

An Empirical Framework for Breast Screening Bundled Payments

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Abstract

Purpose: In an effort to curb health care costs and improve the quality of care, bundled payment models are becoming increasingly adopted, but to date, they have focused primarily on treatment episodes and primary care providers. To achieve current Medicare goals of transitioning fee-for-service payments to alternative payment models, however, a broader range of patient episodes and specialty physicians will need opportunities to participate. The authors explore breast cancer screening episodes as one such opportunity.

Methods: The authors developed a bundled payment model for breast cancer screening and calibrated it using both a national sample of retrospective Medicare claims data and data from a private health system. The model includes alternative screening episode definitions, methods for calibrating prices, and an examination of risk and can serve as a general framework on which other cancer screening bundles could be crafted.

Results: The utilization of services associated with breast cancer screening and diagnosis is stable over time. The inclusion of high-risk patients in breast screening bundles did not cause substantial changes in estimated bundle prices. However, prices are sensitive to the choice of services included in the bundle.

Conclusions: Breast cancer screening may provide a mechanism to expand the use of bundled payments in radiology and could serve as a framework for other episodic specialty bundles. Because screening bundles include costs for follow-up diagnostic imaging in addition to the initial screening mammographic examination, patient adherence to screening guidelines may improve, which may have profound effects on public health.

Key Words: Bundled payments, alternative payment models, mammography, cancer screening, breast cancer

J Am Coll Radiol 2017;14:17-23. Copyright © 2016 American College of Radiology

INTRODUCTION

The growing pressures of an increasingly expensive, fragmented, and uncoordinated fee-for-service system have led to an aggressive push from payers toward alternative payment models (APMs) to incentivize the quality and value

of care over the volume of services performed [1]. Bundled payment models are seen as a particularly important APM because of the magnitude of cost savings potentially achievable by the explicit incentives to constrain episode costs [2,3]. Currently, the CMS Bundled Payments for Care Initiative has more than 1,600 participating provider organizations, and CMS has mandated that all lower extremity joint replacements performed at acute care hospitals in selected geographic areas be paid through bundled payments [4,5].

Bundled payments are designed to reduce inefficiencies and improve quality through better care coordination and management by a provider organization responsible for an entire episode of care. To date, bundled payment models have focused primarily on treatment episodes and primary care providers. The responsible provider is commonly a hospital (27%) or postacute facility (54%) and less frequently a physician group practice

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The authors have no conflicts of interest related to the material discussed in this article.

(19%) [4]. It is less clear what roles are available for radiologists to participate in these new payment models. However, if CMS is serious about transitioning 50% of fee-for-service payments to APMs by 2018, thoughtful consideration should be made about how radiologists and other specialists can participate [1]. Cancer screening episodes provide one such opportunity.

An attractive feature of cancer screening episodes of care is that their end points are easy to define relative to treatment episodes, which may have many divergent treatment pathways. Screening episodes would typically start with the initial screening and then cover any additional diagnostic services required for 364 days after the initial screen or until a positive diagnosis resulting in patient treatment (which would trigger a separate treatment episode that could be either fee-for-service, bundled, or some other APM managed by the treating primary care provider). As others have noted, screening bundles could serve as either stand-alone bundles or as “mini-bundles” within larger “mega-bundles” that contain a full gamut of screening, treatment, and post-acute care [6].

In this report we present a framework for developing bundled mammographic screening episodes as an example for how non-patient-facing physicians could participate in APMs through cancer screening bundles. This framework includes (1) a definition of bundle trigger rules and closing rules, (2) relevant services included, (3) a method for calibrating prices, (4) alternative bundle definitions, and (5) an examination of risk (both financial risk and variance in patient recall rates) for different patient populations and different payers. Although our study focuses on mammographic screening, this framework may be generalizable to other cancer screening bundles for which the included procedures and exclusions have been defined, such as that proposed for colonoscopy screening [7].

STUDY DATA AND METHODS

Data

We used carrier claims data from the CMS 5% Research Identifiable Files (RIF) from 2009 to 2013. These contain all fee-for-service claims associated with a 5% national sample of Medicare enrollees. As a robustness check, a large northeastern health care system examined 100% of its 2012-2014 claims data using the same study design. This private system data contained patients from all age groups and both commercial and public payers, which allowed us to compare results between different

patient populations and payer types. This retrospective claims analysis was deemed review exempt by the ACR’s institutional review board.

Study Cohorts

For the CMS RIF data, we examined three cohorts of patients with cohorts defined by whether a patient underwent screening mammography in 2010, 2011, or 2012. The year of the screening mammographic study was designated as the index year for each cohort. The study population was limited to female patients alive at the end of the study period residing in the 50 US states and the District of Columbia who underwent screening mammography at some point in their designated index year. Each patient must also have maintained continuous Part A and Part B Medicare enrollment throughout the study period for both 12 months before and after the initial screening mammographic study. The private health system cohort was restricted to female patients who underwent initial screening mammography in 2013 and maintained continuous enrollment in either a private or public insurance plan for both 12 months before and after the initial screening mammographic examination.

In addition to examining our initial study population, we replicated the analyses after defining and excluding women considered at high risk for breast cancer. High-risk patients were defined as follows:

- Patients undergoing breast cancer diagnosis or mastectomy before their initial index screening examinations ([Online Table A1](#) lists all of the International Classification of Diseases, ninth rev, and procedure codes used for these exclusions).
- Patients who had any other nonscreening breast imaging services performed in the 12 months before their initial index screening studies ([Online Table A2](#) lists the breast imaging–related procedure codes used for these exclusions). However, if a patient underwent screening mammography between 11 and 12 months before the index mammographic study and no other mammography-related procedure in the 12 months before the initial index examination, the patient was not excluded from the study cohort. This is because Medicare will cover annual screening mammography as early as 11 months after a previous annual screening, rather than 365 days, for patient convenience in scheduling.

Screening Mammography Episode End Points

For the purposes of this study, mammography episodes are triggered with a single mammographic screening

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