



Body System: Nephrologic			
Session Topic: Chronic Kidney Disease and End-Stage Renal Disease			
Educational Format		Faculty Expertise Required	
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.	
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>	
Professional Practice Gap		Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> • Patients are not being effectively screened with renal disease that are at enhanced risk for cardiovascular disease. • The proportion of patients with CKD who were given appropriate CVD risk modifying agents is lower than general population—as part of their in the chronic management of these patients, family physicians need education to address this imbalance. • Patient-based factors that act as barriers to more appropriate care of patients with CKD are frequently not considered. • Frequent non-adherence to CKD/ESRD guidelines. • Patients are frequently non-adherent to prescribed CKD therapies. 		<ol style="list-style-type: none"> 1. Refine evaluation skills to more effectively screen for the presence of chronic kidney disease. 2. Construct an appropriate treatment plan for a patient with chronic kidney disease that also considers the potential for comorbidities, including tailoring the treatment regimen for the individual, follow-up monitoring, and making an appropriate referral. 3. Address the impact of patient misconceptions of their risk for cardiovascular disease, medication non-compliance, and negative lifestyle factors as barriers to appropriate care of chronic kidney disease patients and devise an action plan to correct these issues. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
ACGME Core Competencies Addressed (select all that apply)			
X	Medical Knowledge		Patient Care



X	Interpersonal and Communication Skills	Practice-Based Learning and Improvement
	Professionalism	Systems-Based Practice

Faculty Instructional Goals

Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
 - Visit <http://www.aafp.org/journals> for additional resources
 - Visit <http://familydoctor.org> for patient education and resources
- Provide an overview of current CKD/ESRD clinical practice guidelines and recommendations for incorporating key elements into practice that will have immediate and large impacts to patient care.
- Provide recommendation for more effectively screen for the presence of chronic kidney disease.
- Provide strategies and recommendations for constructing an appropriate treatment plan for a patient with chronic kidney disease that also considers the potential for comorbidities, including tailoring the treatment regimen for the individual, follow-up monitoring, and making an appropriate referral.
- Provide an overview of new treatment therapies and evidence-based recommendations for their use in managing CKD/ESRD.
- Provide recommendations for managing patients who are receiving peritoneal dialysis at home or even hemodialysis at home.
- Provide recommendations to address the impact of patient misconceptions of their risk for cardiovascular disease, medication non-compliance, and negative lifestyle factors as barriers to appropriate care of chronic kidney disease patients and devise an action plan to correct these issues.
- Provide strategies and recommendations for developing a systematic approach to communicating about diagnosis, prognosis, treatment options, and goals of care.
- Provide recommendations regarding guidelines for Medicare reimbursement.
- Provide recommendations to maximize office efficiency and guideline adherence to the diagnosis and management of CKD/ESRD.
- Provide an overview of newly available treatments, including efficacy, safety, contraindications, and cost/benefit relative to existing treatments.
- Provide instructions regarding the incorporation and use of the PCMH/ACO/Primary Care Core Measure Set into practice.



Needs Assessment

It is estimated that as many as 23 million adults aged 20 or older have physiological evidence of chronic kidney disease (CKD), accounting for approximately 10% of the adult population.^{1,2} However, only 2% (4.5 million adults) have reportedly been told by a physician within the past 12 months that they had CKD, and are 16 to 40 times more likely to die from CKD than to reach end-stage renal disease (ESRD).¹ The prevalence of ESRD has steadily increased from 615,899 in the fourth quarter of 2011, to 641,607 in the fourth quarter of 2012.³ The 2009 *National Health Interview Survey* reported that kidney disease is much more prevalent among poor adults and those with less education; adults under the age of 65 covered by Medicaid – and those with less than a high school education – have higher percentages of CKD.⁴

