Abstract

**Background:** Effective strategies are needed to curtail overuse that may lead to harm.

**Objective:** To evaluate the effects of clinician decision support redirecting attention to harms and engaging social and reputational concerns on overuse in older primary care patients.

**Design:** 18-month, single-blind, pragmatic, cluster randomized trial, constrained randomization. (ClinicalTrials.gov: NCT04289753).

**Setting:** 60 primary care internal medicine, family medicine and geriatrics practices within a health system from 1 September 2020 to 28 February 2022.

**Participants:** 371 primary care clinicians and their older adult patients from participating practices.

**Intervention:** Behavioral science-informed, point-of-care, clinical decision support tools plus brief case-based education addressing the 3 primary clinical outcomes (187 clinicians from 30 clinics) were compared with brief case-based education alone (187 clinicians from 30 clinics). Decision support was designed to increase salience of potential harms, convey social norms, and promote accountability.

**Measurements:** Prostate-specific antigen (PSA) testing in men aged 76 years and older without previous prostate cancer, urine testing for nonspecific reasons in women aged 65 years and older, and overtreatment of diabetes with hypoglycemic agents in patients aged 75 years and older and hemoglobin A₁c (HbA₁c) less than 7%.

**Results:** At randomization, mean clinic annual PSA testing, unspecified urine testing, and diabetes overtreatment rates were 24.9, 23.9, and 16.8 per 100 patients, respectively. After 18 months of intervention, the intervention group had lower adjusted difference-in-differences in annual rates of PSA testing (-8.7 [95% CI, -10.2 to -7.1]), unspecified urine testing (-5.5 [CI, -7.0 to -3.6]), and diabetes
overtreatment (-1.4 [CI, -2.9 to -0.03]) compared with education only. Safety measures did not show increased emergency care related to urinary tract infections or hyperglycemia. An HbA1c greater than 9.0% was more common with the intervention among previously overtreated diabetes patients (adjusted difference-in-differences, 0.47 per 100 patients [95% CI, 0.04 to 1.20]).

**Limitation:** A single health system limits generalizability; electronic health data limit ability to differentiate between overtesting and underdocumentation.

**Conclusion:** Decision support designed to increase clinicians’ attention to possible harms, social norms, and reputational concerns reduced unspecified testing compared with offering traditional case-based education alone. Small decreases in diabetes overtreatment may also result in higher rates of uncontrolled diabetes.

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