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Association between the American Board of Internal Medicine's General Internist's Maintenance of Certification Requirement and Mammography Screening for Medicare Beneficiaries

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A B S T R A C T

Background: Breast cancer is a leading cause of death in the United States. Continuing medical education programs such as the American Board of Internal Medicine's Maintenance of Certification (MOC) program can increase early detection of cancers by educating physicians about the benefits of screening. Did the imposition of American Board of Internal Medicine's MOC requirement affect guideline-compliant mammography screening?

Method: To address this question, we took advantage of a natural experiment that occurred when one group of general internists was required to complete MOC by 2001 because they initially certified in 1991 (MOC required) and another group was grandfathered out of this requirement because they initially certified in 1989 (MOC grandfathers). To measure associations with the MOC requirement, we compared mammography screening in the 2 years before and the 3 years after the 2001 MOC requirement among beneficiaries treated by the MOC-required physicians and compared this difference with the same difference in mammography screening among a control group of beneficiaries treated by the MOC-grandfathered physicians.

Results: We found that the MOC requirement was associated with a regression adjusted 2.8% increase ($p < .001$) in annual screening and 1.7% increase ($p < .001$) in biennial screening. When we limited the sample to beneficiaries with no screening at baseline (1999 and 2000), these figures increased to 8.5% ($p = .02$) and 6.4% ($p = .01$), respectively.

Conclusions: The MOC requirement was associated with an improvement in guideline-compliant mammography screening with the most pronounced improvements among women who were the least adherent at baseline and therefore might have benefited the most from screening.

Breast cancer is a leading cause of death in the United States among women, with approximately 40,000 deaths each year (American Cancer Society, 2017). Early detection through mass screening with mammography has the potential to reduce mortality (Etzioni et al., 2003; Torre et al., 2015; Vainio & Bianchini, 2002). Yet, it is well-documented that many women who should screen for breast cancer do not; in particular, women older than 65 (Pham, Schrag, Hargraves, & Bach, 2005; Sabatino, White, Thompson, Klabunde, Centers for Disease Control and Prevention, 2015). A contributing factor to low screening rates may be that primary care physicians are not fully aware of the benefits of mammography screening or the current guidelines for screening (Harvey, 2014). If so, policies that encourage life-long learning for physicians and other providers may be able to improve appropriate screening by increasing awareness and understanding of these guidelines. This is especially true for insured populations that have access to providers, such as Medicare insured women.

One program with the potential to increase screening by encouraging lifelong learning for physicians is the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Completing MOC is a periodic requirement for all internists certifying after 1989. The ABIM certifies 45% of all adult primary care physicians and, therefore, has the potential to impact cancer screening for a large population of women (ABIM, 2013). As described in the Background section, a key component of the ABIM's MOC program is the understanding of guideline changes that may have occurred since physicians first certified. Supporting the notion that knowledge might affect patient adherence to mammography screening guidelines, Holmboe et al., 2008 reported that performing better on the MOC examination was associated with higher rates of mammography

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screening. Yet, no study has examined the association between the ABIM's MOC requirement and changes in mammography screening.

We address this gap in the literature by measuring the association between meeting the ABIM's MOC requirement and Medicare beneficiary adherence to mammography screening guidelines. To do this, we took advantage of a natural experiment that occurred when one group of general internists who certified in 1991 were obligated to complete ABIM's MOC requirement 10 years later in 2001 (MOC required) and another group of internists were not subject to this requirement (MOC grandfathered) only because they initially certified 2 years earlier (in 1989). Taking advantage of this natural experiment, we applied a difference-in-differences methodology to compare differences in mammography screening rates among beneficiaries cared for by MOC-required versus MOC-grandfathered physicians in the 3 years after (2002–2004) versus the 2 years before (1999–2000), the 2001 MOC requirement.

Background

Soon after medical school, most physicians obtain their state license to practice medicine and begin their residency training. Internal medicine residencies require 3 years of training. Most internists pass ABIM's initial certifying examination and receive their internal medicine certification within 1 or 2 years after completing their residency training (assuming their residency evaluations qualify them and their residency programs have been accredited). Internists who pursue primary care generally do not further subspecialize. Starting in 1990, the ABIM's lifetime certification was replaced by a 10-year, time-limited certification referred to as MOC. Physicians who originally certified in 1989 or earlier were grandfathered out of the MOC requirement. However, had these physicians initially certified 1 year later, they would have been subject to this requirement.

