Bundling in Medicare Patients Undergoing Bidirectional Endoscopy: How Often Does It Happen?

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BACKGROUND & AIMS: **In patients with appropriate indications, performance of both colonoscopy and esophagogastroduodenoscopy (EGD) at the same time (bundling) is convenient for patients, efficient for providers, and cost saving for the health care system. However, Medicare reimbursement for bundled procedures is at a rate that is less than the sum of the 2 procedures when charged separately, and this may create a disincentive to bundle. The practice patterns of bundling are unknown at a US population-based level.**

METHODS: **We examined Medicare claims from 2007 to 2009 from the Carrier file in a national, random sample of fee-for-service beneficiaries aged 66 and older. We identified patients who had both a colonoscopy and EGD performed within 180 days of each other and calculated the proportions of patients with both procedures bundled on the same date, within 1 to 30 days, and within 31 to 180 days of each other. We compared patients in these 3 groups for demographics and clinical indications for the procedures (bleeding, lower or upper gastrointestinal symptoms, surveillance, and screening).**

RESULTS: **We identified 12,982 Medicare-enrolled individuals who had a colonoscopy and an EGD performed within 180 days of each other. Approximately 35% of procedures were not bundled on the same day, and, of these, 2359 (18%) were performed within 30 days of each other, and 2219 (17%) were performed within 31 to 180 days of each other. There were marked geographic differences in the percentage of bundling, with the lowest occurrence in the Northeast and the highest in the West. Patients with bundled procedures were more likely to have gastrointestinal bleeding and less likely to have screening or surveillance indications.**

CONCLUSIONS: **Although same-day bundling of endoscopic procedures offers a number of advantages, it is not practiced in more than one-third of cases in a national sample of Medicare beneficiaries.**

Keywords: Medicare; Insurance; Colonoscopy; Health Services Research.

In the management of patients with suspected digestive disorders (eg, bleeding, iron-deficiency anemia), health care providers occasionally request both a colonoscopy and an esophagogastroduodenoscopy (EGD). Performance of both of these procedures in the same setting, a practice called *bundling*, is convenient for patients, efficient for providers, and cost saving for the health care system. However, the extent to which bundling of bidirectional endoscopy is performed in clinical practice is unknown. Medicare reimburses bundled procedures at a rate that is less than the sum of the 2 procedures charged separately. For example, for 2 codes with different base codes (eg, colonoscopy and EGD), multiple-procedure guidelines apply, with 100% reimbursement for the highest procedure and 50% for the second. This reimbursement arrangement may create a disincentive for bundling. In addition, clinical necessities regarding the presentation and type of signs and symptoms may otherwise determine the performance of bundling.

Previous studies[1–7] largely have focused on the diagnostic yield of same-day bidirectional endoscopy. However, the frequency of this practice as compared with procedures performed on different days is unknown. Moreover, patient, endoscopist, facility, and geographic factors that predict the use of bundling are not known at a population level. Such knowledge may have a considerable

Abbreviations used in this paper: EGD, esophagogastroduodenoscopy; GI, gastrointestinal; ICD-9-CM, International Classification of Diseases, 9th revision, Clinical Modification; UPIN, Unique Physician Identification Number.

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impact on cost containment and quality of care. We therefore conducted the present study in a large Medicare-based cohort to examine the prevalence of bundled as compared with different-day bidirectional endoscopy.

Methods

The study cohort was obtained from a 5% random sample of Medicare beneficiaries of noncancer patients in 2007, and an overall 5% random sample that included both cancer and noncancer patients in 2008–2009, and who resided in a state or metropolitan region that is part of the Surveillance Epidemiology and End Results Program. The Surveillance Epidemiology and End Results Program currently captures approximately 26% of the US population (http://seer.cancer.gov/registries/list.html). Our objective was to study this in the outpatient setting, where there are greater opportunities for bundling given the lower acuity. Procedures were identified from the Carrier or Physician Supplier file, which includes claims from physicians, as well as from other clinicians, and claims from free-standing ambulatory surgery centers. These files contain demographics; 1 primary and up to 3 secondary diagnoses coded according to the International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM); and up to 13 procedures coded according to Current Procedural Terminology, 4th edition. The Summarized Denominator file was used to identify patients who were not enrolled in Medicare Part B or fee-for-service plans. The Summarized Denominator file also includes census-tract or Zip code-level measures of income, educational level, and urban/rural status.

