

# Medicare Policy Initiatives and the Relative Utilization of “Double-Scan” CT

Jonathan A. Flug, MD, MBA<sup>a</sup>, Jennifer Hemingway, MS<sup>b</sup>, Danny Hughes, PhD<sup>b,c</sup>,  
Ezequiel Silva III, MD<sup>d,e</sup>, Richard Duszak Jr, MD<sup>b,f</sup>

## Abstract

**Purpose:** Commonly called “double scans” by the media, combined pre- and postcontrast thoracic and abdominal CT examinations have been the focus of recent CMS policy initiatives. The aim of this study was to examine trends in the relative utilization of double-scan CT before and after 2006 legislation mandating relevant Medicare reporting initiatives.

**Methods:** Medicare Physician Supplier Procedure Summary Master Files from 2001 through 2012 were used to identify claims for thoracic and abdominal CT examinations. Double-scan rates by billing physician specialty and place of service were analyzed over time. Rates of double-scan CT between radiologists and nonradiologists were compared using *t* tests.

**Results:** From 2001 to 2006, double-scan rates for thoracic and abdominal CT examinations declined by 1.7% and 7.5% for radiologists, respectively (from 6.0% to 5.9% and from 22.6% to 20.9%) but increased by 15.8% and 23.6% for nonradiologists (from 5.7% to 6.6% and from 28.8% to 35.6%). From 2006 through 2012, double-scan rates declined by 42.3% and 35.2% (from 5.9% to 3.4% and from 20.9% to 13.5%) for radiologists but only by 31.8% and 8.1% (from 6.6% to 4.5% and from 35.6% to 32.7%) for nonradiologists. Double-scan rates were significantly lower for radiologists than nonradiologists for all years for abdominal CT ( $P < .001$ ) and for all years after 2006 legislation for thoracic CT ( $P < .05$ ).

**Conclusions:** Reductions in thoracic and abdominal CT double-scan rates followed legislation mandating CMS initiatives designed to reduce costs and radiation. For nonradiologists, double-scan rates were consistently higher and declined more slowly than those for radiologists. Medicare policy initiatives directed toward imaging utilization seem to influence behavior differently for radiologists compared with nonradiologists.

**Key Words:** Medicare, quality metrics, utilization, appropriateness, body CT, double scans

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## INTRODUCTION

CT examinations of the chest and abdomen performed both with and without contrast—referred to in the media as “combined scans” or “double scans”—have been scrutinized because of their relatively high prevalence, increased

cost, and increased radiation dose compared with single-phase scans, despite limited clinical indications [1-3]. In response to congressional legislation in 2006 [4,5], and in an effort to reduce the injudicious utilization of these double scans, CMS began monitoring the percentage of CT double scans (relative to total examinations) of the chest and abdomen for services covered under the HOPPS. With 2006 chosen as the index year for monitoring, the original endorsement of this measure began in October 2008, affecting payments beginning in calendar year 2009 [6]. This issue received further public attention in 2011 in a widely cited *New York Times* article highlighting the additional costs associated with these potentially unnecessary examinations [7].

Since that time, Levin et al [8] have examined Medicare trends for double scans. In their pilot work focusing only on the chest (ie, not the abdomen as well), they found that the

<sup>a</sup>University of Colorado, Anschutz Medical Campus, Aurora, Colorado.

<sup>b</sup>Harvey L. Neiman Health Policy Institute, Reston, Virginia.

<sup>c</sup>George Mason University, Fairfax, Virginia.

<sup>d</sup>South Texas Radiology Group, San Antonio, Texas.

<sup>e</sup>University of Texas Health Science Center at San Antonio, San Antonio, Texas.

<sup>f</sup>Emory University School of Medicine, Atlanta, Georgia.

Corresponding author and reprints: Jonathan A. Flug, MD, MBA, University of Colorado, Anschutz Medical Campus, Mail Stop 8200, Academic Office One, 12631 East 17th Avenue, Room 2412, Aurora, CO 80045; e-mail: [jonathan.flug@ucdenver.edu](mailto:jonathan.flug@ucdenver.edu).

