokers, were documented to have received smoking cessation counseling during the reporting period.	Number of patients in the sample with documentation of smoking status AND for smokers, with documentation of smoking cessation counseling or treatment during the specified abstraction period (within 12 months of the visit date, with a three month grace period).	Number of patients in the sample.	Several epidemiologic studies have demonstrated a relationship between smoking and more rapid progression of CKD. A number of large randomized clinical trials have demonstrated the efficacy and cost-effectiveness of smoking cessation counseling in changing smoking behavior and reducing tobacco use. The routine and thorough

Treatment: Other				
Measure Title	Description	Numerator	Denominator	Rationale
				assessment of tobacco use is important as a means of preventing smoking or encouraging cessation.
Advised to avoid excessive alcohol in the past 12 months	Patients in the sample who were reported as having been advised to avoid excess alcohol in the past 12 months.	Number of patients in the sample who were reported as having been advised to avoid excess alcohol in the past 12 months.	Number of patients in the sample.	Studies have shown that moderate to heavy alcohol consumption may increase the risk for albuminuria. Excessive alcohol intake is associated with hypertension, which may lead to a progression of CKD. Alcohol consumption is a potential risk factor for glomerular damage, hypertension, and hypertensive nephrosclerosis.
Dietary intervention	Patients in the sample who received dietary intervention.	Number of patients in the sample who received dietary intervention.	Number of patients in the sample.	A number of observational studies have demonstrated that patients with advanced CKD are at risk for malnutrition, and that this risk increases as GFR declines. A dietary assessment of patients with CKD should focus on overall nutrition, including lipids, potassium, phosphate, sodium, protein, and energy. Nutritional interventions are commonly advised for patients with CKD to retard the progression of kidney disease and therefore delay the need for renal replacement therapy. Regardless of prescribed diet, CKD patients are at risk for malnutrition, generally because of inadequate energy and protein intake resulting from decreased appetite. Therefore, many nutritional interventions recommend an increase in energy intake. To prevent hyperphosphatemia it is often recommended that CKD patients restrict intake of organic and inorganic phosphates. Other nutritional interventions focus on the prevention of bone disease, vitamin

Treatment: Other				
Measure Title	Description	Numerator	Denominator	Rationale
				and mineral deficiencies, and hyperlipidemia.
Dietary intervention: Referral to dietician	Patients in the sample received dietary intervention, whose type of dietary intervention is referral to a dietician.	Number of patients in the sample who received dietary intervention, whose type of dietary intervention is referral to a dietician.	Number of patients in the sample.	If there is an indication for restriction or modification of diet, the assistance of a dietitian may be helpful. A dietary assessment of patients with CKD should focus on overall nutrition, including lipids, potassium, phosphate, sodium, protein, and energy.
Dietary intervention: Individual nutrition plan prescribed	Patients in the sample received dietary intervention, whose type of dietary intervention is prescription of individual nutrition plan.	Number of patients in the sample who received dietary intervention, whose type of dietary intervention is prescription of individual nutrition plan.	Number of patients in the sample.	Individualized diet plan and counseling by a dietitian may increase adherence to dietary limitation and prescription.
Dietary intervention: sodium restricted diet prescribed	Patients in the sample received dietary intervention, whose type of dietary intervention is sodium restricted diet prescribed.	Number of patients in the sample who received dietary intervention, whose type of dietary intervention is sodium restricted diet prescribed.	Number of patients in the sample.	Results from multiple studies suggest that variations in dietary salt consumption directly influence albuminuria, with increasing salt intake associated with worsening albuminuria. Sodium intake should be limited to 2-2.4 g/day to reduce fluid accumulation and assist in blood pressure control.
Dietary intervention: Other	Patients in the sample who received dietary intervention, whose type of dietary intervention is other..	Number of patients in the sample who received dietary intervention, whose type of dietary intervention is other.	Number of patients in the sample.	Nutritional interventions are commonly advised for patients with CKD. A major goal of these interventions is to retard the progression of kidney disease and therefore delay the need for renal replacement therapy.
Dietician summary report received from the referred dietician	Patients in the sample who were referred to a dietician and the dietician's summary report was received.	Number of patients in the sample who were referred to a dietician and the dietician's summary report was received.	Number of patients in the sample who were referred to a dietician.	The nutrition plan of care synthesizes information obtained from the nutritional assessment to determine short- and long-term goals from which the nutrition prescription and plan for individualized nutritional therapy is developed.

Preventive Care				
Measure Title	Description	Numerator	Denominator	Rationale
Influenza vaccine during most recent flu season	Patients in the sample who were vaccinated for influenza during the most recent flu season	Number of patients in the sample who were vaccinated for influenza during the most recent flu season.	Number of patients in the sample, excluding those who refused influenza vaccination or could not be vaccinated due to medical reasons.	Influenza immunization is recommended for adults less than age 50 with chronic illness (i.e., heart, lung or kidney disease; asthma; diabetes; anemia or other blood disorders; HIV/AIDS; patients with weakened immune systems) and all adults age 50 and older.
Pneumococcal vaccine	Patients in the sample who received pneumococcal vaccine	Number of patients in the sample who received a pneumococcal vaccine.	Number of patients in the sample, excluding those who refused pneumococcal vaccination or could not be vaccinated due to medical reasons.	Pneumococcal immunization should be administered to all adults age 65 and older, and those less than age 65 with chronic illness, such as CKD, which places them at the highest risk for serious pneumococcal infection. Patients with CKD who have not been previously vaccinated and patients who have not received the vaccine within 5 years (and were less than 65 years of age at the time of vaccination) should receive the pneumococcal vaccine. All persons who have unknown vaccination status should receive one dose of the vaccine.
Hepatitis B vaccine	Number of patients in the sample who received the complete hepatitis B vaccine series.	Number of patients in the sample who received the complete hepatitis B vaccine series.	Number of patients in the sample, excluding those who refused hepatitis B vaccination or could not be vaccinated due to medical reasons.	Some studies have demonstrated that higher antibody response rates could be achieved by vaccinating patients with chronic renal failure before they become dialysis dependent, particularly patients with mild or moderate renal failure. Nonimmune patients with CKD should receive a 3-step hepatitis B vaccine series.

