

Comparing Effectiveness of Evidence-Based Educational Memo with and without Peer-Comparison Feedback at Reducing Vitamin D Screening Among Primary Care Providers – a Randomized Trial

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Research Objective: To evaluate the effect of an evidence-based educational memo with peer-comparison feedback (PC) or without (education memo alone, EM) to encourage primary care providers to reduce low-value screening for Vitamin D deficiency in normal-risk adults.

Study Design: We conducted a pragmatic cluster-randomized trial from October 17, 2018 to April 12, 2019 at 77 primary care practices within a large clinically integrated health system in the Southeastern US. Each practice site was randomly allocated to receive PC or EM. On February 5, 2019, all providers were emailed an evidence-based educational memo, which disclosed the systemwide mean, median, and target Vitamin D test order rates along with a histogram plotting the distribution of rates (all computed during the baseline period from October 17 to December 12, 2018). The memo sent to providers whose practice was assigned to the PC group also included the provider's own baseline Vitamin D test order rate in comparison to peers. We calculated Vitamin D test order rates for each provider in the pre-intervention (December 17, 2018 to February 4, 2019) and post-intervention (February 6, 2019 to April 12, 2019) periods. The primary outcome variable was the change in the provider's two-month Vitamin D test order rate (computed as the difference in rates measured during the post- and pre-intervention period). We calculated descriptive statistics and performed practice-level random effects generalized least squares regression analysis. We used spline functions and their interactions with PC to assess effects of EM and PC memos on change in provider order rates separately for low, mid and high ordering providers (i.e., baseline order rates of 0-50, 51-75, above 75 percentile, respectively).

Population Studied: The sample included 77 practices and 353 providers (249 physicians, 104 advanced practice providers) with ≥ 100 adult (18-65 years old) primary care encounters at baseline.

Principal Findings: Among 82,416 adults with primary care encounters during the pre and post-intervention study period, the mean age was 47 (SD=12.13) and 60% were female. The average Vitamin D test order rates per provider were 5.24% pre-intervention and 4.09% post-intervention, including 4.04% in PC arm and 4.12% in EM arm. In the main adjusted model, Vitamin D test order rates decreased post-intervention ($\beta=-0.21$; $p=0.046$) among providers with high baseline order rates (those above 75 percentile), with a larger decrease for the PC arm compared to the EM arm ($\beta=-0.39$; $p<0.001$).

Conclusions: Provider education with peer comparison feedback reduced Vitamin D test order rates in primary care providers with the highest baseline order rates. For mid-level and low-level baseline prescribers, peer-comparison does not seem to be more effective than generic education.
Implications for Policy or Practice: To reduce unwanted low-value care, health systems should consider targeting resources to provide peer-comparison feedback rather than generic education

alone to modify behavior among the worst offenders. For providers with average or less than average order rates, peer comparison approaches may not deliver the same degree of benefit.