

Evidence for the Harm Reduction Potential of ENDS and "Sick Quitter/Switcher" Effects from a Linked Survey and Electronic Health Records Study.

Derek A. POPE, PhD¹, Jason N. KENNEDY, MS², Corey Neff, MPH², Piotr M. Wargocki, PhD³, Chris Freehauf, BS², Jenny Cai, MBA, MA², Sonam D. Lama, MPH², Yan Wang¹, Mingda Zhang, PhD¹

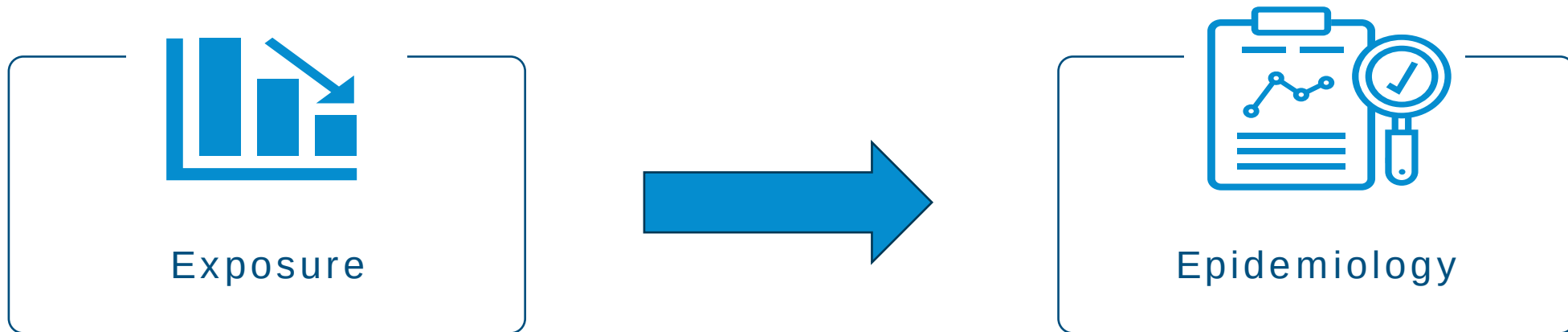
¹Altria Client Services LLC, Richmond, VA, USA; ²Oracle Health and Life Sciences, Austin, TX, USA;

³Oracle Health and Life Sciences, Paris, France

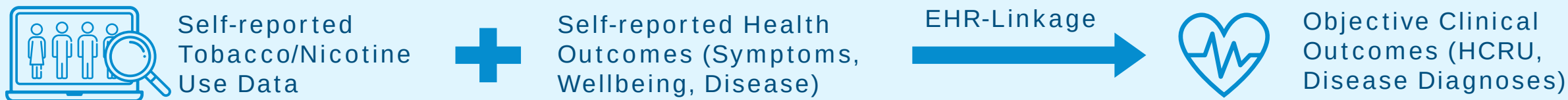
TSRC 2026 Annual Conference, September 22, 2026



Closing the Knowledge Gap Between Exposure and Epidemiology



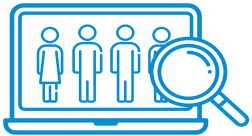
The objective was to conduct a hybrid survey-retrospective EHR RWE Study



to evaluate the tobacco harm reduction potential of quitting tobacco or switching to ENDS compared to continuing to smoke cigarettes

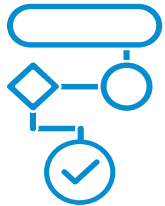
EHR=Electronic Health Records; HCRU=healthcare resource utilization; RWE=Real-world Evidence.

Key Findings & Summary



Survey-EHR Linkage

- Viable approach for RWE studies on SFP transitions and short-term health outcomes that circumvents lack of product use and exposure data in EMR



Divergence of Findings

- Better self-reported respiratory symptoms and wellness after quitting/switching
- Worse self-reported ever disease and pre-/post-index EHR outcomes



Reverse Causation (“Sick Quitter and Sick Switcher” Effects)

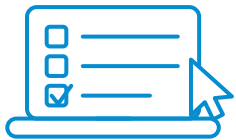
- Substantially complicates interpretation of THR RWE studies
- Recommendations: inclusion of self-reported outcomes, quitting group, and pre-/post-index EHR outcomes, longer-term follow-up, focus on incidence

EHR=Electronic Health Records; EMR=Electronic Medical Records; RWE=Real-world evidence; SFP=Smokefree products;; THR=Tobacco harm reduction.



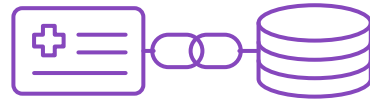
Methods

Self-reported tobacco/nicotine use history and health outcomes directly from consumers; access retrospective EHR data following direct participant consent



Online Survey

- Ages 35-65
- ≥10 years of established cigarette smoking
- Quit/switched for ≥6 months but ≤5 years



Linked-EHR

- Data 12 months before and ≥6 months after index date

Sample Sizes Across the Full Study Flow

	Total clicked on the survey link ¹	Counts 16,768
	Total that completed the screener	Counts 14,052
	Total that passed screener and consented to participate	Counts 2,893
	Registered to retrieve EHR data ²	Counts 1,083

Sample Sizes by Group Across Cohorts

	Continuing Smokers (CS) Counts	ENDS Switchers (ES) Counts	Quitters (QT) Counts	Total Counts
Completed main survey (Survey Cohort)	1,312	744	417	2,473
Linked-EHR Cohort (Matched with EHR data)	352	329	192	873

EHR=Electronic health records; ENDS=Electronic nicotine delivery system.

