Association of Appointment Times in the Primary-Care Clinic with Clinician Ordering and Patient Completion of Breast- and Colorectal-Cancer Screening

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Importance of the study: As the clinic day progresses, clinicians may fall behind schedule and experience decision fatigue. However, the association of the time of day at which a patient is seen with cancer screening rates is unknown.

Objective: To evaluate whether there is an association between appointment times in the primary-care clinic and clinician ordering and patient completion of breast- and colorectal-cancer screening.

Design, Setting, and Participants: Retrospective, quality-improvement study of 33 primary-care practices in Pennsylvania and New Jersey, US, from September 1, 2014, to August 31, 2016. Participants included adults eligible for breast- or colorectal-cancer screening. Data analysis was conducted from April 24, 2018, to November 8, 2018.

Exposures: The time of the patient's first clinic appointment with a primary-care physician during the study period.

Main Outcomes and Measures: Primary outcome was the order by the clinician during the appointment of a screening test. Secondary outcome was patient completion of the tests within one year of their appointments.

Results: Among the 19,254 patients eligible for breast-cancer screening, the mean (SD) age was 60.2 (6.9) years; 19,254 (100%) were female, 11,682 (60.7%) were white, and 5,495 (28.5%) were black. Screening-test order rates were highest at 8 AM, at 63.7%. They decreased throughout the morning to 48.7% at 11 AM, increased to 56.2% at noon, and then decreased to 47.8% at 5 PM (adjusted odds ratio [OR] for overall trend, 0.94; 95% CI, 0.93-0.96; P < .001). Trends in screening-test completion rates were similar: for those seen at 8 AM, 33.2% completed the tests, but the figure decreased according to the time of day of the first appointment to 17.8% for those seen at 5 PM (adjusted OR, 0.95; 95% CI, 0.94-0.97; P < .001). Among the 33,468 patients eligible for colorectal-cancer screening, the mean (SD) age was 59.6 (7.4) years; 18,672 (55.8%) were female, 22,157 (66.2%) were white, and 7,296 (21.8%) were black. Screening-test order rates were highest at 8 AM, at 36.5%,, decreased to 31.3% by 11 AM, increased at noon to 34.4%, and then decreased to 23.4% at 5 PM (adjusted OR, 0.94; 95% CI, 0.93-0.95; P < .001). Trends in screening-test completion rates were similar: 28.0% of patients seen at 8 AM completed the tests, and the figures decreased to 17.8% of those seen at 5 PM (adjusted OR, 0.97; 95% CI, 0.96-0.98; P < .001).

Conclusions and Relevance: Clinician ordering of cancer-screening tests significantly decreased as the clinic day progressed. Patient completion of cancer-screening tests within one year of these appointments was also reduced for those whose primary-care appointment times were later in the day. Future interventions that target improvements in cancer screening should consider how time of day of clinician appointments may influence these behaviours.