According to the National Institutes of Health (NIH), “kidney disease can be detected earlier by standardized blood tests to estimate renal function and monitoring of urine protein excretion. New drugs better control blood pressure and slow the rate of kidney damage by about 50%.⁵ Family physicians should conduct such blood tests as part of routine screenings for patients with kidney disease, and many do. AAFP *Practice Profile* data indicate that the majority of family physicians perform a variety of blood and urine tests or collect the specimen and send to an outside lab; such tests include complete blood count (CBC), Hemoglobin, dipstick urinalysis or urine microscopic exam.⁶ Screening and diagnosis of patients with CKD can help family physicians to classify stages in the progression of the disease, which will allow them to better manage such patients. Screening individuals at high risk for CKD—those older than 50 years; those with a history of diabetes, hypertension, or cardiovascular disease; and those with a family history of CKD, among others—may prevent or delay CKD and ESRD.¹

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have knowledge gaps with regard to managing CKD and ESRD, and patient adherence and patient education.⁷ More specifically, CME outcomes data from 2012-2015 AAFP FMX (formerly Assembly): *Chronic Kidney Disease/Cardiovascular Disease*; and *Chronic Kidney Disease-End Stage Renal Disease* sessions, and a multi-format *CKD-CVD* program suggest that physicians have knowledge and practice gaps with regard to appropriate screening, especially patients at risk for diabetes, hypertension, and chronic kidney disease; appropriate and timely referral; treating within the guidelines, and providing better patient education and counseling.⁸⁻¹¹

More and more patients with CKD and ESRD are surviving longer. For these patients, their CKD is complicating and is complicated by their other comorbidities. Also, there are more options available for patients with ESRD other than traditional hemodialysis. As patients with early stage CKD may be best managed through primary care, physicians should be aware of how to manage patients who are receiving peritoneal dialysis at home or even hemodialysis at home (which is easier and less expensive).^{12,13} Also, it is worth discussing prognostication for patients with ESRD.

A review of the literature confirms that physicians are frequently non-adherent to current CKD/ESRD guidelines, with lack of time during a normal office visit cited as a barrier to



guideline implementation.¹⁴⁻¹⁷ Physicians also show limited understanding and use of National Kidney Foundation (NKF) screening guidelines, resulting in ineffective patient screening for renal disease, which are at increased risk for cardiovascular disease (CVD).¹⁴⁻¹⁷ Physicians have low confidence when giving antiplatelet (AP) agents to patients with CKD because of bleed risk fears—despite evidence showing that with appropriate monitoring the use of AP therapy in this patient group is safe and effective.¹⁸ This results in an underuse of therapies. The proportion of patients with CKD who were given appropriate risk modifying agents is lower than in the general population “therapeutic nihilism”. Less than 50% of patients with severe CKD (and therefore known to be at high CVD risk) were on appropriate combination ASA, β -blocker, ACE inhibitors, and statins. Patient non-adherence to prescribed therapies, resulting in risk factors for CVD being poorly controlled, thereby enhancing the probability of CVD-induced ischemic events.¹⁹ Physicians need to receive continuing medical education regarding evidence-based recommendations for efficacious treatments for CKD comorbidities, including strategies to foster patient adherence.

CKD is a more pronounced risk factor for CVD in Blacks and Hispanics than in Whites; in part, due to lower awareness of the CKD and its risks in Black patients, leading to later office visits and diagnosis at a more severe stage.^{20,21,22} Racial differences also exist clinically and are hypothesized to be due to more frequent or more severe subclinical vascular disease secondary to hypertension or diabetes in Black individuals.^{23,24} Socioeconomic status is also an independent risk factor for CKD-CVD risk.²⁵ Because the rates of ESRD are much higher among black and Native American populations, family physicians should exercise culturally competent care in all interactions with patients and families as well.

