# The Diversion of Outpatient Echocardiography From Private Offices to Higher Cost Hospital Facilities: An Unanticipated Effect of Code Bundling

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**Purpose:** In 2009, the add-on codes for spectral Doppler and color flow Doppler echocardiography were bundled into the code for primary transthoracic echocardiography. The relative value units for the new single code were substantially lower than the previous sum for the 3 codes. The purpose of this study was to see how this affected the distribution of outpatient echocardiographic studies between cardiology offices and hospital outpatient departments (HOPDs).

**Methods:** The 2005 to 2011 Medicare databases were used. All echocardiography Current Procedural Terminology codes were selected. Specialty codes identified those done by cardiologists (who do most echocardiographic studies). Place-of-service codes identified those done in offices and HOPDs. Procedure volumes and utilization rates per 1,000 were determined each year before and after bundling occurred in 2009.

**Results:** Cardiologists' office echocardiography utilization rate rose from 219.5 per 1,000 in 2005 to 257.1 in 2008 (+17%), then dropped to 100.0 in 2009 (−61%) because of bundling. Their HOPD echocardiography rate rose from 72.2 in 2005 to 76.5 in 2008 (+6%), then dropped to 35.0 in 2009 (−54%). From 2009 to 2011, cardiologists' office echocardiography rate dropped again from 100.0 to 88.8 (−11%), while their HOPD rate increased from 35.0 to 46.1 (+32%).

**Conclusions:** Echocardiography code bundling produced the expected sharp drop in outpatient claims from cardiologists in 2009. But after bundling, office echocardiography rates continued to drop, while HOPD rates increased. It seems that in this instance, code bundling led to the closure of many cardiology offices and a resultant shift of echocardiography from that lower cost setting to the higher cost HOPD setting.

**Key Words:** Medical economics, echocardiography, code bundling, cardiology and cardiologists, socioeconomic issues, radiology and radiologists

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## INTRODUCTION

Late in the past decade, it became apparent that of all physician services, imaging was growing the most rapidly [1]. Under pressure from the US Government Accountability Office and the Medicare Payment Advisory Commission, CMS responded by introducing a number of reimbursement cuts for imaging [2]. One of these came about through bundling of Current Procedural Terminology, version 4 (CPT-4), codes that were frequently performed together. The complex process through which code bundling occurs has been nicely explained by Silva [3-5]. One of the first major examples of imaging-related code bundling was in echocardiography, a service performed for the most part by cardiologists. Before 2009, it was common practice, when performing transthoracic echocardiography (CPT-4 code 93307), to also perform and bill for 2 add-on codes for spectral Doppler (code 93320) and color flow Doppler (code 93325). However, beginning in January 2009, the 3 codes were bundled into a single new code, 93306. Thereafter, when the 3 services were performed together (as they usually were), the new code had to be used. The sum of the Medicare global relative value units for the 3 codes had been 9.52. The global relative value units for the new bundled code were 7.42, representing a decrease of 22%. The 3 older codes

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continue to exist; transthoracic echocardiography can still be done by itself, and color flow Doppler and spectral Doppler can still be done as add-on codes with other types of studies, such as transesophageal or stress echocardiography.

Although CMS intended this change as a cost-saving vehicle, it could have an untoward and possibly unanticipated side effect: if the reimbursement cuts were drastic enough, it could lead to the closure of private cardiology offices and the shifting of outpatient echocardiography procedures to hospitals, where costs to Medicare are considerably higher.

Our purpose was to study utilization trends in outpatient echocardiography before and after the bundling occurred to try to see whether there was any evidence of such a shift. Although echocardiography is performed and interpreted primarily by cardiologists, any such shift could portend similar changes that might occur as bundling is more widely extended to imaging examinations done by radiologists.

