CORE CURRICULUM IN NEPHROLOGY

Economic Factors in Nephrology: Core Curriculum 2009

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INTRODUCTION

Five years ago, Provenzano and Nissenson published a Core Curriculum in the *American Journal of Kidney Diseases* entitled "Economics of Clinical Nephrology Practice." They describe how to select a practice location, choose a practice structure, and address such issues as assessing practice opportunities, employment contracts, billing, purchasing, and reimbursement. They discuss the operational elements of the small business of a nephrology practice. They provide an overview of Medicare, Medicaid, and managed care, offering an excellent outline of the economics of nephrology practice. In this addition to the Provenzano and Nissenson Core Curriculum, we expand the information about payment for services, regulations governing clinical practice, and economic forces affecting nephrologists.

SUGGESTED READING

➢ Provenzano R, Nissenson AR: Core Curriculum in Nephrology. Economics of clinical nephrology practice. Am J Kidney Dis 44:168-178, 2004

BASICS OF MEDICARE

Medicare Is the Principal Payer for Dialysis and Transplant Care

- Part A: Hospital Insurance
- Part B: Medical Insurance
  - Physician services, outpatient hospital care, outpatient dialysis, and laboratory costs
  - For transplant recipients, immunosuppression medications are included
  - The patient pays a monthly premium ($96.40/mo for most beneficiaries in 2008, with annual deductible of $135.00)
- Part C: Medicare Advantage Plans
  - Private plans contracting with Medicare to administer Medicare benefits
  - Patients with end-stage renal disease (ESRD) generally are barred from enrolling in most Medicare Advantage Plans
- Part D: Prescription Benefit: Privately administered benefits differ from plan to plan and from state to state

Eligibility and Enrollment

Medicare regulations define ESRD as "that stage of kidney impairment that appears irreversible and permanent and requires a regular course of dialysis treatment or kidney transplantation to survive." Patients with ESRD are eligible irrespective of age, but must:

- Have worked long enough under Social Security, the Railroad Entitlement Board, or as a government employee to qualify for a monthly insurance benefit, or
- Be receiving or be eligible for Social Security, Office of Personnel Management, or Railroad Retirement benefits, or
- Be the spouse or dependent child of a person who meets 1 of these 2 criteria

The physician determining the ESRD diagnosis must provide evidence of ESRD to the Centers for Medicare & Medicaid Services (CMS) by submitting CMS Form 2728, the Medical Evidence Report, as certification.

- Note: This form is used only for patients who meet these criteria for ESRD and not for patients with acute kidney injury (AKI) receiving dialysis in the outpatient setting
- For patients eligible for Medicare solely by virtue of ESRD, eligibility begins after completion of a 3-month waiting period that begins on the first day of the month when outpatient dialysis therapy starts
- The 3-month waiting period is waived if the patient completes a self-dialysis training program in a Medicare-approved facility or undergoes transplantation within the first 3 months after beginning routine dialysis therapy

Payments

Payment for dialysis and transplantation services is divided into a fee for the facility providing the

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service and a separate fee for the physician providing/supervising care.

In-Center Dialysis

After the initial 3-month "waiting period," entitlement starts on the first day of the fourth month of treatment and payment begins on this date.

Home Dialysis

Medicare entitlement is available retroactively to the first day of the month dialysis therapy started, and payment also is retroactive to this date.

Transplant Recipients

If patients receive a transplant before dialysis therapy starts or during the waiting period, Medicare entitlement is retroactive to the first day of the month of the transplantation.

Reimbursement for Non-ESRD Dialysis

Some patients with AKI require dialysis therapy that may be temporary should kidney function recover. Such patients younger than 65 years are not entitled to Medicare ESRD benefits. The CMS made a policy revision in 2003 to allow reimbursement to physicians for dialysis services provided for patients with AKI. However, dialysis facility Medicare reimbursement is limited to ESRD care. Thus, there are substantial barriers to the outpatient dialysis care of patients with AKI. New legislation would be needed to allow Medicare payment to dialysis facilities for dialysis of patients with AKI.

