

Noncardiac Point-of-Care Ultrasound by Nonradiologist Physicians: How Widespread Is It?

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Purpose: The use of point-of-care (POC) ultrasound by nonradiologist physicians has recently been advocated. The aim of this study was to see how widespread this practice is.

Methods: The Medicare Part B databases for 2004 to 2009 were used. Global and professional component claims for noncardiac ultrasound were tabulated, and utilization rates per 1,000 beneficiaries were calculated. Provider specialty was determined. Utilization rates of ultrasound by radiologists and other specialists were compared, and changes over the years were studied.

Results: In 2009, 425.3 Medicare noncardiac ultrasound examinations per 1,000 beneficiaries were performed (+21% since 2004). Of these, radiologists performed 233.7 (55%), and another 15.6 (4%) were done at independent diagnostic testing facilities, for which provider specialty could not be determined. The remaining 175.7 (41%) constituted POC ultrasound by nonradiologists. Between 2004 and 2009, radiologists' utilization rate increased by 17%, compared with 28% for nonradiologists. Radiologists' market share of noncardiac ultrasound was 56.6% in 2004 and 54.9% in 2009. Other major specialties involved in POC ultrasound and their 2009 rates per 1,000 and percentage increases since 2004 were cardiology (39.7 [+60%]), vascular surgery (34.9 [+36%]), primary care (27.2 [+11%]), general surgery (24.2 [+8%]), and urology (22.3 [+12%]).

Conclusions: Between 2004 and 2009, there was a 21% increase in the overall utilization rate of noncardiac ultrasound. Point-of-care ultrasound by nonradiologists amounted to 41% of all studies done in 2009. Multiple nonradiologic specialties are involved, but radiologists' involvement is far higher than any other single specialty. Radiologists' ultrasound market share remained relatively stable between 2004 and 2009.

Key Words: Medical economics, diagnostic ultrasound, imaging utilization, self-referral, radiology and radiologists, socioeconomic issues

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A recent paper in the *New England Journal of Medicine* by Moore and Copel [1] discussed “point-of-care” (POC) ultrasound. The authors, an emergency medicine physician and an obstetrician, defined this as ultrasound performed and interpreted by the clinician at the bedside. One might logically extend this definition to also include ultrasound performed and interpreted by clinicians in their offices. They indicated that miniaturization and a drop in costs have facilitated the growth of POC ultra-

sound and that the concept of an “ultrasound stethoscope” is rapidly moving from the theoretical to a reality. The paper includes a table listing 21 other nonradiologic specialties that use ultrasound to at least some degree in their practices.

Radiologists have traditionally been considered the experts in noncardiac ultrasound and the leading producers of education and research in that technique. The commentary by Moore and Copel [1] raises the question of how widespread its use has become among nonradiologist physicians and how quickly such use is growing with the advent of hand-carried ultrasound devices. We used a nationwide database to investigate these questions.

METHODS

Our data sources were the Medicare Part B Physician/Supplier Procedure Summary Master Files for 2004

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Table 1. Utilization rate of noncardiac ultrasound per 1,000 Medicare beneficiaries by type of specialty, 2009 compared with 2004

Specialty Category	2004 Rate	2009 Rate	% Change	Increase in Rate/1,000	2009 Share
All specialties	351.4	425.3	21%	73.9	—
Radiologists	198.9	233.7	17%	34.8	55%
All nonradiologists	137.2	175.7	28%	38.5	41%
IDTF/multis	15.0	15.6	4%	0.6	4%

Note: IDTF/multis = independent diagnostic testing facilities and multispecialty groups. In this category, the specialty of the actual physician provider cannot be determined. "Increase in rate/1,000" refers to the number of new studies per 1,000 beneficiaries that were added in each category between 2004 and 2009. The rates shown in the bottom 3 rows add up to the rates in the top row ("All specialties"), with minor rounding errors.