The AAFP National Research Network (NRN) conducted the *Chronic Kidney Disease – Improving Evidence-based Primary Care* study from September 2011 through August 2016. As of June 2016 the project is in the data analysis phase.²⁶

Specific Aims and Objectives of the study:

1. Conduct a group randomized controlled trial of point-of-care computer decision support plus the full TRANSLATE model of practice change, versus computer decision support alone in promoting evidence-based care in primary care practices for all patients with an eGFR <60 and >15 ml/min/1.73m² confirmed with repeat testing over three or more months. (CKD stages 3 and 4)
 - *Hypothesis 1.1:* CDS practices using the TRANSLATE model will provide a greater degree of evidence-based guideline-concordant care for CKD than CDS only practices.
2. Conduct an intent-to-treat and process analysis between the CDS practices with facilitation versus the CDS-only practices of the clinical outcomes of CDK progression and all-cause mortality.
 - *Hypothesis 2.1:* Patients with stage 3 and 4 CKD in facilitated practices will have slower CKD progression than patients in CDS-only practices.
 - *Hypothesis 2.2:* Patients with stage 3 and 4 CKD in facilitated practices will have significantly lower all-cause mortality than stage 3 and 4 patients in CDS-only practices.



- *Hypothesis 2.3:* The process evaluation will determine through qualitative methods the fidelity of the facilitated TRANSLATE program; find the challenges and enablers of the implementation process, and the contextual factors that contribute to TRANSLATE decisions and strategies; and translate lessons learned into pragmatic “best practices” for future facilitation and dissemination.
3. Conduct a cost-effectiveness analysis that will compare the benefit of the intervention of computer decision support alone against the intervention of computer decision support plus TRANSLATE (practice facilitation) in relationship to overall cost per quality adjusted years of life.
- *Hypothesis 3.1:* The intervention of computer decision support plus TRANSLATE is more cost-effective than the intervention of computer decision support alone.

Key findings, to date, are summarized as follows:²⁷⁻³¹

- Barriers to guideline implementation were identified in each of the 4 NPT domains, including (1) lack of knowledge and understanding around CKD (coherence), (2) difficulties engaging providers and patients in CKD management (cognitive participation), (3) limited time and competing demands (collective action), and (4) challenges obtaining and using data to monitor progress (reflexive monitoring).
- CKD stage 3 ICD-9 code usage did not accurately reflect the prevalence of disease among this population. This has clinical implications because patients may be treated or receive tests for a disease they do not have.
- More research is needed to determine definitively whether or not the treatment of albuminuria delays the progression of chronic kidney disease and reduces mortality

Physicians may improve their care of patients with CKD/ESRD by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:³²⁻³⁹

- The AAFP *concludes that the evidence is insufficient* to assess the balance of benefits and harms for routine screening for chronic kidney disease (CKD) in asymptomatic adults. Common tests considered for CKD screening include creatinine-derived estimates of glomerular filtration rate (GFR) and urine testing for albumin.
- Asymptomatic adults without risk factors for chronic kidney disease should not be screened for chronic kidney disease.
- Adults who are taking an angiotensin-converting enzyme inhibitor or an angiotensin II-receptor blocker should not be tested for proteinuria, whether or not they have diabetes.
- Adults with hypertension and stage 1 to 3 chronic kidney disease should be treated with either an angiotensin-converting enzyme inhibitor or an angiotensin II-receptor blocker.
- Adults with stage 1 to 3 chronic kidney disease and elevated low-density lipoprotein should be treated with statin therapy.
- Physicians should screen at-risk populations for CKD using serum creatinine levels and random urine testing for albuminuria.
- Adults with cardiovascular disease should be screened for CKD.
- The Chronic Kidney Disease Epidemiology Collaboration formula is more accurate than the Modification of Diet in Renal Disease equation or the Cockcroft-Gault equation, and should be used to estimate GFR.