Bundling

Bundling is a payment method that defines a group or "bundle" of services delivered for episodes of care. Nephrologists have been reimbursed for a bundle of services to dialysis patients, the monthly capitated payment (MCP; discussed later). The ESRD composite rate is another example of bundling, paying dialysis facilities for episodes of dialysis treatment. Since 1983, the bundled composite rate has included payment for:

- Dialysis equipment and supplies
- Certain drugs and laboratory tests
- Nursing, social work, dietary services
- Rent

Excluded from this bundle:

- Physician services
- Hospital services
- Maintenance of vascular access

In 2008, Congress passed the Medicare Improvements for Patients and Providers Act (MIPPA), which includes payment reform to expand the bundle for payment of outpatient dialysis services. New services to be included in the expanded bundle include:

- Drugs, such as erythropoietin-stimulating agents (ESAs), iron, and vitamin D preparations, that are provided routinely as part of long-term dialysis treatment, including oral equivalents of parenteral medications
- Laboratory tests previously billed separately

Still excluded from the bundle:

- Physician services
- Hospital services
- Maintenance of vascular access

Adjustors for the bundle:

- Mandatory
  - Case mix (patient weight, body mass index, comorbid conditions, time on dialysis therapy, age, race, ethnicity, and other factors)
  - Patients who are high-cost outliers because of unusual variations in the type or amount of medically necessary care
  - Costs incurred by low-volume facilities
- Discretionary
  - Pediatric providers
  - Geographic index
  - Rural providers

SUGGESTED READING

- Centers for Medicare & Medicaid Services (CMS): Publication 100-04, The Medicare Claims Processing Manual, chapter 8, section 140, Rev. 1456. Available at: http://www.ssa.gov/OP_Home/ssact/title02/0226A.htm. Accessed July 21, 2009
- Medicare Benefit Policy Manual, Chapter 11—End Stage Renal Disease, Section 50. Available at: http://www.cms.hhs.gov/manuals/Downloads/bp102c11.pdf. Accessed May 17, 2009
- Medicare Prescription Drug, Improvement, and Modernization Act of 2003, Section 911. Available at: http://www.treas.gov/offices/public-affairs/hsa/pdf/pll108-173.pdf. Accessed May 17, 2009
- Social Security Act, Title II, Section 226A. Available at: http://www.ssa.gov/OP_Home/ssact/title02/0226A.htm. Accessed July 21, 2009
- Medicare Improvements for Patients and Providers Act of 2008. Available at: www.govtrack.us/congress/bill.xpd?bill=h110-6331. Accessed May 17, 2009

MEDICAID

A joint federal/state health care program for low-income individuals, Medicaid is administered by the states and counties and financed with federal, state, and county funds.

- Federal guidelines establish minimum mandatory benefits
- States determine who is covered and by which criteria, as well as the quantity, duration, and payment for services
- May serve as primary payer pending start of Medicare benefits or for those who do not quality for Medicare
- May serve as a secondary payer to Medicare (dual eligible)
- May serve as sole payer for children and resident and undocumented aliens
- Health plans may vary from state to state
- Traditionally a low payer, but physician must accept rates as payment in full

PHYSICIAN CODING AND REIMBURSEMENT

Physician reimbursement is tied to each patient's diagnosis (*International Classification of Diseases, Ninth Revision* [*ICD-9*] codes) and to the specific evaluation and management (E&M) services provided. Payers require accurate coding of the diagnosis and services provided and expect that the medical record will support these codes. Practitioners must understand these codes, apply appropriate codes to each patient visit, and keep accurate records documenting the level of service provided.

ICD-9 Codes

Chronic Kidney Disease Staging Codes

Specify chronic kidney disease (CKD) by level of kidney function as estimated by means of glomerular filtration rate (eGFR) and dialysis status:

- 585.1: Stage 1 CKD (evidence of kidney damage and eGFR $\geq$ 90 ml/min)
- 585.2: Stage 2 CKD (evidence of kidney damage and eGFR of 60 to 89 ml/min)
- 585.3: Stage 3 CKD (eGFR of 30 to 59 ml/min)
- 585.4: Stage 4 CKD (eGFR of 16 to 29 ml/min)
- 585.5: Stage 5 CKD (eGFR $\leq$ 15 ml/min)
- 585.6: Stage 6 CKD (ESRD; on renal replacement therapy)

Other CKD Codes

- 584.9: Acute-on-chronic kidney disease
  - Use with appropriate CKD code before acute event
- 996.81: Complication of kidney transplantation
  - Use with appropriate CKD code for CKD stage

E&M Codes

Codes differentiate a new patient visit from an established patient visit. Codes are graded according to the intensity of the visit and detail of the physical examination:

- Problem focused
  - Brief history of present illness (HPI)
  - One to 5 physical examination elements
- Expanded problem focused
  - Brief HPI, 1-system review
  - Six or more physical examination elements
- Detailed
  - Extended HPI with 4 or more elements or status of 3 or more chronic or inactive conditions
  - Extended review of 2 to 9 systems
  - Pertinent past medical, family, or social history element related to present problem
  - Physical examination with 2 or more elements identified from 6 system areas or 12 or more elements
- Comprehensive
  - Extended HPI with 4 or more elements or status of 3 or more chronic or inactive conditions
  - Complete review of 10 or more systems or some systems with statement "all others negative"
  - Complete past medical, family, or social history element with 3 new or 2 of 3 established elements
  - Pertinent past medical, family, or social history element related to present problem
  - Physical examination with 2 or more elements identified from 9 system areas

Codes are graded according to the complexity of medical decision making based on the number of diagnoses, amount and/or complexity of data to

be reviewed, and risk of complications and/or morbidity or mortality.

- Straightforward (minimal diagnoses, minimal complexity, minimal risk)
- Low (limited diagnoses, limited complexity, low risk)
- Moderate (multiple diagnoses, moderate complexity, moderate risk)
- High (extensive diagnoses, extensive complexity, high risk)

MCP Codes for ESRD

Medicare pays physicians for supervising and providing maintenance dialysis care by an MCP. The MCP is a comprehensive per-patient per-month payment for all outpatient renal-related care.

Services Included in the MCP

- All kidney-related outpatient services rendered to the dialysis patient
- Interpretation of ancillary testing (nerve conduction, bone density, Doppler studies)
- Services rendered to the dialysis patient while on dialysis therapy
- Physical examinations required by the dialysis facility for the dialysis patient
- Certification of need for items and services associated with durable medical equipment (DME) and home health care
- Services related to oversight and long-term care planning
- Periodic visits (at least 1 monthly) to the patient during dialysis with assessment and management of physiological and psychological status
- Coordination of the multidisciplinary team involved in the patient's care

Services Not Included in the MCP

- Non–kidney-related evaluation and management not performed coincident to the dialysis procedure are reimbursable in addition to the MCP according to the Medicare fee schedule; examples are:
  - Assessment and treatment of an allergic reaction to an antibiotic
  - Assessment and treatment of pneumonia
  - Assessment and treatment of diabetes mellitus
- Hospital inpatient services
- All procedures not related to renal disease
- Donor and recipient evaluation for transplantation
- Home dialysis training

MCP Scope of Services

- Assess and determine the need for outpatient maintenance dialysis therapy
- Assess nutritional needs
- Assess which modes of maintenance dialysis are suitable and recommended
- Arrange for creation and maintenance of a functional vascular access (or peritoneal access for peritoneal dialysis patients)
- Assess whether the patient meets preliminary criteria as a kidney transplant candidate
- Arrange for evaluations required by referral institution for assessment and maintenance of transplant candidacy
- Prescribe the parameters of intradialytic management
- Assess and treat kidney failure–related anemia
- Assess and treat hyperparathyroidism and/or bone mineral disease
- Assess and treat dialysis-related arthropathy or neuropathy
- Assess and treat fluid overload, establish "ideal (dry) weight"
- Determine need for antihypertensive medications and prescribe treatment
- Periodically review dialysis records to assess adequacy of dialysis and change prescribed treatment as needed
- Periodically visit the patient during dialysis to ascertain the effectiveness of dialysis, both the physiological and psychological aspects of care
- Perform periodic physical assessments
- Review result of laboratory testing and alter dialysis prescription as needed
- Periodic review and update of patient's short- and long-term care plan
- Coordinate and direct the patient's care by other professional staff
- Complete and certify the many forms and prescriptions that are required

MCP Billing

- In-center patient billing each month is incrementally determined by the number of phy-

sician visits (1 versus 2 to 3 versus 4), including a comprehensive visit
- Home dialysis patients are billed as a single monthly visit with a payment rate approximately that for 2- to 3-visit in-center payment
- Partial-month billing applies to patients with less than a full month of services for any of the following reasons:
  - Transient patients
  - Home dialysis patients
  - Patients with permanent change in MCP physician midmonth
  - Patient receiving 1 or more face-to-face visits, but lacking the comprehensive visit because of hospitalization, transplantation, or death
  - Note: Patients who begin dialysis therapy during the month do not fall under the partial-month rule because of the lack of a comprehensive visit
  - Note: Patients with a comprehensive visit who die, undergo transplantation, or transfer within the same month as their comprehensive visit may be billed according to the number of encounters