through 2009. These files provide administrative data on the 35 million individuals enrolled in fee-for-service Medicare. Data on volume and approved payments are provided for each code in the *Current Procedural Terminology*[®] (*CPT*[®]), fourth ed. Utilization rates per 1,000 beneficiaries were calculated by dividing total volume by the number of thousands of beneficiaries enrolled each year. We examined the noninvasive ultrasound codes in the 70000 *CPT* series and also those vascular ultrasound codes in the 90000 series. Echocardiography and the supervision and interpretation codes for invasive procedures were excluded. Medicare's physician specialty codes were used to determine studies interpreted by radiologists and other specialists. A separate "specialty" category was established for claims from independent diagnostic testing facilities and multispecialty groups; Medicare lists these as specialty codes even though the actual specialty of the physician provider cannot be determined. All global and professional component claims were included, but technical component-only claims were excluded to avoid double counting. All places of service were included.

RESULTS

Table 1 shows the noncardiac ultrasound utilization rate changes over the 5-year period between 2004 and 2009. For all specialties together, the rate per 1,000 beneficiaries increased from 351.4 in 2004 to 425.3 in 2009 (+21%). The majority of these examinations were done by radiologists, although the growth over the 5-year period was greater for nonradiologists than for radiologists (28% for the former, 17% for the latter). Between 2004 and 2009, almost 74 new ultrasound examinations per 1,000 were added in the Medicare population, of which 34.8 were added by radiologists and 38.5 by nonradiologist physicians. The category for independent diagnostic testing facilities and multispecialty groups had low volumes and almost no growth. Figure 1 shows the trend lines for the 3 categories from 2004 to 2009. A slow and steady increase is seen for both radiologists and nonradiologist physicians, and the trends closely parallel each other.

Table 2 presents the data for the 5 nonradiologic specialties that are the highest users of noncardiac ultrasound: cardiologists, vascular surgeons, primary care

physicians, general and other surgeons, and urologists. A sixth category shown in the table includes all other specialties. Among the 5 major users, the utilization rates per 1,000 beneficiaries all were clustered between 20 and 26 per 1,000 in 2004. The trend lines thereafter for the 5 are shown in Figure 2. Cardiologists had the most rapid growth over the 5 years (14.9 new examinations per 1,000, or 60%), followed by vascular surgeons (9.2 new examinations per 1,000, or 36%). Relatively little growth occurred among primary care physicians, general and other surgeons, or urologists.

Market shares of noncardiac ultrasound are also shown in the 2 tables and Figure 3. Radiologists' market share declined from 56.6% in 2004 to 54.9% in 2009. Figure 3 shows that although this decline is quite small, it seemed to occur in a progressive fashion. Among the top 5 other user specialties (Table 2), shares in 2009 ranged from 5% to 9%.

DISCUSSION

Our data indicate that despite the encouragement offered by Moore and Copel [1] and others [2] of POC ultra-

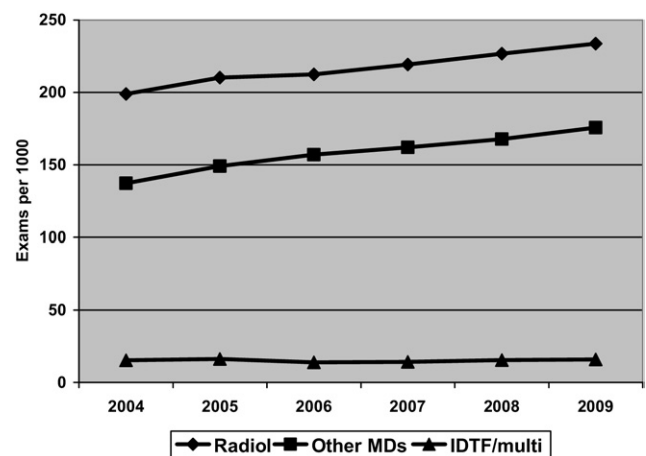


Fig 1. Medicare utilization rates of noncardiac ultrasound, 2004 to 2009. All places of service are included. Trend lines compare use by radiologists, all nonradiologist physicians, and IDTF/multi facilities. IDTF/multi = independent diagnostic testing facilities and multispecialty groups; other MDs = all other physicians; Radiol = radiologists.

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