- Acetaminophen is the analgesic of choice for short-term treatment of mild to moderate pain in patients with stage 3 to 5 CKD.
- Nephrology consultation is indicated when the estimated GFR is less than 30 mL per minute per 1.73 m².
- Patients with nondiabetic kidney disease and a random urine total protein-to-creatinine ratio greater than 200 mg per g, and those with diabetic kidney disease, should be treated with an ACE inhibitor or an angiotensin II receptor blocker.
- Concurrent use of ACE inhibitors and angiotensin II receptor blockers should be avoided because of symptomatic hypotension and worsening kidney function.
- Hemoglobin goals should not exceed 11 g per dL (110 g per L) in patients receiving erythropoiesis-stimulating agents due to the risk of major cardiovascular events.
- Gadolinium should be avoided in patients with a glomerular filtration rate less than 30 mL per minute per 1.73 m², or with acute kidney injury caused by hepatorenal syndrome or in the perioperative liver transplantation period.
- Fentanyl and methadone are the preferred opioids for use in patients with end-stage renal disease.
- Conservative (nondialytic) management of end-stage renal disease can be offered to older adults and patients with multiple comorbidities.
- Delayed initiation of dialysis (when glomerular filtration rate is 5.0 to 7.0 mL per minute per 1.73 m²) yields equivalent outcomes to early initiation.
- Patients with end-stage renal disease should have advance directives, including documentation of situations in which they would want to discontinue dialysis.
- Develop a Physician-Patient Relationship for Shared Decision-Making, for ESRD patients.
- Fully Inform AKI, Stage 4 and 5 CKD, and ESRD Patients about Their Diagnosis, Prognosis, and All Treatment Options.
- Give All Patients with AKI, Stage 5 CKD, or ESRD an Estimate of Prognosis Specific to Their Overall Condition
- If Appropriate, Forgo (Withhold Initiation or Withdraw Ongoing) Dialysis for Patients with AKI, CKD, or ESRD in Certain, Well-defined Situations.
- Consider Forgoing Dialysis for AKI, CKD, or ESRD Patients Who Have a Very Poor Prognosis or for Whom Dialysis Cannot Be Provided Safely.
- Consider a Time-Limited Trial of Dialysis for Patients Requiring Dialysis, But Who Have an Uncertain Prognosis, or for Whom a Consensus Cannot Be Reached about Providing Dialysis.
- Establish a Systematic Due Process Approach for Conflict Resolution if There Is Disagreement about What Decision Should Be Made with Regard to Dialysis.
- To Improve Patient-Centered Outcomes, Offer Palliative Care Services and Interventions to All AKI, CKD, and ESRD Patients Who Suffer from Burdens of Their Disease.
- Use a Systematic Approach to Communicate about Diagnosis, Prognosis, Treatment Options, and Goals of Care.

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference



resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

Physicians can improve patient satisfaction with the referral process by using readily available strategies and tools such as, improving internal office communication, engaging patients in scheduling, facilitating the appointment, tracking referral results, analyzing data for improvement opportunities, and gathering patient feedback.^{40,41}

The American Academy of Family Physicians Academy has participated in the Core Measures Collaborative (the Collaborative) convened by America's Health Insurance Plans (AHIP) since August 2014. The Collaborative is a multi-stakeholder effort working to define core measure sets of various specialties promoting alignment and harmonization of measure use and collection across both public and private payers.

Participants in the Collaborative included Centers for Medicare and Medicaid Services (CMS), the National Quality Forum (NQF), private payers, provider organizations, employers, and patient and consumer groups. This effort exists to decrease physician burden by reducing variability in measure selection, specifications and implementation—making quality measurement more useful and meaningful for consumers, employers, as well as public and private clinicians.

With significant AAFP input, a PCMH/ACO/Primary Care Core Measure Set has been developed for primary care. The goal of this set is to decrease burden and allow for more congruence between payer reporting programs.⁴²

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Chronic kidney disease: detection and evaluation³⁹
- End-stage renal disease: symptom management and advance care planning³⁴
- National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification³³
- Update on the management of chronic kidney disease³⁵
- K/DOQI clinical practice guidelines on hypertension and antihypertensive agents in chronic kidney disease¹⁷
- Revised dialysis clinical practice guideline promotes more informed decision-making³²
- ACP: Screening, Monitoring, and Treatment of Stage 1 to 3 Chronic Kidney Disease: A Clinical Practice Guideline³⁷
- AMA PCPI Performance Measures: Kidney Disease (adult/pediatric)⁴³
- Adding health education specialists to your practice⁴⁴
- Envisioning new roles for medical assistants: strategies from patient-centered medical homes⁴⁵
- The benefits of using care coordinators in primary care: a case study⁴⁶



