Expanding Utilization and Regional Coverage of Diagnostic CT Colonography: Early Medicare Claims Experience

Richard Duszak Jr, MD[a,b], David H. Kim, MD[c], Perry J. Pickhardt, MD[c]

Purpose: The aim of this study was to assess national and regional trends in utilization and Medicare coverage of diagnostic CT colonography (CTC).

Methods: Medicare claims for diagnostic CTC were identified for the first 4 complete years for which Current Procedural Terminology® tracking codes existed (2005-2008). The frequencies of billed and denied services were extracted on a national and regional basis, along with physician provider specialty and site of service.

Results: Total annual claims for diagnostic CTC for Medicare fee-for-service beneficiaries increased from 3,660 to 10,802 (+195%) between 2005 and 2008. Overall, 50.1% (14,051 of 28,048) of all claims were denied, with annual national denial rate decreasing from 70.0% to 43.4% (2,562 of 3,660 to 4,692 of 10,802, $P < .001$). Annual regional denial rates ranged from 16.5% to 98.3%. Of all 28,048 CTC claims, 25,893 (92.3%) were submitted by radiologists, 286 (1.0%) by gastroenterologists, and 369 (1.3%) by other specialists (specialties were indeterminate for 1,550). Most services were performed in office (n = 13,764 [49.1%]) and outpatient hospital (n = 12,110 [43.2%]) settings, with only a small number in the inpatient hospital (n = 1,768 [6.3%]) and other miscellaneous (n = 406 [1.4%]) settings.

Conclusions: Diagnostic CTC is performed predominantly by radiologists in private office and outpatient hospital settings. Since the advent of Current Procedural Terminology tracking codes, the utilization of diagnostic CTC by Medicare fee-for-service beneficiaries has tripled. Despite perceptions that new technology tracking codes are not payable, more than half of all examinations are now reimbursed by Medicare. Coverage varies regionally but overall is improving annually, setting the stage for expanded patient access.

Key Words: Radiology and radiologists, Medicare utilization and coverage, CT colonography, socioeconomic trends

J Am Coll Radiol 2011;8:235-241. Copyright © 2011 American College of Radiology

INTRODUCTION

Computed tomographic colonography (CTC) has been the focus of considerable attention recently in both the physician and payer communities. It represents a minimally invasive alternative to conventional optical colonoscopy (OC) for colorectal cancer screening and diagnosis. Mounting evidence points to comparable performance to colonoscopy [1-4], particularly for the detection of advanced neoplasia [5]. Currently, only about 50% of the eligible population participates in colorectal screening programs [6,7]. CTC thus holds the promise of markedly increasing patient access and participation, thereby improving such historically low screening rates.

In many settings, barriers to physician payment have adversely affected patient access to medical services [8-13]. Medical imaging in general [14] and new technology in particular [15-17] especially face ever increasing hurdles for coverage, and that convergence has specifi-

[a]Mid-South Imaging and Therapeutics, Memphis, Tennessee.

[b]Department of Radiology, The University of Tennessee Health Science Center, Memphis, Tennessee.

[c]Department of Radiology, University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin.

Corresponding author and reprints: Richard Duszak Jr, MD, Mid-South Imaging and Therapeutics, 6305 Humphreys Boulevard, Suite 205, Memphis, TN 38120; e-mail: rduszak@duszak.com.

Dr Kim is a cofounder of VirtuoCTC (Madison, Wisconsin) and a consultant for Viatronix (Stony Brook, New York). Dr Pickhardt is a cofounder of VirtuoCTC and a consultant for Viatronix and MedicSight (New York, New York).

0091-2182/11/$36.00 • DOI 10.1016/j.jacr.2010.08.028

cally targeted CTC. Recently, Centers for Medicare & Medicaid Services (CMS) reaffirmed its decision to deny CTC coverage nationally for screening indications [18], a decision enthusiastically hailed by government agents as "landmark" and unprecedentedly "evidence based" [19], while derided by practitioners as politically and economically driven and contrary to public policy goals of expanding colorectal cancer detection [20,21].