Physician-Extender Billing

Nephrologists in increasing numbers are employing physician assistants and clinical nurse specialists in their practices. These advanced practitioners see patients in the office, hospital, and dialysis facilities. Fellows in training are not eligible physician extenders for billing purposes. When physician extenders render service under the supervision of a physician, their services may be billed if:
- The advanced practitioner is employed by same entity as the physician of record
- The advanced practitioner is equipped to perform services otherwise performed by a physician
- For services in the dialysis facility, visits exclusive of those intended as the complete assessment may be provided by the advanced practitioner and billed under the designated physician

Home Training Dialysis Management

- Requirements of the nephrology provider:
  - Direction of and active participation in home dialysis training
  - Review of family and home status environment and counseling of family members
  - Review of training process
- The billing code used depends on whether training is complete or incomplete
- Billing for training is a 1-time opportunity

SUGGESTED READING

➢ 2008 *ICD-9-CM* Volume 1 Diagnosis Codes Home. Diseases of the Genitourinary System 580-629 Fed Regist 73:20370-20484, April 15, 2008

➢ Medicare Benefit Policy Manual, Chapter 11—End Stage Renal Disease, Section 50. Available at: http://www.cms.hhs.gov/manuals/Downloads/bp102c11.pdf. Accessed May 17, 2009

MEDICARE CONDITIONS FOR COVERAGE

In 2008, Medicare published its long-awaited revision of the Conditions for Coverage. These regulations substantially change the requirements and economic impact for dialysis facilities, medical directors, and care teams led by the nephrologist. In addition, the CMS issued interpretive guidelines for the Conditions for Coverage that provide guidance to state surveyors for how to review a facility's and medical director's implementation of these conditions. Nephrologists who have contracted with the facilities to serve as medical directors are expected to know the content and process of these conditions and interpretive guidelines to comply with the terms of their contracts. Resources are available to assist medical directors in understanding and performing these functions, such as the Renal Physicians Association Position Paper on Dialysis Facility Medical Director Responsibilities (see Suggested Reading). The oversight function of the medical director includes:
- Responsibility for processes of care and clinical outcomes
- Staff education
- Dialysis technology, water quality and reuse
- Infection control

The medical director also is responsible for developing and implementing the Quality Assessment and Performance Improvement (QAPI) program in conjunction with the interdisciplinary care team. The medical director must:
- Implement QAPI procedures, with a thorough knowledge of QAPI processes

- Maintain a focused and continuous surveillance process for infection control
- Follow the Association for the Advancement of Medical Instrumentation (AAMI) standards for water and dialysate preparation
- Ensure safe mixing of water and dialysate and distribution of dialysate
- Ensure safe central bicarbonate mixing procedures
- Ensure reuse personnel are properly certified and understand the inherent risks of processing incoming raw water
- Implement patient assessment requirements in conjunction with the interdisciplinary care team and oversee documentation requirements as leader of this team
- Maintain an ongoing improvement-oriented culture of compliance, including initial assessments and corrective action plans when individual goals are not met
- Record evidence of proper consideration and referral for transplantation, home dialysis modalities, and vocational rehabilitation
- Develop plans for unstable patients
- Develop and oversee all policies and procedures
- Take a leadership role in developing requirements for education and performance by the medical staff
- Develop and monitor implementation of a policy to address concerns emanating from disruptive patients

The regulation states that the medical director should devote sufficient time to carry out these responsibilities and offers as a guideline that the job requires one-quarter of a full-time equivalent position.

SUGGESTED READING

- Medicare and Medicaid Programs: Conditions for Coverage for End-Stage Renal Disease Facilities, Final Rule. Available at: http://www.cms.gov/CFCsAndCoPs/downloads/ESRDfinalrule0415.pdf. Accessed May 17, 2009
- Renal Physicians Association: Position Paper on Dialysis Facility Medical Director Responsibilities Under the Revised CMS Conditions for Coverage for End-Stage Renal Disease Facilities, Rockville, MD, Renal Physicians Association, March 20, 2009

ECONOMICS OF CLINICAL PRACTICE

Billing and documentation requirements, payment and oversight agencies, and efforts to eliminate fraud and abuse have shaped the practice environment. In addition to the Medicare requirements listed, the clinician must understand Medicare Administrative Contractors (MACs) and Recovery Audit Contractors (RACs).

