Supplemental Online Content

Iturralde E, Weisner CM, Adams SR, et al. Patterns of health care use 5 years after an intervention linking patients in addiction treatment with a primary care practitioner. *JAMA Netw Open.* 2022;5(11):e2241338. doi:10.1001/jamanetworkopen.2022.41338
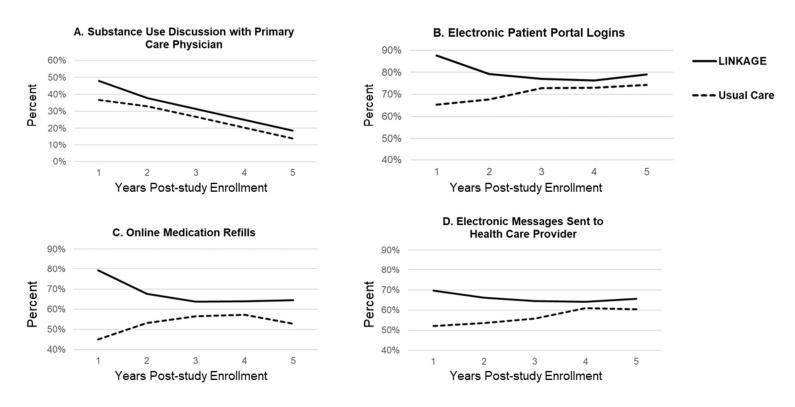
This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. Most Common Participant Emergency Department Diagnoses Coded as Emergent, Nonemergent, and Substance Use-Related

Classification	Primary Emergency Department Diagnosis	
Emergent	Chest pain, unspecified Abdominal pain, unspecified site Other chest pain Syncope and collapse Unspecified septicemia Abdominal pain, other specified site Headache Issue of repeat prescriptions Other malaise and fatigue Lumbago Nausea with vomiting Painful respiration Urinary tract infection, site not specified	Dizziness and giddiness Diarrhea Other convulsions Unspecified abdominal pain Unspecified gastritis and gastroduodenitis, without mention of hemorrhage Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled Epigastric pain
Non-emergent	Headache Issue of repeat prescriptions Other malaise and fatigue Lumbago Nausea with vomiting Urinary tract infection, site not specified Dizziness and giddiness Diarrhea Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled Calculus of gallbladder without mention of cholecystitis, without mention of obstruction Pneumonia, organism unspecified Unspecified viral infection	Chronic or unspecified duodenal ulcer with hemorrhage, without mention of obstruction Esophageal reflux Low back pain Migraine, unspecified, without mention of intractable migraine without mention of status migrainosus Rash and other nonspecific skin eruption Other and unspecified noninfectious gastroenteritis and colitis Pain in joint, shoulder region Pyelonephritis, unspecified
Substance Use-related	Alcohol withdrawal Alcohol abuse, unspecified Acute alcoholic intoxication in alcoholism, unspecified Other and unspecified alcohol dependence, unspecified Acute alcoholic intoxication in alcoholism, continuous Alcohol dependence with withdrawal, unspecified Alcohol abuse, continuous Alcohol withdrawal delirium Drug withdrawal Other, mixed, or unspecified drug abuse, unspecified Alcohol dependence, uncomplicated Alcohol abuse with intoxication, unspecified	Alcohol abuse, uncomplicated Alcohol dependence with intoxication, unspecified Alcoholic gastritis, without mention of hemorrhage Amphetamine and other psychostimulant dependence, unspecified Alcohol dependence with withdrawal, uncomplicated Other and unspecified alcohol dependence, episodic Alcohol abuse with intoxication, uncomplicated Alcohol abuse, episodic

eFigure 2. Estimated Percentage of Participants by Group With Health Care System Engagement per Year of Study Follow-up

Marginal percent estimates by group were plotted from a modified Poisson generalized estimating equations model per outcome including time as a categorical variable, a time x group interaction term, and age, Charlson comorbidity index, and baseline emergent-type emergency department use.

eTable 1. Health System Engagement Associated With Study Group Using Multiply Imputed Data

Time	Substance use discussion with primary care provider[a]			Electronic patient portal logins			Online medication refills			Secure electronic messages sent to health care provider		
	RR	(95% CI)	*P* value	RR	(95% CI)	*P* value	RR	(95% CI)	*P* value	RR	(95% CI)	*P* value
Yr. 1	1.26	(0.99-1.60)	.06	1.32	(1.18-1.47)	< .001	1.70	(1.45-1.99)	< .001	1.32	(1.13-1.54)	< .001
Yr. 2	1.09	(0.83-1.44)	.54	1.16	(1.02-1.31)	.02	1.23	(1.05-1.46)	.01	1.21	(1.04-1.42)	.02
Yr. 3	—		—	1.06	(0.94-1.20)	.33	1.11	(0.93-1.32)	.24	1.12	(0.95-1.33)	.19
Yr. 4	—		—	1.07	(0.95-1.20)	.27	1.08	(0.91-1.27)	.38	1.05	(0.89-1.24)	.55
Yr. 5	1.26	(0.76-2.07)	.37	1.05	(0.94-1.17)	.39	1.13	(0.96-1.33)	.13	1.05	(0.90-1.23)	.54
All years (1-5)[c]	1.20	(0.99-1.45)	.07	1.12	(1.03-1.21)	.01	1.23	(1.09-1.38)	.001	1.12	(1.00-1.25)	.06

Time: year since study enrollment; RR: risk ratio; CI: confidence interval.