- Engaging Patients in Collaborative Care Plans⁴⁷
- Health Coaching: Teaching Patients to Fish⁴⁸
- Medication adherence: we didn't ask and they didn't tell⁴⁹
- Encouraging patients to change unhealthy behaviors with motivational interviewing⁵⁰
- Integrating a behavioral health specialist into your practice⁵¹
- Simple tools to increase patient satisfaction with the referral process⁴⁰
- Managing difficult encounters: understanding physician, patient, and situational factors⁵²
- Communicating bad news to your patients⁵³
- Exercise training for adults with chronic kidney disease⁵⁴
- FamilyDoctor.org (patient resource): Chronic Kidney Disease⁵⁵

References

1. Centers for Disease Control and Prevention. 2014 National Chronic Kidney Disease Fact Sheet. *Fact Sheets & Reports* 2014; <http://www.cdc.gov/diabetes/pubs/factsheets/kidney.htm>. Accessed August, 2014.
2. National Kidney and Urologic Disease Information Clearinghouse (NKUDIC). Kidney Disease Statistics for the United States. 2012; <http://kidney.niddk.nih.gov/kudiseases/pubs/kustats/>. Accessed August, 2013.
3. United States Renal Data System. ESRD Quarterly Update - July 2013 - Current. 2013. Accessed August, 2014.
4. Blackwell DL, Lucas JW, Clarke TC. Summary health statistics for u.s. Adults: national health interview survey, 2012. *Vital and health statistics. Series 10, Data from the National Health Survey*. Feb 2014(260):1-171.
5. National Institutes of Health. Chronic Kidney Disease and Kidney Failure. *Research Portfolio Online Reporting Tools (RePORT)* 2014; <http://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=34>. Accessed August, 2014.
6. American Academy of Family Physicians (AAFP). Practice Profile II. unpublished: American Academy of Family Physicians; 2009.
7. AAFP. 2012 CME Needs Assessment: Clinical Topics. American Academy of Family Physicians; 2012.
8. American Academy of Family Physicians (AAFP). AAFP FMX CME Outcomes Report. Leawood KS: AAFP; 2015.
9. American Academy of Family Physicians (AAFP). 2012 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2012.
10. American Academy of Family Physicians (AAFP). 2013 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2013.
11. American Academy of Family Physicians (AAFP). AAFP Assembly CME Outcomes Report. Leawood KS: AAFP; 2014.
12. Ferguson TW, Tangri N, Rigatto C, Komenda P. Cost-effective treatment modalities for reducing morbidity associated with chronic kidney disease. *Expert review of pharmacoeconomics & outcomes research*. Apr 2015;15(2):243-252.
13. Johnson DW, Wong MG, Cooper BA, et al. Effect of timing of dialysis commencement on clinical outcomes of patients with planned initiation of peritoneal dialysis in the



