ELECTRONIC MEDICAL RECORD (EMR) REMINDER FOR HIV SCREENING

Evidence-Informed Structural Intervention

INTERVENTION DESCRIPTION

Goals of Intervention
- Increase HIV testing

Target Population
- Clinic patients

Brief Description

Electronic Medical Record (EMR) Reminder for HIV Screening facilitates universal HIV testing by adding a routine passive EMR reminder for all patients aged 13–65 years at an academic hospital-based primary care practice. The provider reminder appears on the home page of each patient's EMR in small red text that reads "HIV antibody" alongside other clinical reminders. If a test is performed, the reminder automatically disappears. The practitioner can also manually enter testing information if the patent declines testing or receives a test at a different institution.

Theoretical Basis
None reported

Intervention Duration
- Ongoing

Intervention Setting
- Hospital-based primary care practice

Deliverer
- Healthcare staff

Delivery Methods
- Provider reminders

Structural Components
- Access
    - o Increased access to HIV testing
- Capacity building -- Technology
    - o Routine passive reminder for HIV screening added to EMR

INTERVENTION PACKAGE INFORMATION

An intervention package is not available at this time. Please contact **Colleen Kershaw,** Section of Infectious Diseases and International Health, Dartmouth-Hitchcock Medical Center, One Medical Center Drive, Suite 5C, Lebanon, New Hampshire 03766.

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EVALUATION STUDY AND RESULTS

Study Location Information
The original evaluation study was conducted in Boston, MA between January 2012 and October 2015.

Key Intervention Effects
- Increased HIV testing

Recruitment Settings
- Hospital-based primary care practice

Eligibility Criteria
Patients were included in the analysis if they were between the ages of 18–65 years, a patient in the adult internal medicine practice, had at least one visit in the practice during the 2.5-year study period, and had not been tested previously for HIV.

Study Sample
Participants in the post-implementation cohort (i.e., individuals who had a care visit in the practice after EMR reminder implementation, n = 20,640) had the following characteristics:
- *62% white, 17% black or African American, 12% other; 7% Asian*
- *58% female, 42% male*
- *8% <25 years old, 22% 26-35 years old, 19% 36-45 years old, 51% 46-65 years old*

Assignment Method
- Not applicable

Comparison
This study uses a serial, cross-sectional clinic design. Participants in the post-EMR implementation period (i.e., participants who had a care visit between October 30, 2013 and October 30, 2015) were compared to participants in the pre-implementation cohort (i.e., participants who had a care visit between January 1, 2012 and October 29, 2013). A patient could appear in both cohorts (pre and post) if he or she had at least one visit in the pre-implementation period, did not have HIV testing in the pre-implementation period, and had a visit in the post-implementation period. Because of this possibility, the observations used in the analysis were not independent when comparing the cohort samples (pre vs. post).

Relevant Outcomes Measured
- HIV testing was measured as the proportion of patients receiving an HIV test before and after EMR implementation
- HIV incidence was measured as the proportion of patients with a new HIV diagnosis before and after EMR implementation

Participant Retention

Because participant retention is not a criterion for the Structural Interventions (SI) chapter, the Prevention Research Synthesis project does not evaluate that information.

Significant Findings on Relevant Outcomes
- HIV incidence was significantly higher in the post-implementation period compared to the pre-implementation period (0.7% vs. 0.3%, p = 0.0001).
- The percentage of clients receiving HIV testing was significantly higher among post-implementation participants than pre-implementation participants (30.7% vs. 15.3%, respectively, RR = 2.02, 95% CI= 1.95–2.09, p < 0.0001). Additionally, HIV testing was also significantly higher among post-implementation participants than pre-implementation participants, respectively, for the following subgroups:
  - Age:
    - Participants age ≤ 25 (34.3% vs. 22.5%, RR = 1.52, 95% CI=1.38–1.69, p < 0.0001)
    - Participants ages 26-35 (36.9% vs. 23.1%, RR = 1.61, 95% CI= 1.53–1.71, p < 0.0001)
    - Participants ages 36-45 (31.0% vs. 15.8%, RR = 1.98, 95% CI= 1.83–2.13, p < 0.0001)
    - Participants ages 46-65 (27.2% vs. 9.7%, RR = 2.81, 95% CI= 2.65–2.99, p < 0.0001)
  - Gender:
    - Female participants (30.5% vs. 14.0%, RR = 2.19, 95% CI=2.10–2.30, p < 0.0001).
    - Male participants (30.8% vs. 17.3%, RR = 1.82, 95% CI=1.73–1.91, p < 0.0001)
  - Race:
    - White participants (27.1% vs. 13.9%, RR = 1.97, 95% CI=1.88–2.07, p < 0.0001).
    - Black participants (41.0% vs. 21.5%, RR = 1.93, 95% CI=1.81–2.06, p < 0.0001).
    - Asian participants (30.3% vs. 14.5%, RR = 2.11, 95% CI= 1.85–2.40, p < 0.0001).
    - Participants of other races (33.4% vs. 14.6%, RR = 2.31, 95% CI= 2.12–2.51, p < 0.0001).
  - Language:
    - English speaking participants (30.4% vs. 15.3%, RR= 2.01, 95% CI= 1.94–2.08, p < 0.0001).
    - Non-English-speaking participants (37.5% vs. 17.2%, RR= 2.20, 95% CI= 1.89–2.56, p < 0.0001).
  - Household Incomes:
    - Participants living in zip codes with household incomes lower than the median income of $67,338 (34.9% vs. 19.1%, RR=2.28, 95% CI= 2.16–2.40, p < 0.0001).
    - Participants living in zip codes with household incomes higher than the median income of $67,338 (26.9% vs. 11.9%, RR= 1.85, 95% CI= 1.77–1.93, p < 0.0001).
- In the sensitivity analysis, HIV testing was significantly higher among new patients in the post-implementation period compared to those in the pre-implementation period (32.9% vs. 22.5%, RR= 1.46, p = 0.0001).

Strengths
- None identified

Considerations

Additional significant positive findings on non-relevant outcomes
- None reported

Non-significant findings on relevant outcomes
- None reported

Negative findings
- None reported

Other related findings
- Among attending physicians, the percentage of patients receiving HIV testing was significantly higher in the post-implementation period compared to the pre-implementation period (29.5% vs 13.9%, RR= 2.14, 95% CI=2.05–2.23, p = 0.0001).
- Among resident physicians, the percentage of patients receiving HIV testing was significantly higher in the post-implementation period compared to the pre-implementation period (36.9% vs 21.7%, RR=1.72, 95% CI =1.60–1.84, p = 0.0001).
- During the time period between June 26, 2012 (the date of change in Massachusetts law requiring written consent for HIV testing), up to the date of the reminder implementation, the percentage of HIV testing among patients in the practice was 16.5% (4094/24842). In the study period after the reminder, HIV testing proportion increased to 31.3% (6505/20817), p-value = 0.0001.

Implementation-related findings
- None reported

Adverse events
- None reported

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REFERENCES AND CONTACT INFORMATION

Kershaw, C., Taylor, J. L., Horowitz, G., Brockmeyer, D., Libman, H., Kriegel, G., & Ngo, L. (2018). Use of an electronic medical record reminder improves HIV screening. *BMC Health Services Research, 18*(1):14.

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