Coordination of Care				
Measure Title	Description	Numerator	Denominator	Rationale
Patients referred to nephrologist	Patients in the sample who were reported as having been referred to a nephrologist. This measure is for physicians who are not nephrologists.	Number of patients in the sample who were reported as having been referred to a nephrologist.	Number of patients in the sample (in a non-nephrologist practice).	In observational studies, late nephrology referral among patients with severe CKD is associated with worse outcomes after initiation of dialysis. Nephrology consultation or referral can serve a variety of different purposes: identifying the underlying etiology of kidney disease, initiating therapies to slow progression of CKD and identifying reversible processes leading to rapid loss of eGFR, managing the complications of kidney disease, and preparing patients for renal replacement therapy.
Nephrologist summary report sent to referring Physician	Patients in the sample whose nephrologist summary report was sent to the referring physician. This measure is for physicians who are nephrologists.	Number of patients in the sample whose nephrologist summary report was sent to the referring physician.	Number of patients in the sample (in a nephrologist practice).	The post-consult letter sent by nephrologists to the referring clinician should serve to help establish effective communication with the referring clinician, serve as a reminder regarding the various clinical issues that need to be addressed in patients with advanced CKD and, if applicable, describe the need for, benefits, and feasibility of co-management and define the co-management working plan.
Nephrologist summary report received from the referred nephrologist	Patients in the sample who were referred to a nephrologist and the nephrologist summary report was received. This measure is for physicians who are not nephrologists.	Number of patients in the sample who were referred to a nephrologist and the nephrologist summary report was received.	Number of patients in the sample who were referred to a nephrologist.	The post-consult letter sent by nephrologists to the referring clinician should serve to help establish effective communication with the referring clinician, serve as a reminder regarding the various clinical issues that need to be addressed in patients with advanced CKD and, if applicable, describe the need for, benefits, and

Coordination of Care				
Measure Title	Description	Numerator	Denominator	Rationale
				feasibility of co-management and define the co-management working plan.
Patients referred to vascular access surgeon or specialist	Patients in the sample who were reported as having been referred to a nephrologist by a PCP, or referred to a vascular access surgeon or specialist.	Number of patients in the sample who were reported as having been referred to a nephrologist by a PCP, or referred to a vascular access surgeon or specialist.	Number of patients in the sample, excluding patients who prefer peritoneal dialysis or for whom dialysis is not a practical option.	Patients should be referred to vascular access surgeon or specialist for an arteriovenous fistula (AVF) evaluation, including vessel mapping, no later than Stage 4 CKD (GFR<30). Having a successful RRT access is a major contributor to patient well-being. Appropriate planning allows for the initiation of dialysis therapy at the appropriate time with a permanent access in place at the start of dialysis therapy.
Vascular surgeon or specialist summary report received	Patients in the sample who have a chart documentation of report from vascular surgeon or specialist.	Number of patients in the sample who have a chart documentation of report from vascular surgeon or specialist.	Number of patients in the sample who were referred to vascular access surgeon or specialist.	The specialist report documents arteriovenous fistula (AVF) plan and time table. A joint plan of care should be developed and include patient education and support for self-management and resources.
Patients referred for transplant evaluation	Patients in the sample with GFR <=20 who were reported as having been referred to a nephrologist by a PCP or referred for transplant evaluation.	Number of patients in the sample with GFR <=20 who were reported as having been referred to a nephrologist by a PCP or referred for transplant evaluation.	Number of patients in the sample with GFR <=20, excluding patients who do not wish to have transplantation or for whom transplant is not a practical option.	Transplantation as the first mode of renal replacement therapy results in better graft survival and decreased mortality. A study has concluded that patient survival is better for patients not dialyzed than those dialyzed, regardless of the type of kidney donor. Transplant requires a well-prepared patient. Therefore it may be beneficial to anticipate and prepare for an early transplant.

End of Life Care				
Measure Title	Description	Numerator	Denominator	Rationale
Patient's preferences for life-sustaining care are documented	Patients in the sample whose preferences for life-sustaining care were documented	Number of patients in the sample whose preferences for life-sustaining care were documented	Number of patients in the sample	Physicians routinely should discuss life-sustaining treatment decisions with their patients, particularly before the actual need for such care arises. Patients should be asked to designate a surrogate decision maker and to discuss their preferences with this person and with other family members and friends.
Patient's designated surrogate decision maker is documented	Patients in the sample whose designated surrogate decision maker was documented	Number of patients in the sample whose designated surrogate decision maker was documented	Number of patients in the sample	Physicians routinely should discuss life-sustaining treatment decisions with their patients, particularly before the actual need for such care arises. Patients should be asked to designate a surrogate decision maker and to discuss their preferences with this person and with other family members and friends.

© 2011 American Board of Internal Medicine. All rights reserved. ABIM publications are protected by United States and international copyright laws. Written permission for any reproduction or adaptation, in whole or in part, in any format or medium must be obtained from ABIM. Contact request@abim.org.