## METHODS

The data sources were the Medicare Part B Physician/Supplier Procedure Summary Master Files for 2005 through 2011. These files provide Medicare procedure volume and other administrative data for every CPT-4 code. They cover all individuals in traditional fee-for-service Medicare (36.3 million in 2011) but not those in Medicare Advantage plans (12.6 million in 2011). We selected all echocardiographic procedure codes for analysis. We used Medicare's physician specialty codes to identify those studies done by cardiologists and place-of-service codes to identify outpatient studies performed in either private cardiology offices or hospital outpatient departments (HOPDs). Studies on inpatients or emergency department patients were not included. The number of fee-for-service Medicare beneficiaries each year was determined from the CMS Medicare Advantage State/County Penetration reports. From this, we calculated echocardiography utilization rates per 1,000 beneficiaries. We compared the utilization rate trends in cardiology offices with those HOPDs. Although a small number of echocardiographic studies (approximately 14%) are done by physicians other than cardiologists, we did not include those in our analysis because echocardiography is generally a very minor component of those practices and is unlikely to affect any decisions about where practices are located. Data analysis was performed using SAS version 9.3 for Windows (SAS Institute Inc, Cary, North Carolina).

Code bundling was also implemented in another major type of cardiac imaging, radionuclide myocardial perfusion imaging (MPI), a year later in 2010. We did not include that in our analysis because there would have been only 2 years of data available (2010 and 2011). That is not enough to suggest a trend in utilization.

## RESULTS

### From 2005 to 2009

Figure 1 shows the trends in utilization rates of echocardiography per 1,000 Medicare fee-for-service beneficiaries among cardiologists in private offices and HOPDs between 2005 and 2011. In offices, the rate per 1,000 progressively increased from 219.5 in 2005 to 257.1 in 2008 (+17%). In 2009, there was a sharp decrease to 100.0 (−61%). This was attributable primarily to code bundling; up until 2008, most claims for transthoracic echocardiography were accompanied by claims for spectral Doppler and color flow Doppler, but beginning in 2009 the 3 were bundled into a single new code. Figure 1 also shows that in HOPDs, utilization of echocardiography by cardiologists was considerably less than in offices. The rate in HOPDs increased slightly from 72.2 in 2005 to 76.5 in 2008 (+6%). When bundling occurred in 2009, the HOPD rate dropped sharply to 35.0 (−54%). Other factors could possibly have played a small role in these utilization declines, but their effect would have been very minor compared to that of bundling.

### The Years After Bundling: 2009 to 2011

From 2009 to 2011, a small additional decline occurred in the echocardiography utilization rate in cardiologists' offices, from 100.0 per 1000 in 2009 to 88.8 in 2011 (−11%). However, in HOPDs, the utilization rate increased from 35.0 in 2009 to 46.1 in 2011 (+32%). Medicare procedure volume changes in the two locales

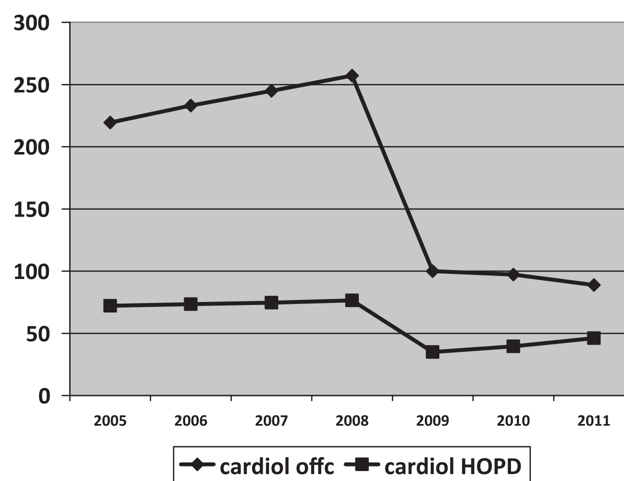


**Fig 1.** Outpatient echocardiography performed by cardiologists in the Medicare fee-for-service population, 2005 to 2011. The vertical axis shows the rate per 1,000 Medicare beneficiaries. Cardiol offc = examinations performed by cardiologists in their private offices; cardiol HOPD = examinations performed by cardiologists in hospital outpatient facilities.

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