Medicare Administrative Contractors

MACs are Medicare contract entities that have replaced "fiscal intermediaries" and "carriers." MACs serve as Medicare providers' primary point of contact for the receipt, processing, and payment of claims. MACs standardize contracting principles and use competition and performance incentives to improve care. This restructuring of claims process operations was mandated by Medicare Contracting Reform (Section 911 of the Medicare, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003). MACs:

- Amalgamate Parts A and B claims processing for a given jurisdiction
- Provide a simplified interface to providers, with a single MAC for Part A and Part B processing
- Are organized into jurisdictions in an effort to:
  - Balance allocation of workloads
  - Promote competition between contractors
  - Account for integration of claims processing activities
  - Promote greater efficiency in claims processing
- Streamline the claims infrastructure; CMS awarded contracts to 19 MACs for claims processing and payment:
  - Fifteen A/B MACs service claims for both Parts A and B for the majority of providers (MACs 1 to 15)
  - Four specialty MACs service DME suppliers (DME MACs A, B, C, D)
  - Home health and hospice claims (jurisdictions A, B, C, and D) consolidated into 4 A/B MAC jurisdictions (6, 11, 14, 15)
- Serve as the providers' primary point of contact for:
  - Enrollment

- Training on Medicare coverage and billing requirements
- Receipt, processing, and payment of Medicare fee-for-service claims within their respective jurisdictions

Recovery Audit Contractors

To reduce fraud and abuse and recover Medicare funds dispersed improperly, Medicare has engaged these organizations to identify and recover funds for incorrect or inappropriate Medicare bills. In July 2008, the CMS reported that RACs had succeeded in correcting more than $1.03 billion in improper Medicare payments. Approximately 96% ($992.7 million) of the improper payments were overpayments collected from providers, whereas the remaining 4% ($37.8 million) were underpayments repaid to providers. RACs perform:

- Automatic audits: analyze claims data
- Complex audits: When the RAC identifies claims that "likely" contain improper payments
  - RAC requests medical records from the provider
  - RAC reviews claims and the record, then makes a determination
  - RAC chooses and publicly posts areas of focus for investigations (eg, improper patient admissions or level 4 E&M claims)
  - Look-back period: 2 to 3 years

SUGGESTED READING

- Statement of Work for the Recovery Audit Contractor Program. Available at: www.cms.hhs.gov/rac/downloads/Final%20RAC%20SOW.pdf. Accessed May 17, 2009
- Recovery Audit Contractor (RAC) Program. Available at: www.aha.org/aha/issues/RAC/index.html. Accessed May 17, 2009

ECONOMICS OF MODALITY CHOICE

Payment policies have a profound effect on patient and physician choice of treatment for ESRD. Cost drivers for peritoneal dialysis and hemodialysis differ for facility owners and patients.

- Cost factors for in-center hemodialysis are driven by fixed costs (facility and staff)
- Cost factors for home peritoneal dialysis are driven by variable costs (eg, solution, tubing)
- When in-center hemodialysis capacity is high, there is an incentive for facility owners to use that capacity rather than place patients at home
- Home hemodialysis or peritoneal dialysis require home training facilities with nurses and social workers specifically trained in these modalities
  - The economic viability of home training programs depends on a culture supporting and promoting home therapies, creating a critical number of home dialysis patients
  - To offer an incentive for home treatment, Medicare waives the 3-month waiting period for Medicare eligibility after long-term dialysis therapy begins

The feasibility of more frequent hemodialysis also is determined by economic realities. Many observational and some randomized controlled trials suggest that more frequent hemodialysis, performed 4 to 6 times weekly, or longer nocturnal dialysis improves outcomes. An economic analysis predicts that for daily dialysis, the cost of each treatment would need to be reduced by 32% to 43% to maintain overall cost constant. Although more frequent dialysis might save money by reducing morbidity and hospitalizations, the only way to break even would be to eliminate hospitalizations entirely for patients dialyzed more than 4 times weekly. Daily dialysis performed 6 or 7 times weekly can never break even under the current payment system.

