Appendix E: Analytic Details

Details of intent-to-treat effect estimation

To calculate the intent-to-treat (ITT) cumulative incidence using a G-computation approach, we first fitted a Cox proportional hazards regression model including available baseline covariates for prior arrest, stable living, age, and injury intent (see Table 1 for hazard ratios from the Cox model adjusting for baseline covariates). We then created two versions of the HiFi study population with baseline covariates: one in which all patients had been assigned to the treatment arm, and another in which all patients had been assigned to the control arm. For each of these two new datasets, and for each study participant, we obtained a person-specific estimate of the cumulative incidence based on the fitted Cox model and the baseline covariate values for this participant. Then, within each dataset, we averaged all person-specific estimates to obtain adjusted estimates of the ITT cumulative incidence corresponding to the treatment and control groups. The relative risk was calculated by dividing the adjusted estimate of the ITT cumulative incidence at 1 year for the intervention group to the corresponding estimate for the control group. This process was repeated 5,000 times to calculate bootstrapped percentile-based confidence intervals for both adjusted cumulative incidences as well as the relative risk.

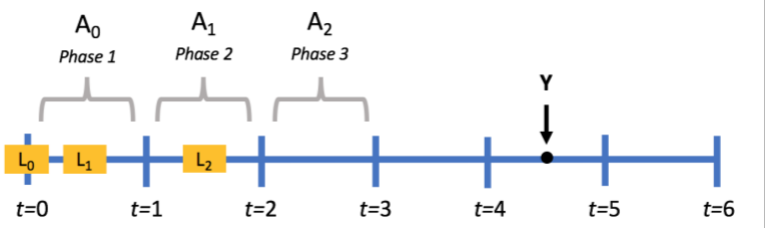
Table 1: Hazard ratios from the Cox model adjusting for baseline covariates.

	Hazard Ratios (95% CI)	
	1 year	**2 years**
Arrest		
Intervention	1.27 (0.83, 1.92)	1.26 (0.86, 1.85)
Prior arrest	8.27 (3.33, 20.57)	4.53 (2.39, 8.56)
Age	0.97 (0.95, 0.99)	0.97 (0.95, 0.99)
Injury intent	1.13 (0.96, 1.32)	1.12 (0.97, 1.30)
Stable living	0.55 (0.35, 0.85)	0.56 (0.37, 0.84)
Injury		
Intervention	1.70 (0.89, 3.23)	1.63 (0.91, 2.91)
Prior injury	2.63 (1.34, 5.18)	3.16 (1.67, 5.97)
Age	0.97 (0.94, 1.01)	0.99 (0.96, 1.02)
Injury intent	0.84 (0.62, 1.13)	0.92 (0.72, 1.17)
Stable living	0.51 (0.27, 0.98)	0.43 (0.24, 0.77)

Details of per-protocol effect estimation

For the G-computation per-protocol effect (PPE) analysis, main-terms logistic regression was used to estimate the required sequential regressions. This analysis begins by estimating the probability of events (i.e., arrests/injuries) during the final time period given all baseline and time-varying covariates. Because few events were observed during the final time periods, we evaluated the number of non-zero outcomes for each sequential regression and used the logistic rule-of-thumb to adjust for one covariate per ten non-zero outcomes. These covariates were selected in a forward stepwise fashion based on Akaike Information Criteria (AIC). To account for missingness in the living stable variable, we included an intervention node as an indicator for missingness in both the 1- and 3-month surveys in our ordering of intervention assignment, covariates, outcome nodes and allowed them to be informed by prior nodes and covariate values (Figure 1). Confidence intervals were computed using a percentile-based nonparametric bootstrap based on 500 resamples. The two-sided p-values for the hypothesis test that the PPE risk ratio equals 1was computed based on a Wald test statistic that used a bootstrap-estimated standard error estimate for the log risk ratio. We additionally present odds ratios of the baseline covariate-adjusted marginal structural model used in the first step of this analysis to provide additional insight into the relative importance of these variables in our analysis (Table 2).

Figure 1: Ordering of variables for the per-protocol effect analysis



$A_0 \longrightarrow L_0 \longrightarrow A_1 \longrightarrow L_1 \longrightarrow A_2 \longrightarrow Y_1 \longrightarrow A_3 \longrightarrow L_2 \longrightarrow A_4 \longrightarrow Y_2 \longrightarrow A_5 \longrightarrow Y_3 \longrightarrow Y_4 \longrightarrow Y_5 \longrightarrow Y_6$

Note: A_0 = randomization; L_0 = baseline covariates (age, injury intent, stable living and prior arrest); A_1 = indicator for missingness in stable living at 1 month; L_1 = stable living at 1 month; A_2 = engagement with the intervention during Phase 1; Y_x = indicator for arrest during Phase 1; A_3 = indicator for missingness in stable living at 3 months; L_2 = stable living at 3 months; A_4 = engagement with the intervention during Phase 2; Y_2 = indicator for arrest during Phase 2; A_5 = engagement with the intervention during Phase 3; Y_3 = indicator for arrest during Phase 3; Y_4 = indicator for arrest between t=3 and t=4; Y_5 = indicator for arrest between t=4 and t=5; Y_6 = indicator for arrest between t=5 and t=6.

Table 2: Odds ratios for the marginal structural logistic regression model adjusting for baseline covariates

	Odds Ratio (95% CI)	
	1 year	**2 years**
Arrest		
Intervention	1.23 (0.73, 2.16)	1.27 (0.73, 2.16)
Prior arrest	1.96 (1.54, 3.73)	2.10 (1.43, 2.98)
Age	0.99 (0.97, 1.00)	0.99 (0.97, 1.00)
Injury intent	1.27 (0.87, 2.11)	1.34 (0.89, 1.97)
Stable living	0.48 (0.31, 0.78)	0.56 (0.37, 0.80)
Injury		
Intervention	1.75 (0.77, 3.82)	1.73 (0.86, 3.49)
Prior injury	1.23 (0.84, 2.25)	1.77 (0.90, 1.93)
Age	0.99 (0.97, 1.01)	0.99 (0.98, 1.01)
Injury intent	0.84 (0.40, 1.32)	0.67 (0.50, 1.22)
Stable living	0.62 (0.44, 1.34)	0.93 (0.47, 1.22)