The study sample was obtained from all beneficiaries aged 66 years and older in the Carrier files with any of several codes for EGD (CPT codes: 43234, 43235, 43239, and 43255) and colonoscopy (CPT codes: 44388, 44389, 45378, 45380, 45382, G0105, G0121, 44392–44394, and 45383–45385) performed within 180 days of each other, beginning on January 1, 2007, and ending on June 30, 2009. Patients were followed up for up to 6 months after the index endoscopic procedure (the earliest of the 2 procedures) for performance of a second procedure. We excluded patients with either a colonoscopy alone or an upper endoscopy alone (n = 4046). Because of the high likelihood of incomplete claims data, patients who were enrolled in Medicare managed-care plans and patients who were not enrolled in Medicare Part B during the period of interest were excluded. We used the Unique Physician Identification Number (UPIN) associated with the initial procedure claim, and those missing a UPIN part are substituted from the Health Care Financing Administration specialty information to categorize physician specialty as gastroenterology, general surgeon, colorectal surgeon, internal medicine, family practice, and other/unknown. Approval from the Institutional Review Board at Case Western University was obtained.

For each procedure of interest, using the associated diagnosis and procedure codes, we identified possible indications for colonoscopy, as well as indications for EGD. These included gastrointestinal (GI) bleeding or anemia (ICD-9-CM codes: 280, 285.1, 285.9, 569.3, 578, 792.1), lower GI symptoms (ICD-9-CM codes: 558.9, 560.9, 564.0, 564.5, 783.0, 783.2, 787.0, 787.3, 787.6, 787.9), upper GI symptoms (ICD-9-CM codes: 530.8, 560.9, 783.0, 783.2, 786.5, 787.0, 787.2, 787.3, 789.0, 789.3), or colon surveillance (ICD-9-CM codes: 555, 556, V10.05, V10.06, V12.72); the remaining colonoscopy procedures were categorized as screening. The Carrier, Outpatient, and Medicare Provider Analysis and Review files were searched for a diagnosis code of interest according to ICD-9-CM during the 365 days before the index procedure date. To maximize the true-positive rate of a listed diagnosis, we included only diagnoses that appeared more than once in any of the 3 files. Claims from the 365-day to 30-day period before the index procedure also were used to derive a previously validated, weighted comorbidity score.[8]

We compared the characteristics of 3 groups of patients (bundled same-day procedures, procedures conducted within 2–30 days, and procedures conducted within 30–180 days) including demographics, procedure indications, and census-tract measures of socioeconomic status. The a priori decision to examine periods from 2 to 30 days and from 30 to 180 days was made based on our assumption that a second endoscopic procedure performed after 30 days may have been related to new indications that were not discovered at the time of presentation, whereas those occurring within 2 to 30 days were much more likely to have been present at presentation. The Pearson chi-square test was used for categoric variables and the *t* test was used for continuous variables.

We tested several patient (demographic and clinical) characteristics as well as provider characteristics in unadjusted bivariate analyses and selected those with a *P* value of less than .1 for further testing in a multivariate model. Age was treated as a categoric variable. A multinomial logistic-regression model then was used to determine independent predictors of undergoing both procedures within a 2- to 30-day interval or a 30- to 180-day interval. Two sets of models were constructed, one nested within individual endoscopists and another that included the endoscopists as independent observations. Variables with a *P* value less than .1 were retained in the final model. We used Proc Glimmmix in Statistical Analysis System software (version 9; SAS, Inc, Cary, NC), treating UPIN as a random effect. All statistical analyses were performed using SAS (version 9).

Results

In the sample, we identified 12,982 Medicare beneficiaries with claims for colonoscopy and EGD within 180 days of each other. This group included 8404 patients