- IDEAL trial. *Peritoneal dialysis international : journal of the International Society for Peritoneal Dialysis*. Nov-Dec 2012;32(6):595-604.
14. Basile JN. Recognizing the link between CKD and CVD in the primary care setting: accurate and early diagnosis for timely and appropriate intervention. *Southern medical journal*. May 2007;100(5):499-505.
 15. Fox CH, Voleti V, Khan LS, Murray B, Vassalotti J. A quick guide to evidence-based chronic kidney disease care for the primary care physician. *Postgraduate medicine*. Jul 2008;120(2):E01-06.
 16. Weiner DE, Tighiouart H, Stark PC, et al. Kidney disease as a risk factor for recurrent cardiovascular disease and mortality. *American journal of kidney diseases : the official journal of the National Kidney Foundation*. Aug 2004;44(2):198-206.
 17. K/DOQI clinical practice guidelines on hypertension and antihypertensive agents in chronic kidney disease. *American journal of kidney diseases : the official journal of the National Kidney Foundation*. May 2004;43(5 Suppl 1):S1-290.
 18. Anavekar NS, Pfeffer MA. Cardiovascular risk in chronic kidney disease. *Kidney international. Supplement*. Nov 2004(92):S11-15.
 19. Calabrese D. Management of cardiovascular disease in chronic kidney disease: implications for managed care. *The American journal of managed care*. Dec 2011;17 Suppl 15:S412-418.
 20. Flessner MF, Wyatt SB, Akyzbekova EL, et al. Prevalence and awareness of CKD among African Americans: the Jackson Heart Study. *American journal of kidney diseases : the official journal of the National Kidney Foundation*. Feb 2009;53(2):238-247.
 21. Palmer Alves T, Lewis J. Racial differences in chronic kidney disease (CKD) and end-stage renal disease (ESRD) in the United States: a social and economic dilemma. *Clinical nephrology*. Nov 2010;74 Suppl 1:S72-77.
 22. Lopes AA. Relationships of race and ethnicity to progression of kidney dysfunction and clinical outcomes in patients with chronic kidney failure. *Advances in renal replacement therapy*. Jan 2004;11(1):14-23.
 23. Hall YN. Racial and ethnic disparities in end stage renal disease: access failure. *Clinical journal of the American Society of Nephrology : CJASN*. Feb 2012;7(2):196-198.
 24. Levin A. Clinical epidemiology of cardiovascular disease in chronic kidney disease prior to dialysis. *Seminars in dialysis*. Mar-Apr 2003;16(2):101-105.
 25. Bruce MA, Beech BM, Crook ED, et al. Association of socioeconomic status and CKD among African Americans: the Jackson Heart Study. *American journal of kidney diseases : the official journal of the National Kidney Foundation*. Jun 2010;55(6):1001-1008.
 26. American Academy of Family Physicians (AAFP), National Research Network. Chronic Kidney Disease - Improving Evidence-based Primary Care. 2011; <http://www.aafp.org/patient-care/nrn/studies/all/ckd-eb.html>. Accessed June, 2016.
 27. Vest BM, York TR, Sand J, Fox CH, Kahn LS. Chronic Kidney Disease Guideline Implementation in Primary Care: A Qualitative Report from the TRANSLATE CKD Study. *Journal of the American Board of Family Medicine : JABFM*. Sep-Oct 2015;28(5):624-631.
 28. Dickinson LM, Beaty B, Fox C, et al. Pragmatic Cluster Randomized Trials Using Covariate Constrained Randomization: A Method for Practice-based Research Networks (PBRNs). *Journal of the American Board of Family Medicine : JABFM*. Sep-Oct 2015;28(5):663-672.