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percentage of thoracic double scans nationwide peaked at 6.1% in 2006 and declined to 4.2% in 2011, and they concluded that double-scan rates overall are low. But the impact of these policies on double-scan rates by specialty (ie, radiologists vs nonradiologists) is unknown.

Rosenkrantz et al [9] recently reported that radiologists scored more favorably on specialty-specific publicly reported Medicare quality metrics than nonradiologists. Given the increased emphasis on such metrics under Medicare's proposed Merit-Based Incentive Payment System [10], such differential metric conformance may have significant implications on future physician payments.

On the basis of the work of Rosenkrantz et al [9], we hypothesized that changes in thoracic and abdominal CT double-scan rates would differ for radiologists compared with nonradiologists in response to metric-based policy initiatives by CMS. Thus, the purpose of this study was to evaluate trends in double-scan CT imaging of the chest and abdomen segmented by specialty of billing physician using national Medicare data.

## METHODS

### Data Source

This HIPAA-compliant study of aggregated Medicare claims data from CMS-designated public-use files was deemed exempt from review by our institutional review board.

National Medicare claims-tracking methodology was based on methodologies previously used for other imaging services [11-14]. We acquired annual Medicare Physician Supplier Procedure Summary (PSPS) Master Files from 2001 through 2012 from CMS. PSPS Master Files aggregate Medicare Part B billing claims submitted by physicians and all other providers nationally. Data fields include codes for procedure and billing provider specialty and include the numbers of procedures for which claims were submitted and paid. These data were retrospectively compiled and aggregated by CMS in designated public-use files, which contain no individual patient or physician identifiers or diagnosis information.

PSPS Master Files include all claims for all beneficiaries in the traditional Medicare fee-for-service program, which currently represents approximately 71% of all Medicare supplementary medical insurance enrollees [15]. Although Medicare enrollment has increased over the past two decades, that growth has largely involved private Medicare-managed care programs. Accordingly, Part B

enrollment has remained relatively stable (increasing from 31.5 million in 2001 to 33.0 million 2012) [15].

Health care providers are identified within PSPS Master Files with self-reported specialty codes. For this study, we grouped services by those with specialty codes for diagnostic radiology (#30), nuclear medicine (#36), and interventional radiology (#94) together in a radiologist category. Codes used for claims submitted by independent diagnostic testing facilities and multispecialty clinics (#47 and #70, respectively) do not permit specialty identification; these were grouped in a specialty-undetermined category. Nonradiologists were then identified separately, as indicated by all remaining specialty codes.

Sites of service are similarly identified within PSPS Master Files. We supplemented our analysis by studying sites with the highest volumes of services: physician office (#11), inpatient hospital (#21), outpatient hospital (#22), and emergency department (#23). We grouped all other lower frequency sites of service together. Services for chest CT were identified using Current Procedural Terminology (CPT) [16] codes 71250 (without contrast), 71260 (with contrast), and 71270 (pre- and postcontrast). Double-scan rates were calculated as:

$$\frac{(\text{frequency of } 71270)}{(\text{frequency of } 71250 + 71260 + 71270)}$$

Services for abdominal CT were identified from 2001 through 2010 using CPT codes 74150 (without contrast), 74160 (with contrast), and 74170 (pre- and postcontrast). In 2011, new bundled codes for CT of the abdomen and pelvis, when concurrently performed, were implemented [17]. As such, for 2011 and 2012, services for abdominal CT were additionally identified using CPT codes 74176 (without contrast), 74177 (with contrast), and 74178 (pre- and postcontrast). Double-scan rates were calculated as:

$$\frac{(\text{frequency of } 74170 + 74178)}{(\text{frequency of } 74150 + 74160 + 74170 + 74176 + 74177 + 74178)}$$

Service utilization rates were calculated per 1,000 beneficiaries using annual Medicare fee-for-service supplementary medical insurance enrollment figures [15]. Double-scan rates were compared by specialty groups and by sites of service and analyzed over time. Compound annual growth rates (CAGRs) were calculated.

We performed *t* tests to examine whether the double-scan rates of radiologists and nonradiologists were statistically different in each of the years of the study. Because

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