Unlike state licensure, board certification is a voluntary process and is not a legal requirement to practice medicine. Board certification differentiates physicians by specialty, but state licensure does not. Although voluntary, initial board certification, and to a lesser extent MOC, is a requirement of continued employment for most physicians because many health plans and hospitals require board certification as part of their credentialing for insurance networks and admitting privileges, respectively (Cassel & Holmboe, 2006; Freed, Dunham, & Singer, 2009). Military physicians receive bonuses for MOC (Gray & Grefer, 2012) and most physician rating websites include board certification status (e.g., Health Grades). These websites are mainstays for consumers looking for information about providers (Hanauer, Zheng, Singer, Gebremariam, & Davis, 2014).

During our study period, the MOC requirement largely consisted of passing an examination and completing ABIM's Self Evaluation Product every 10 years. Self Evaluation Product learning modules focus on recent advances in medicine, such as changes in guidelines and the rationale for these changes. Furthermore, during this time period, many physicians participated in primary care Clinical Preventive Services Module activities that encouraged continuing quality of care improvements, such as better adherence to guidelines, including their patients meeting mammography standards. Physicians also likely learned through the considerable effort they expend in preparing for the examination, often studying for 2 months or more and for many hours a week (Gray et al., 2017).

MOC activities emphasize knowledge of, and evidence for, guideline changes. Evidence for the benefits of mammography screening for Medicare-aged women emerged between 1991 and the 2001 recertification deadline for physicians who initially certified in 1991. Thus, knowledge gained by these physicians through the MOC process might have had a particularly large effect on screening for Medicare-aged women. Furthermore, past research indicates that physician counseling of older women may be an effective means to encourage breast cancer screening (Schonberg, McCarthy, York, Davis, & Marcantonio, 2007). The quality of this counseling may have been improved through better recall around the evidence supporting guideline adherent breast cancer screening (Gray et al., 2017).

Methods

Physician and Patient Sample

Our physician sample consisted of non-subspecializing general internists (generalists) who originally certified in 1989 or 1991. We the 1989 MOC grandfathers as our control group because 1989 was the last certification class grandfathered out of the MOC requirement. We chose the 1991 MOC-required group as our treatment group because they were one of the first certification classes required to complete MOC. Although physicians certified in 1990 were closer in time to the 1989 MOC grandfathers, they were the first group required to complete MOC and so were less likely to enroll and complete MOC and, among those completing MOC, more likely to substantially delay their enrollment and completion. These issues were resolved in the 1991 group. Presumably, the 2-year difference in practice experience between the 1991 MOC-required and the 1989 MOC-grandfathered physicians would not have materially impacted quality of care 10 years later in 2001 had neither group faced the MOC requirement.

We then identified a sample of fee-for-service women beneficiaries who had a billing contact with either a physician in the MOC-required and MOC-grandfathered groups during the 2001 MOC requirement year and obtained their billing claims data from 1999 to 2004 (Medicare claims line file yearly datasets). We limited this sample to those women who 1) were likely eligible for the mammography screening guidelines used in the analysis (women with no billing history of breast cancer who were under age 75 through the study period; i.e., age 65 to 69 in 1999), 2) resided in the United States, and 3) were not originally eligible for Medicare owing to end-stage renal disease or disability. Finally, we limited our sample to beneficiaries whose primary care provider (PCP) was attributed to be a generalist in our sample during the full 1999 to 2004 study period. Our PCP attribution criterion was based on counts of outpatient visits to either generalists in our sample or other PCPs (see the Appendix for a more complete specialty definition of potential PCP).

For a beneficiary's care to be attributed to a generalist in our study four conditions were met. First, the physician had the most (plurality) outpatient visits among all PCPs summed from 1999 to 2001 (the pre-MOC period) for that beneficiary. Second, the physician had to have the plurality of outpatient visits, summed across 2001 to 2004 (the pre-MOC period), among all PCPs for that beneficiary. Third, the physician had a plurality of outpatient visits in at least 2 individual years during the pre-MOC period (1999, 2000, or 2001) for that beneficiary. Fourth, the physician had a plurality of outpatient visits in at least 2 individual years during the post-MOC period (2001, 2002, or 2003) for that