29. Cipparone CW, Withiam-Leitch M, Kimminau KS, Fox CH, Singh R, Kahn L. Inaccuracy of ICD-9 Codes for Chronic Kidney Disease: A Study from Two Practice-based Research Networks (PBRNs). *Journal of the American Board of Family Medicine : JABFM*. Sep-Oct 2015;28(5):678-682.
30. Fox C, Neuhaus K, Vassalotti J. Importance of urine albumin–creatinine ratio in the diagnosis and prognosis of chronic kidney disease. *OA Nephrology*. 2013;1(3):21.
31. Fox CH, Vest BM, Kahn LS, et al. Improving evidence-based primary care for chronic kidney disease: study protocol for a cluster randomized control trial for translating evidence into practice (TRANSLATE CKD). *Implementation science : IS*. 2013;8:88.
32. Moss AH. Revised dialysis clinical practice guideline promotes more informed decision-making. *Clinical journal of the American Society of Nephrology : CJASN*. Dec 2010;5(12):2380-2383.
33. Levey AS, Coresh J, Balk E, et al. National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification. *Annals of internal medicine*. Jul 15 2003;139(2):137-147.
34. O'Connor NR, Corcoran AM. End-stage renal disease: symptom management and advance care planning. *American family physician*. Apr 1 2012;85(7):705-710.
35. Rivera JA, O'Hare AM, Harper GM. Update on the management of chronic kidney disease. *American family physician*. Oct 15 2012;86(8):749-754.
36. American Academy of Family Physicians (AAFP). Chronic Kidney Disease. *Clinical Preventive Service Recommendation* 2012; <http://www.aafp.org/patient-care/clinical-recommendations/all/kidney-disease.html>. Accessed August, 2014.
37. Qaseem A, Hopkins JRH, Sweet DE, Starkey M, Shekelle P. Screening, Monitoring, and Treatment of Stage 1 to 3 Chronic Kidney Disease: A Clinical Practice Guideline From the American College of Physicians. *Annals of internal medicine*. 2013;159(12):835-847.
38. American Academy of Family Physicians (AAFP). Chronic Kidney Disease. *Clinical Practice Guideline(s)* 2014; <http://www.aafp.org/patient-care/clinical-recommendations/all/chronic-kidney-disease.html>. Accessed August, 2014.
39. Baumgarten M, Gehr T. Chronic kidney disease: detection and evaluation. *American family physician*. Nov 15 2011;84(10):1138-1148.
40. Jarve RK, Dool DW. Simple tools to increase patient satisfaction with the referral process. *Family practice management*. Nov-Dec 2011;18(6):9-14.
41. American Academy of Family Physicians (AAFP). FPM Toolbox: Referral Management. 2013; <http://www.aafp.org/fpm/toolBox/viewToolType.htm?toolTypeId=26>. Accessed July, 2014.
42. American Academy of Family Physicians (AAFP). PCMH/ACO/Primary Care Core Measure Set. 2016; <http://www.aafp.org/practice-management/improvement/measures.html>. Accessed May, 2016.
43. American Medical Association (AMA). PCPI Approved Quality Measures. 2013; <http://www.ama-assn.org/apps/listserv/x-check/qmeasure.cgi>. Accessed May, 2013.
44. Chambliss ML, Lineberry S, Evans WM, Bibeau DL. Adding health education specialists to your practice. *Family practice management*. Mar-Apr 2014;21(2):10-15.
45. Naughton D, Adelman AM, Bricker P, Miller-Day M, Gabbay R. Envisioning new roles for medical assistants: strategies from patient-centered medical homes. *Family practice management*. Mar-Apr 2013;20(2):7-12.



46. Mullins A, Mooney J, Fowler R. The benefits of using care coordinators in primary care: a case study. *Family practice management*. Nov-Dec 2013;20(6):18-21.
47. Mauksch L, Safford B. Engaging Patients in Collaborative Care Plans. *Family practice management*. 2013;20(3):35-39.
48. Ghorob A. Health Coaching: Teaching Patients to Fish. *Family practice management*. 2013;20(3):40-42.
49. Brown M, Sinsky CA. Medication adherence: we didn't ask and they didn't tell. *Family practice management*. Mar-Apr 2013;20(2):25-30.
50. Stewart EE, Fox CH. Encouraging patients to change unhealthy behaviors with motivational interviewing. *Family practice management*. May-Jun 2011;18(3):21-25.
51. Reitz R, Fifield P, Whistler P. Integrating a behavioral health specialist into your practice. *Family practice management*. Jan-Feb 2011;18(1):18-21.
52. Cannarella Lorenzetti R, Jacques CH, Donovan C, Cottrell S, Buck J. Managing difficult encounters: understanding physician, patient, and situational factors. *American family physician*. Mar 15 2013;87(6):419-425.
53. Old J. Communicating bad news to your patients. *Family practice management*. Nov-Dec 2011;18(6):31-35.
54. Heiwe S, Jacobson SH. Exercise training for adults with chronic kidney disease. *Cochrane Database Syst Rev*. 2011(10):CD003236.
55. FamilyDoctor.org. Chronic Kidney Disease | Overview. 2005; <http://familydoctor.org/familydoctor/en/diseases-conditions/chronic-kidney-disease.html>. Accessed August, 2013.