

Study Design: We conducted a retrospective study of claims data from a large commercial insurer in Michigan. We first profiled telehealth adoption by primary care practices during March–July 2020. We defined a practice's "telehealth conversion rate" as the proportion of visits conducted via telehealth during this period compared to the total number of visits during the same period in 2019. Then, to enable comparison between groups at a time when both outpatient and acute care visits were in flux, we used a differences-in-differences (DID) model to determine whether varying levels of primary care telehealth conversion were associated with differences in acute care visits (ED visits and hospitalizations) for ACSCs from June–September 2020. We examined visit rates for acute and chronic ACSCs separately, controlling for practice size, in-person visit volume, and zip code-level attributes as well as patient characteristics (age, gender, comorbidities). We performed sensitivity analyses using varying definitions of telemedicine conversion rates and multiple model specifications.

Population Studied: Six million Blue Cross Blue Shield of Michigan beneficiaries across 3780 primary care practices from January 2019 to September 2020.

Principal Findings: Average primary care practice telehealth conversion rate was 25% (median 10%), and 29% of practices had no telehealth claims identified. Practices that did not adopt telehealth tended to be smaller and were more likely to be in rural areas. We found no significant differences in the rate of ED visits and hospitalizations for ACSCs by practice-level telemedicine conversion tertile after adjusting for practice case-mix, as shown in Table 1. Sensitivity analyses showed similar results.

Conclusions: Beneficiaries within a large commercial payer experienced rapid shifts from in-person to telehealth for their primary care, though telehealth adoption was not evenly distributed, with smaller and more rural practices being less likely to adopt telemedicine. These changes did not seem to obviously help or harm patients as ED visits and hospitalizations for ACSCs were similar across groups.

Implications for Policy or Practice: Widespread substitution of telehealth for in-person care had little impact on cost of care with respect to avoidable ED visits and hospitalizations in the near-term. Additional research should continue to monitor this trend as health care utilization stabilizes beyond the pandemic.

Primary Funding Source: University of Michigan Institute for Health Policy and Innovation.

TABLE 1 Differences-in-differences model of practice telemedicine conversion rate on acute care visits for acute and chronic ACSCs

	Acute ACSC aOR (95% CI)	Chronic ACSC aOR (95% CI)
Telemedicine tertile (mean telemedicine conversion rate)		
Low (9%)	ref	ref
Medium (30%)	0.98 (0.91–1.07)	0.98 (0.76–1.26)
High (66%)	1.07 (0.98–1.17)	1.14 (0.86–1.50)

Updating an Electronic Measure of Screening Colonoscopy Overuse in a Large Integrated Healthcare System to Examine Trends and Variation in Overuse

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Research Objective: Overuse of screening colonoscopy can lead to patient harm and wasteful use of resources. We previously developed an ICD-9 based measure to detect screening colonoscopy overuse in a large integrated healthcare system. This measure was highly specific, suggesting that cases identified as overuse were true positives, but had low sensitivity (likely to miss cases of overuse). We sought to update and test this previously validated measure for use in ICD-10 and assess trends and variation in colonoscopy overuse in a large integrated healthcare delivery system.

Study Design: Retrospective cohort study of Veterans Health Administration (VHA) administrative data, with measure validation via manual record review.

Population Studied: Index screening colonoscopy encounters at 117 VHA facilities in 2017.

Principal Findings: 269,572 colonoscopies were performed in VHA in 2017. After applying exclusion criteria (non-index procedures, procedures in patients at increased risk of colorectal cancer, inpatient procedures, colonoscopy for non-screening indication within 12 months), 88,143 colonoscopy encounters remained. Validating the updated ICD-10 based electronic overuse measure ("Updated Measure") against the gold standard of manual record review in a random sample of 511 cases, the Updated Measure had similar specificity to the ICD-9 based measure (96% vs. 97%) but was significantly more sensitive (92% vs. 20%). The sensitivity and specificity of the Updated Measure were robust both among sites with the lowest levels of overuse (sensitivity 100%, specificity 97%) and sites with the highest levels of overuse (sensitivity 93%, specificity 97%).

Applying the Updated Measure, 24.5% of screening colonoscopy encounters (21,600/88,143) met the definition of overuse (as defined in *J Gen Intern Med* 2016;31[Suppl 1]:53–60), similar to levels in 2011–13 (23%). Of these 21,600 colonoscopies meeting overuse criteria, the top 2 reasons for overuse in both periods were screening colonoscopy performed <9 years after previous colonoscopy (45% in 2017 vs. 35% in 2011–13) and screening colonoscopy performed <6 months after negative FOBT (23% in 2017 vs. 31% in 2011–13).

