Examining the Effectiveness of an Adaptive Implementation Intervention to Improve Uptake of the VA Suicide Risk Identification Strategy (PEC 19-303)

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QUERI RISK ID Statistical Analysis

Primary Aim. Determine if the addition of Audit and Feedback in Phase 1 (February 2021 – November 2021) significantly improved eCSSRS1 and eCSRE1 adherence. To determine the effect of Audit & Feedback on Phase 1, we compared group 6 (Implementation As Usual [IAU] in Phase 1; N=66) to Groups 2, 3, 4, and 5 combined (Audit & Feedback [AF] in Phase 1; N=67). We used all available data and modeled monthly 1) eCSSRS1 and 2) eCSRE1 adherence across the entire study period (January 2021 – March 2024) for each group (IAU and AF). We chose to estimate these trajectories using natural cubic B-spline transformations on time to allow for smoothly changing trajectories and not restrict the estimation to a parametric form (e.g., polynomials). Internal knot selection for the B-splines was based on visible change points in descriptive longitudinal plots – these were November 2021, January 2022, November 2022, and March 2023 (or months 11, 13, 23, and 27). These 4 internal knots result in 5 knot spans and 5 degrees of freedom for each group/outcome combination modeled. Each outcome was then modeled as a function of group, the B-spline transformations, and group by B-spline transformation interactions so that we could estimate a trajectory for each group. These mixed effects models included a random intercept (i.e., random site effect). Contrasts were constructed within each model and were used to estimate the change in adherence for each group from February 2021 – November 2021 and the difference in adherence change between the groups, which was our hypothesis test of interest. These estimated differences in change were reported with 95% confidence intervals (CIs). For both estimates, the difference in change was calculated as the AF group minus the IAU group.

Secondary Aim 2a. For sites that responded to AF during Phase 1, determine if switching to AF Light during Phase 2 (January 2022 – July 2023) resulted in a significant decrease in eCSSRS1 and eCSRE1 adherence. To determine the effect of switching to AF Light in Phase 2, we compared Group 2 (Continued AF; N=6) to Group 3 (Switched to AF Light; N=6). We used the same approach as was used for the Primary Aim. Monthly eCSSRS and eCSRE adherence was modeled across the entire study period as a function of group (Continued AF and Switch to AF Light), B-spline transformations on time, and group by B-spline transformation interactions, so that we could estimate a trajectory for each group. Knot selection was the same as for the Primary Aim. Contrasts were constructed within each model and were used to estimate the change in adherence for each group from January 2022 – July 2023 and the difference in adherence change between the groups, which was our hypothesis test of interest. These estimated differences in change were reported with 95% CIs. For both estimates, the difference in change was calculated as the Continued AF group minus the Switch to AF Light group.

Secondary Aim 2b. For sites that did not respond to AF during Phase 1, determine if the addition of External Facilitation (EF) during Phase 2 (January 2022 – July 2023) resulted in a significant increase in eCSSRS1 and eCSRE1 adherence. To determine the effect of the addition of EF in Phase 2, we compared Group 4 (Continued AF; N=38) to Group 5 (Added EF; N=17). We used the same approach as was used for the Primary Aim. Monthly eCSSRS and eCSRE adherence was modeled across the entire study period as a function of group (Continued AF and Added EF), B-spline transformations on time, and group by B-spline transformation interactions, so that we could estimate a trajectory for each group. Knot selection was the same as for the Primary Aim. Contrasts were constructed within each model and were used to estimate the change in adherence for each group from January 2022 – July 2023 and the difference in adherence change between the groups, which was our hypothesis test of interest. These estimated differences in change were reported with 95% CIs. For both estimates, the difference in change was calculated as the Continued AF group minus the Added EF group.