Although coverage decisions for screening services are determined by Medicare at the national level, coverage decisions for most other services are made at the local carrier level. This includes CTC performed in the setting of signs or symptoms, commonly referred to as "diagnostic CTC." Since the assignment of dedicated category III Current Procedural Terminology® (CPT®) codes, the utilization of diagnostic CTC has seemingly increased, and although variable, successful provider reimbursement has anecdotally improved. However, we are unaware of any formal validation of those impressions. Accordingly, the purpose of this analysis was to assess national and regional trends in utilization and Medicare coverage of diagnostic CTC.

MATERIALS AND METHODS

This study was performed using similar methodology to that previously described for other diagnostic imaging procedure analyses [22-25]. Annual Medicare Physician Supplier Procedure Summary (PSPS) master files from 2005 through 2008 were acquired from CMS. These files aggregate Part B Medicare fee-for-service billing claims filed by physicians and other providers. Those summary claims data are classified by codes for procedure, region, place of service, and specialty of the providing physician and include the numbers of procedures both billed and denied. These files are compiled for public use, without individual patient, provider, diagnosis, or other encounter-specific information, and their analysis is thus exempt from institutional review board oversight.

The PSPS data files include claims for all beneficiaries in Medicare's traditional fee-for-service program, which currently represents approximately 78% of all Medicare beneficiaries [26]. Medicare currently covers those aged $\geq$ 65 years, some disabled individuals aged $<$ 65 years, and persons of all ages with end-stage renal disease. Between 2005 and 2008, total Medicare Part B enrollment increased from approximately 39.8 million to 41.7 million [26], making its public-use claims data set the largest available for national physician service trend research.

CPT code 0067T was implemented in July 2004 and described diagnostic CTC during the period of this analysis [27]. Alphanumeric category III CPT tracking codes such as this are assigned to report new and emerging technologies [28]. Abdominal CT was selected as an established abdominal imaging benchmark to provide context for changes in CTC utilization and overage. Abdominal CT is described by CPT codes 74150 (noncontrast), 74160 (with contrast), and 74170 (precontrast and postcontrast) [29]. Such 5-digit numeric category I CPT codes are used to report established, widely performed, and widely accepted medical services.

The PSPS data files for these CTC and abdominal codes were targeted for analysis. Technical-only claims were excluded to avoid double counting.

Claims for bundled services (nominally the result of incorrect CPT coding) are administratively denied and are excluded by CMS in its PSPS claims data. Denials in the PSPS files therefore refer to those claims that have been disallowed because of coverage or medical necessity determinations. Isolating the annual number of submissions and denials, denial rates could be calculated. National changes in volume for diagnostic CTC and abdominal CT and corresponding denial rates were evaluated for statistical significance using Pearson's χ^2 test.

Geographic analysis of CTC denials was performed by CMS region. Regional codes are assigned to the various CMS regional offices: Boston, New York, Philadelphia, Atlanta, Chicago, Dallas, Kansas City (Missouri), Denver, San Francisco, and Seattle. These 10 regions include all states and United States territories. An additional code, for "travelers railroad," also exists but applies to only a small number of Medicare beneficiaries classified by nongeographic miscellaneous criteria (such as railroad workers).

Physicians are identified within the PSPS files with self-reported specialty codes. Those with codes for interventional radiology (94), diagnostic radiology (30), and nuclear medicine (36) were grouped together as radiologists. Gastroenterology has its own specialty provider code (10) and for this analysis was considered a distinct category. All other identifiable specialties were aggregated. For some physicians (such as those servicing independent diagnostic testing facilities or employed by multispecialty groups), claims are submitted using a code for the practice type (rather than physician specialty), and thus specialty information could not be extracted. These were grouped in an undetermined category.

The PSPS files also identify procedures by site of service, using a variety of different code groups. Place of service information could thus be extracted in a similar fashion, specifically targeting the highest volume location codes for physician office (11), outpatient hospital (22), and inpatient hospital (21). Other much lower volume sites were aggregated in a single miscellaneous category.