SUGGESTED READING

- Just PM, deCharro FT, Tschosik EA, Noe LL, Bhattacharyya SK, Riella MC: Reimbursement and economic factors influencing dialysis modality choice around the world. Nephrol Dial Transplant 23:2365-2373, 2008
- Walsh M, Culleton B, Tonelli M, Manns B: A systematic review of the effect of nocturnal hemodialysis on blood pressure, left ventricular hypertrophy, anemia, mineral metabolism, and health-related quality of life. Kidney Int 67:1500-1508, 2005
- Suri RS, Nesrallah GE, Mainra R, Garg AX, Lindsay RM: Daily hemodialysis: A systematic review. Clin J Am Soc Nephrol 1:33-42, 2006
- Culleton BF, Walsh M, Klarenbach SW, et al: Effect of frequent nocturnal hemodialysis vs conventional hemodialysis on left ventricular mass and quality of life. A randomized controlled trial. JAMA 298:1291-1299, 2007

➢ Lee CP, Zenios SA, Chertow GM: Cost-effectiveness of frequent in-center hemodialysis. J Am Soc Nephrol 19:1792-1797, 2008

PATIENTS WITH ESRD AND HOSPICE

Each year approximately 20% of prevalent dialysis patients die. As they near life's end, referral to hospice with continued dialysis therapy for its palliative effects might provide more compassionate, patient-centered, and less costly care. Although regulatory barriers to such care may impact on the use of hospice, patients with ESRD may qualify for hospice benefits even if they continue with dialysis therapy. Important facts include:

- CMS provides hospice benefit for patients with ESRD by a National Coverage Decision (NCD)
- Interpretation of the NCD is made by a responsible contractor/fiscal intermediary, now known as MACs
- MACs with responsibility for hospice (formerly the regional home health intermediaries) are MACs 6, 11, 14, and 15
- Local Coverage Decisions determining eligibility for hospice are made by these 4 MACs
- ESRD may be used as the terminal diagnosis for hospice benefit in patients who withdraw from dialysis therapy or for whom hospice agrees to cover the ESRD benefit
- A non-ESRD terminal diagnosis is required for patients with ESRD choosing to continue dialysis therapy, retain their ESRD benefit, and be covered with the hospice benefit
- An ESRD diagnosis may be used if the patient is not seeking dialysis or transplantation and:
  - Creatinine clearance is less than 10 ml/min (15 ml/min for patients with diabetes mellitus)
  - Serum creatinine level is greater than 8 mg/dL (>6 mg/dL for diabetes mellitus)
  - There are signs/symptoms of renal failure
- A beneficiary with ESRD may be covered under the Medicare hospice benefit for services related to the terminal diagnosis
- Services not related to the terminal diagnosis are not covered under the hospice benefit
- When a beneficiary with ESRD has a terminal diagnosis other than ESRD, the beneficiary may elect the hospice benefit and continue dialysis therapy for palliative reasons
- ESRD beneficiaries with a non-ESRD terminal diagnosis who elect the hospice benefit but wish to continue dialysis therapy may be covered under both the hospice benefit and the ESRD benefit
- Services related to the terminal (non-ESRD) diagnosis would be covered under the hospice benefit
- Services related to ESRD (eg, dialysis) would be covered under the ESRD benefit
- Patients with ESRD wishing to engage hospice and withdraw from dialysis therapy may use ESRD as the terminal diagnosis for the hospice benefit
- Patients with ESRD wishing to engage hospice without withdrawal from dialysis therapy must:
  - Have a terminal diagnosis other than ESRD to qualify for the hospice benefit and retain their ESRD benefit
  - Forego their ESRD benefit and engage a hospice willing to pay for ESRD services (dialysis) as part of the hospice benefit
- For patients with ESRD admitted to in-center hospice, withdrawal from dialysis therapy is not required
  - However, financial responsibility for transportation to and from the dialysis unit would be covered under the hospice benefit only if dialysis was related to the terminal illness
  - For patients with a terminal illness not related to dialysis, transportation arrangements would be no different from those available to a patient traveling from home to the dialysis unit

SUGGESTED READING

➢ Medicare Benefit Policy Manual, Chapter 11—End Stage Renal Disease, Section 50. Available at: http://www.cms.hhs.gov/manuals/Downloads/bp102c11.pdf. Accessed May 17, 2009

➢ Thompson KF, Bhargava J, Bachelder R, Bova-Collis R, Moss AH: Hospice and ESRD: Knowledge deficits and underutilization of program benefits. Nephrol Nurs J 35:461-466, 2008

➢ Medicare Benefit Policy Manual, Chapter 9—Coverage of Hospice Services Under Hospital Insurance, Section 10. Available at: http://www.cms.hhs.gov/manuals/downloads/bp102c09.pdf. Accessed May 17, 2009

