In Alberta, Canada, a province with a population of 4.5 million, we have had success with a criteria-based approach to testing vitamin D levels. In 2013, when the Choosing Wisely campaign was in its early stages in Canada, laboratories in Alberta had noted an excessive test volume for vitamin D assays. Therefore, in 2013, laboratory services decision makers approached endocrinology specialists in the province to identify when a 25-hydroxy vitamin D assay was likely to be most useful. The Choosing Wisely campaign had also started issuing guidelines, including the American Society for Clinical Pathology recommendation to avoid performing vitamin D assays except for patients with higher-risk conditions (eg, osteoporosis, chronic kidney disease, and malabsorption) when results could be used to initiate more aggressive therapy. Indeed, when adequate supplementation is ensured, testing of vitamin D levels has relatively few indications, that is, clinical conditions for which the results are likely to alter management of a current condition. To reduce unnecessary testing, we studied the effect of a change in ordering procedure for vitamin D on the number of tests ordered.
Methods | Waiver for this study was obtained through Alberta Health Services for collection of aggregate data. Based on these various sources of recommendations, a guideline was formed (Box) and was approved by Alberta Health Services. This guideline led to a separate form being developed and issued by laboratory services. Physicians now had to identify the indication for testing vitamin D levels. Indications other than those identified in the guideline did not allow for testing of vitamin D levels. This new requisition was implemented on April 1, 2015. Before this date, for several years, the number of annual 25-hydroxy vitamin D assays was approximately 310,000 per year (ie, 1 in 14 Albertans). We measured the monthly number of vitamin D order requests before and after introducing a new procedure for ordering tests.

Results | From April 1 to December 31, 2015, subsequent to the creation of a new ordering form, 20,609 vitamin D tests were ordered. During this 9-month period, one would have expected, based on historical data, that 256,027 tests would have been ordered. This intervention thus led to a 92.0% reduction in the number of vitamin D tests ordered, a savings of about $4 million USD per year ($3 million in the period studied thus far) (Figure). Although criteria-based interventions are susceptible to methods that manage to avoid adhering to the requirements, a rebound in test ordering has not been observed 9 months after implementation. Our laboratory ordering system is both paper-based and electronic; thus, this type of intervention can be used in many different systems.

Discussion | Criteria-based approaches to the implementation of the Choosing Wisely recommendations have been examined in practice for other tests, including the commonly ordered tests for rheumatoid factor antibody and anti-nuclear antibodies, as well as advanced imaging (computed tomographic scan, bone scan, or magnetic resonance imaging) for spinal pain.5,6 Using a criteria-based approach to test ordering not only reduces the number of tests that would be ordered but it does so without missing clinically relevant conditions.

Robert Ferrari, MD, MSc (Med), FRCP
Connie Prosser, PhD, FCACB

Author Affiliations: Department of Medicine, University of Alberta, Edmonton, Alberta, Canada (Ferrari); Department of Rheumatic Diseases, University of Alberta, Edmonton, Alberta, Canada (Ferrari); Laboratory Medicine and Pathology, University of Alberta, Edmonton, Alberta, Canada (Prosser).

Corresponding Author: Robert Ferrari, MD, MSc (Med), FRCP, Department of Medicine, University of Alberta, 13-103 Clinical Sciences Bldg, Edmonton, Alberta T6G 2P4, Canada (robertferrari9@gmail.com).


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Characteristics of Decedents in Medicare Advantage and Traditional Medicare
Approximately 25% of all Medicare expenditures are for care received in the last year of life.1 Much research has been done to understand cost and utilization patterns for Medicare beneficiaries at the end of life (EOL).2 However, when assessing EOL costs, most studies focus on decedents with traditional fee-for-service (FFS) Medicare owing to the lack of cost and utilization data for the 30% of Medicare beneficiaries in Medicare Advantage (MA) plans.3 This gap is a cause for concern because utilization and quality of care may differ between MA and FFS beneficiaries.4 6 We sought to examine differences in characteristics of decedents in MA and FFS Medicare based on detailed survey data.

Methods | The Health and Retirement Study (HRS) is a biennial longitudinal survey of a nationally representative cohort of US adults 51 years or older that measures a broad range of questions about health and aging. Between interview cycles, the HRS identifies participants who have died using information from family members and the National Death Index. We included decedents 65 years or older who died between the 1998 and 2012 survey waves and who authorized their HRS responses to be linked to Medicare data. We compared demographic, health, and functional and cognitive characteristics of all HRS decedents enrolled in Medicare FFS and MA plans using χ2 and t test. We performed multivariable ordinal regressions to determine if demographic differences between the Medicare groups explained differences in health, functional, and cognitive status. We used multiple imputation for missing data. The study was exempt from institutional review board approval because the data looked only at decedents. There were no significant differences in results of multivariable analyses using imputed or nonimputed variables (Table 1).

Results | Of the 9385 decedents included in our analysis, 2280 (24.3%) were continuously enrolled in MA plans for the last 6 months of life and 7105 (75.7%) were continuously enrolled in Medicare FFS. The FFS beneficiaries were significantly older than MA beneficiaries at the time of death, and the 2 groups differed with respect to marital status, race, net worth, and educational attainment (Table 1). The MA decedents were less likely to have supplemental insurance compared with FFS decedents, includ-