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Methodological Article

A Framework for Measuring Low-Value Care

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ABSTRACT

Background: It has been estimated that more than 30% of health care spending in the United States is wasteful, and that low-value care, which drives up costs unnecessarily while increasing patient risk, is a significant component of wasteful spending. **Objectives:** To address the need for an ability to measure the magnitude of low-value care nationwide, identify the clinical services that are the greatest contributors to waste, and track progress toward eliminating low-value use of these services. Such an ability could provide valuable input to the efforts of policymakers and health systems to improve efficiency. **Methods and Results:** We reviewed existing methods that could contribute to measuring low-value care and developed an integrated framework that combines multiple methods to comprehensively estimate and track the magnitude and principal sources of clinical waste.

We also identified a process and needed research for implementing the framework. **Conclusions:** A comprehensive methodology for measuring and tracking low-value care in the United States would provide an important contribution toward reducing waste. Implementation of the framework described in this article appears feasible, and the proposed research program will allow moving incrementally toward full implementation while providing a near-term capability for measuring low-value care that can be enhanced over time.

Keywords: administrative claims, health spending, low-value care, measuring clinical waste.

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Introduction

Health care spending in the United States exceeds 18% of the nation's gross domestic product, and it has been estimated that more than 30% of this spending is wasteful [1]. Low-value care—a significant component of wasteful spending—not only drives up costs unnecessarily but also increases patient risk. Furthermore, reducing low-value care can allow resources to be redirected toward care that provides higher value. Traditional approaches to reduce spending, such as increasing a patient's exposure to health care costs through higher deductibles, co-pays, and co-insurance, have been shown to reduce both high- and low-value care indiscriminately. Instead, if we adopt a value-driven strategy to identify and eliminate the use of inefficient, low-value care, we can make room for increased use of underutilized and important innovative services. A vital component of such a strategy is a clear, data-driven understanding of the nature and extent of low-value care in the current health care system.

Recognizing the importance of identifying low-value care and tracking progress toward reducing its use, the Robert Wood Johnson Foundation has funded research to develop approaches for identifying and measuring the extent of wasteful spending in the United States. We anticipate that the resulting framework

will allow measurement of the overall magnitude and costs of low-value care at the health system, state, or national level. Such a framework can facilitate a more holistic and value-based approach to health care decision making.

A methodology for comprehensive measurement of low-value care in the United States should provide the ability to:

1. estimate expenditures on low-value care nationwide, by region, and perhaps by other dimensions (such as a health care system or payer);
2. identify the services that contribute most to this waste and the magnitude of the contribution to provide actionable information that allows remediation; and
3. update these estimates over time to allow tracking of progress.

This article summarizes progress toward developing such a methodology by 1) identifying three alternative approaches to measuring low-value care, 2) describing an integrated framework that combines multiple approaches to comprehensively estimate the magnitude of low-value care, 3) outlining a process for implementation of the framework, and 4) suggesting needed future research into measuring low-value care that will move the related science forward.

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Alternative Approaches for Measuring Low-Value Care

Major technical challenges to measuring low-value care include:

1. the large number of clinical services that contribute to low-value care;
2. the clinical nuance necessary to determine whether a service was of low value in the particular circumstance under which it was delivered; and
3. the fact that claims data—the most readily available source for identifying low-value care—frequently lack the clinical detail to make this determination.

To help address these challenges, we consider three alternative approaches for tracking low-value care. The additive approach hypothesizes that the wasteful services with the largest associated expenditures make up a substantial portion of low-value care (an “80/20 rule”), and that measuring the magnitude of this relatively small number of services will allow approximating total waste. The indicator approach hypothesizes that tracking a small number of low-value procedures that may signal systematic waste can provide input to statistical methods to approximate the overall magnitude of low-value care. The comparative approach hypothesizes that low-value care is best measured not by counting waste of individual procedures, but instead by analyzing total spending and relative patient outcomes across geographic or organizational units. Each approach has advantages and disadvantages; we conclude that a method that combines two or more of them provides the best opportunity for a feasible way to track low-value care.