HARNESSING INFORMATION TECHNOLOGY

Electronic medical records, personal medical records, and systems to more effectively exchange information, analyze practice patterns, and aggregate data promise a new era of effective medical care. These systems often are expensive and require substantial infrastructure to succeed. In February 2009, the US Senate approved an $838 billion "stimulus" bill. Part of this bill is designated to facilitate the conversion of paper to electronic medical records and establish uniform standards and implementation specifications. To engage physicians in e-prescribing, there will be an initial payment bonus for using e-prescription and then later a penalty for physicians not adapting this system. Hospitals and physicians will receive incentives for switching from paper to electronic health records if they begin the process by 2011. Starting in 2015, there will be a penalty for physicians who are not meaningful users of an electronic record database. Maddux and Maddux (see Suggested Reading) recently have outlined the requirement of such systems.

Clinical Information System Components

- Information about patients, with error-checking capability
- Decision support
- Incorporation of algorithms of care
- Coordination of medication refills
- Highlight the work in a queue of documents to review and respond to
- Help patients access scheduling or triage personnel
- Referring or consulting providers
- Performance and process measurement capacity
- Continuous quality improvement: Implementing best clinical practices with measures, reports, and adjustments of the clinical workflow

Nephrology-specific Tools

- Decision support tools by CKD stage
- Educational components, CKD stages 4 and 5
  - Vascular access preparation
  - Dialysis options
  - Transplantation
  - Anemia, heart and vascular disease, bone and mineral metabolism, nutrition, diabetes, hypertension

Communication Link Between Patient and Providers

- Encourage patient compliance with medications, appointments
- Coordinate care with tools that avoid redundancy
- Provide clinical tools to facilitate communication among all providers and the patient

Business Model for Information Technology Integration Into Practice

- Software provider contract
  - Upgrades
  - Training and maintenance
  - Systems security
- Software for billing/coding/collections

Internet as a Tool

- Patient Health Record: Move the locus of the medical record to the patient, creating a patient health record carried by each patient, accessible with appropriate authorization to all providers
- Web resources for patients

SUGGESTED READING

➢ Maddux FW, Maddux DW: Characterizing the ideal clinical office system for nephrology. Adv Chronic Kidney Dis 15:64-72, 2008

CHALLENGES OF PRIVATE PRACTICE: SOURCES OF INCOME

Nephrologists faced with practice costs growing at a faster rate than payments increasingly examine ways to diversify their revenue streams. Common sources of income include:

- Outpatient and inpatient care and consultation
- CKD clinics, ESA administration
- Dialysis MCP
- Medical directorships, dialysis facilities
- Ownership or joint ventures of dialysis facilities
- Vascular access centers
- Clinical research

- Participation in industry-derived protocols
- Participation in pharmaceutical studies
- Investigator-initiated research

- Office real estate ownership
- Consultant to other physicians and practices for practice design, information technology, other aspects of practice
- Consultant or advisory positions with industry

CHALLENGES OF ACADEMIC NEPHROLOGY: SOURCES OF INCOME

Academic nephrologists face many of the same challenges as private practitioners, increasingly having to show evidence that income they generate is adequate to cover their salary and accommodate the overhead costs of the academic institution.

Sources of funding for academic nephrologists include:

- Clinical practice
- Dialysis MCP
- Medical directorships, dialysis facilities
- Consultant or advisory positions with industry
- National Institutes of Health/government-funded research
- General clinical research center contracts
- Pharmaceutical industry–funded research
- Other industry-supported research
  - Dialysis chains
  - Equipment manufacturers
- Philanthropy

Academic faculty and private practitioners must deal with funding shifts, funding losses, and increasing institution costs while developing mentoring opportunities for nephrologists in training.

SUGGESTED READING

➢ Golper TA, Feldman HI: New challenges and paradigms for mid-career faculty in academic medical centers: Key strategies for success for mid-career medical school faculty. Clin J Am Soc Nephrol 3:1870-1874, 2008

SUMMARY

Understanding the economic forces that govern clinical practice is crucial to the future success of all nephrologists, private practice and academic alike. An earlier Core Curriculum publication outlined economic issues in clinical practice. This addition to the curriculum details the administrative and regulatory structure of Medicare, coding, billing and payment requirements, alternate sources of income for nephrologists, and components of electronic information support systems.

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