[a] Telephone interviews were conducted at 1, 2, and 5 years after study enrollment.

[b] Group differences were estimated from a modified Poisson regression model per follow-up time point, adjusting for baseline age, Charlson comorbidity index, and emergent-type ED use.

[c] Group differences were estimated from a modified Poisson generalized estimating equations model, adjusting for (linear) time and baseline age, Charlson comorbidity index, and emergent-type ED use.

eTable 2. Health System Engagement Associated With Study Group, Complete Cases, No Deaths

| | Group differences[b] | | | | | | | | | | | |
| | Substance use discussion with primary care provider[a] | | | Electronic patient portal logins | | | Online medication refills | | | Secure messages sent to health care provider | | |
Time	RR	(95% CI)	P value	RR	(95% CI)	P value	RR	(95% CI)	P value	RR	(95% CI)	P value
Yr. 1	1.50	(1.08-2.07)	.02	1.35	(1.17-1.56)	< .001	2.05	(1.61-2.61)	< .001	1.47	(1.18-1.84)	.001
Yr. 2	1.24	(0.85-1.79)	.26	1.18	(1.00-1.38)	.048	1.28	(1.04-1.59)	.02	1.36	(1.09-1.69)	.01
Yr. 3		—	—	1.07	(0.93-1.23)	.35	1.12	(0.91-1.38)	.28	1.16	(0.94-1.44)	.17
Yr. 4		—	—	1.10	(0.95-1.27)	.21	1.20	(0.99-1.45)	.07	1.11	(0.91-1.34)	.30
Yr. 5	1.19	(0.59-2.41)	.62	1.06	(0.93-1.21)	.40	1.18	(0.95-1.46)	.13	1.09	(0.90-1.33)	.36
All years (1-5)[c]	1.32	(1.02-1.69)	.03	1.16	(1.03-1.30)	.01	1.42	(1.21-1.68)	< .001	1.22	(1.04-1.43)	.02

Time: year since study enrollment; RR: risk ratio; CI: confidence interval.

[a] Telephone interviews were conducted at 1, 2, and 5 years after study enrollment.

[b] Group differences were estimated from a modified Poisson regression model per follow-up time point, adjusting for baseline age, Charlson comorbidity index, and emergent-type ED use.

[c] Group differences were estimated from a modified Poisson generalized estimating equations model, adjusting for (linear) time and baseline age, Charlson comorbidity index, and emergent-type ED use.

eTable 3. Five-Year Health Care Use by Study Groups, Multiply Imputed Data

Health care service use	Group differences in annual change over the 5 years since study enrollment[a]			Time-adjusted group differences across 5 years post-study enrollment[b]		
	Risk Ratio	(95% CI)	P value	Risk Ratio	(95% CI)	P value
Primary care	1.03	(1.00-1.07)	.03	1.00	(0.94-1.06)	.97
Emergency department	0.97	(0.90-1.06)	.52	0.92	(0.76-1.10)	.34
Emergent	0.95	(0.78-1.16)	.63	1.03	(0.70-1.53)	.87
Non-emergent	1.00	(0.84-1.18)	.97	0.77	(0.58-1.01)	.06
Substance-related	0.86	(0.70-1.06)	.16	0.84	(0.51-0.99)	.48

CI: confidence interval.

[a] Group × linear time effect; modified Poisson generalized estimating equations models included (linear) time, a time x group interaction term, and baseline age, Charlson comorbidity index, and emergent-type emergency department use.

[b] Time-adjusted group effect; GEE models included (linear) time, no interaction term, and baseline age, Charlson comorbidity index, and emergent-type emergency department use.

eTable 4. Five-Year Health Care Use by Study Group, Complete Cases, No Deaths

Health care service use	Group differences in annual change over the 5 years since study enrollment[a]			Time-adjusted group differences across 5 years post-study enrollment[b]		
	Risk Ratio	(95% CI)	*P* value	Risk Ratio	(95% CI)	*P* value
Primary care	1.05	(1.01-1.09)	.01	0.98	(0.91-1.05)	.60
Emergency department	0.98	(0.87-1.10)	.69	0.89	(0.68-1.16)	.37
Emergent	0.81	(0.62-1.06)	.12	1.34	(0.79-2.28)	.28
Non-emergent	1.12	(0.89-1.39)	.34	0.60	(0.39-0.93)	.02
Substance-related	0.71	(0.56-0.92)	.01	0.73	(0.35-1.52)	.40

CI: confidence interval.
[a] Group × linear time effect; modified Poisson generalized estimating equations models included (linear) time, a time x group interaction term, and baseline age, Charlson comorbidity index, and emergent-type emergency department use.
[b] Time-adjusted group effect; modified Poisson generalized estimating equations models included (linear) time, no interaction term, and baseline age, Charlson comorbidity index, and emergent-type emergency department use.