Additive Approach

The most straightforward method of measuring waste is to count it additively. The additive approach involves identifying services that can have low value, identifying the circumstances in which their use constitutes low-value care, and measuring the frequency and cost of such low-value use.

A number of initiatives have identified individual services that are, under specified circumstances, deemed wasteful. The best-known of these is the Choosing Wisely campaign [2], under which more than 70 national organizations representing medical professionals have identified nearly 500 tests, procedures, and other services commonly used in their field whose necessity should be questioned and discussed. The US Preventive Services Task Force [3] develops evidence-based recommendations for the use of preventive services, including recommendations for circumstances under which such services should not be used. The Beers Criteria [4] are guidelines for health care professionals to help improve the safety of prescribing medications for older adults, with an emphasis on avoiding prescribing medications that are unnecessary. From these and similar initiatives (including international efforts such as Choosing Wisely Canada [5] and UK’s National Institute for Health and Care Excellence [6]), we have identified and cataloged nearly 2500 recommendations within the United States and other nations for services that have been identified as wasteful under some circumstances (although some recommendations have been listed by multiple initiatives, resulting in significant overlap).

Several researchers (e.g., [7–10]) have developed algorithms for subsets of these services that, when applied to administrative claims data, estimate low-value expenditures associated with the services. These algorithms codify the clinical circumstances under which the services constitute low-value care such that they can be discerned using claims data. In addition, at least two

private organizations—Anthem [11] and Milliman [12]—have developed more comprehensive sets of such algorithms that can be used in conjunction with claims data to estimate the frequency of low-value use of the services included in their research. We have experimented with such algorithms using an all-payer claims data set for the state of New Hampshire and have concluded that such an approach is feasible.

Nevertheless, because of the large number of services that can be of low value, applying the additive approach comprehensively would be impractical. If, however, a relatively small number of services accounted for a significant portion of expenditures on low-value care (the 80/20 rule alluded to earlier), limiting application of the additive approach to services anticipated to generate large amounts of wasteful spending might identify a significant portion of total low-value expenditures. A preliminary assessment in which we used existing literature to develop rough estimates of the frequency of low-value use of 48 high-expenditure services suggests that an 80/20 rule likely applies to low-value care. In addition, our review of data from an application of the additive approach to 44 services in the Virginia All Payer Claims Database [13] indicated that 10 of those services (23%) account for 80% of the low-value expenditures measured by that application, providing additional evidence for an 80/20 rule.

Another impediment to using the additive approach to estimate the total magnitude of low-value expenditures is that many low-value services require knowledge of the clinical details associated with the use of the service to determine whether that specific use constituted low-value care. In some cases, this clinical nuance is beyond that which can be inferred from claims data, which are the most readily available data for measuring low-value care. For example, the American Academy of Family Physicians recommends against performing “imaging for low back pain within the first six weeks, unless red flags are present”; nevertheless, the comprehensive identification of “red flags” is nearly impossible using claims data alone. (Some users of the additive method [7] have addressed this limitation by developing broader and narrower measures of low-value use of a service, leading to a range of estimated wasteful spending on that service.) Furthermore, some researchers [14,15] have concluded that even electronic health records (EHRs) are unlikely to provide adequate data to identify cases of low-value care for many services, either because the required data are unlikely to be available in EHRs or the recommendations are insufficiently precise.

An important advantage of the additive approach is that it is actionable. Because it measures low-value care by summing the magnitude of specific services that have been identified as having low value, it can be used to develop specific initiatives designed to reduce the inappropriate use of each of these services. But the limits of claims data (or even EHRs) to discern clinical nuance coupled with the sheer magnitude of the effort to track hundreds of low-value services suggest that the additive approach alone is unlikely to provide a method for comprehensive measurement of low-value care.

Indicator Approach

Like the additive approach, the indicator approach measures low-value care associated with specific services, but does so with a different purpose. The indicator approach is based on an assumption that low-value care is a systematic problem throughout the US health care delivery system. Rather than measuring low-value use of services expected to produce the most waste, this method targets a small number of services most likely to signal total systematic waste.

As an example of this approach, Segal et al. [16] identified 20 services whose low-value use can be identified using Medicare

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