Median facility-level overuse was 22.5% (IQR 19.1%–26.3%), with four to five-fold variability among facilities. The performance of 55/117 (47%) of facilities remained stable over time (same quartile), while the performance of 93/117 (79%) facilities improved or worsened by no more than one quartile. The 13 lowest performing facilities remained in the bottom quartile of performance in both time periods.

Conclusions: Our updated ICD-10 based measure reliably measures screening colonoscopy overuse with similar specificity but markedly better sensitivity than the ICD-9 based measure, allowing VHA to track facility-level performance over time. Despite increased focus on reducing low value care and enhancing access, levels of colonoscopy overuse in VHA remained stable between 2011–13 and 2017, with continued facility-level variability.

Implications for Policy or Practice: These findings are among the first to suggest that ICD-10 codes can substantially improve the validity of quality measures relying on administrative data. Moreover, this updated measure can be successfully deployed by large healthcare systems to track facility-level procedural overuse over time. This data can facilitate efforts to improve care quality and access and, in integrated healthcare systems, expand capacity by limiting low-value colonoscopy.

Primary Funding Source: Department of Veterans Affairs.

Coverage Denials for Medical Necessity Rules in Medicare

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Research Objective: Coverage policy may be an important tool to reduce spending while discouraging low-value medical services. Government and private insurers may also differ in their scope of coverage restrictions for suspected low-value services. However, basic facts about coverage denials are unknown because denials are not identifiable in standard research datasets. In this study, we characterized fundamental features of coverage denials for medical necessity using data on all claims denied by a large Medicare Advantage health insurer.

Study Design: We analyzed medical benefit claims for Medicare Advantage beneficiaries. We detected all claims that were denied for failing to meet medical necessity rules. Some rules were made by the government (i.e. national or local coverage determinations) and other rules were made by the private insurer. We measured the frequency of denials, associated spending, affected service types and provider specialties, the reasons for denials, and temporal trends in denials. We also quantified differences between denials due to government coverage rules and denials due to private insurer coverage rules.

Population Studied: We analyzed 2014–2019 claims for all Medicare Advantage beneficiaries enrolled with the health insurer Aetna. Our sample included 2.9 million unique beneficiaries (mean age = 73, 56% female, 5% Medicaid dual eligible).

Principal Findings: There were 0.84 denials per beneficiary per year (95% CI 0.83–0.84), corresponding to 1.45% of claims (95% CI 1.44–0.46), with 31.8% of beneficiaries affected each year (95% CI 31.8–31.9). Denied claims accounted for \$64 per beneficiary per year (95% CI 63–65), or 0.73% of medical spending (95% CI 0.71–0.76). Denial rates increased over time, from 0.59% of spending in 2014 to 0.85% of spending in 2019 ($p < 0.01$). Government coverage rules accounted for 83% of denied claims, but only 60% of denied spending, and private insurer coverage rules accounted for the remaining denials. Most services denied under private insurer coverage rules were categorized as experimental/investigational (49%), not a treatment for disease (20%), or without proven efficacy (16%); denials for services categorized as cosmetic were rare (1%). A large majority of claims denied under Medicare coverage rules were for laboratory tests (75%), most of which were for chemistry studies. Denials under private insurer coverage rules were more widely distributed across service types; home care and chemotherapy accounted for the greatest shares of denied spending (14% and 11%). The provider types with the greatest share of denied spending were hospital outpatient departments (34%) and laboratories (19%).

Conclusions: For a large Medicare Advantage insurer, denials under medical necessity rules accounted for a small but growing fraction of annual spending. While most spending was denied under government coverage rules, additional private insurer rules targeted different types of services and accounted for additional denied spending.

Implications for Policy or Practice: To the authors' knowledge, this study presents the first comprehensive evidence on how often medical services are denied for failing to meet medical necessity criteria. In Medicare Advantage, coverage denials appear to contribute to modest savings, derived from both government-produced and private insurer-produced coverage criteria.

Primary Funding Source: NIH, CVS Health, Phyllis & Jerome Rapaport Foundation.

Predicting Fragmented Care: Beneficiary, Primary Care Physician, and Practice Characteristics

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Research Objective: Identifying characteristics of beneficiaries, primary care physicians, and primary care practice sites that predict highly fragmented ambulatory care (that is, care spread across multiple providers without a dominant provider) is essential to develop