1. Participants that were recruited from the marketplace completed a pre-screener prior to clicking on the survey link. A total of 259,038 clicked on the pre-screener via the marketplace recruitment approach.

2. Participants provided separate consent to retrieve their EHR data from Health Information Exchanges.

Final Survey and Linked-EHR Cohorts included US adults age 35-65 and reported ≥10 years of regular smoking; CS=Current cigarette smoking, no use of ENDS and no more than occasional use of other smokefree products in the past 6-months; ES=Stopped smoking and switched to exclusive ENDS use for at least the past 6 months but within the last 60 months, switched to ENDS within 1 year of stopping smoking, no more than occasional use of combustible products other than cigarettes in the past 6 months; QT=Stopped smoking for at least the past 6 months but within the last 60 months, no ENDS use in the past 6 months, and no more than occasional use of other products in the past 6 months.

Linking Survey & EHR



Recruit U.S. adult participants ages 35-65, ≥10-year history of cigarette smoking, and are one of the following:

- Continuing Smokers (CS)
- ENDS Switchers (ES)
- Quitters of Tobacco and Nicotine Products (QT)

1

2



- Eligible participants **complete online survey**: detailed tobacco and nicotine product histories, self-reported health outcomes and behaviors
- **Provide consent** for **EHR linking**



EHR Fetching

- Fetching of participant EHR via **Health Information Exchanges**
- **All available** medical records for each participant are fetched

3

4



- Survey / EHR linked datasets **de-identified**
- **De-identified data** variables transferred to study database



Oracle Health & Life Sciences Harm Reduction, RWD, and medical experts analyze extracted linked data and deliver regulatory ready study data and report

5

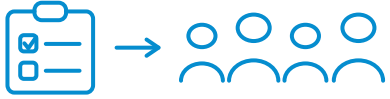
EHR=Electronic Health Records; ENDS=Electronic nicotine delivery system; RWD=Real-world data.



Altria

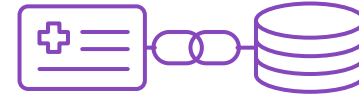
Altria Client Services & Oracle Health & Life Sciences | Derek Pope, Jason Kennedy et al. | TSRC 2026 | September 22nd, 2026

Outcomes



Online Survey

- **Sociodemographics**
- **Tobacco/nicotine use/exposure**
 - Frequency/intensity
 - Duration
 - Timing
- **Respiratory Symptoms Experience Scale (RSES)**
- **PROMIS-10 health & wellbeing**
- **Health-related behavior**
 - Diet
 - Exercise
 - Alcohol use
- **Ever disease diagnosis**
 - Respiratory
 - Cardiovascular
 - Dental
 - Other Diseases



Linked-EHR

All outcomes assessed pre- and post-index (i.e., quitting/switching)

- **All-cause HCRU**
 - Hospitalizations
 - ER visits
 - Physician office visits
- **Disease diagnosis**
 - Charlson Comorbidity Index (CCI)
 - Cardiovascular
 - Respiratory
 - Dental
 - Other Diseases

EHR=Electronic Health Records; HCRU=Healthcare Resource Utilization; PROMIS-10=Patient-Reported Outcomes Measurement Information System® Global Health 10 scale



Analytic Approach

1. Descriptive Analyses



Online Survey Cohort

Conducted pre- and post-Inverse Probability of Treatment Weighting (IPTW)

- Age, sex, race/ethnicity, income, urbanicity, marital status, years smoked



Linked-EHR Cohort

Conducted pre- and post-IPTW

- IPTW also included pre-index CCI and COPD
- Descriptives analyses both pre- and post-index (i.e., quitting or switching)
- *Incident post-index outcomes also examined*

2. Multivariable Regression Analyses

Adjusted for the same variables included in IPTW

- Adjusted linear regressions for continuous outcomes (RSES, PROMIS-10)
- Logistic for binary categories (Ever Disease: yes/no)

Adjusted for the same variables included in IPTW

- Conducted pre- and post-index
 - Logistic for binary categories (Disease: yes/no)
 - Poisson regressions for counts (# of HCRU visits)
- Cox proportional hazards for time-to-event (time to first diagnosis)

CCI=Charlson Comorbidity Index; COPD=Chronic Obstructive Pulmonary Disease; EHR=Electronic Health Records; HCRU=Healthcare Resource Utilization; IPTW=Inverse Probability of Treatment Weighting; PROMIS-10=Patient-Reported Outcomes Measurement Information System® Global Health 10 scale; RSES=Respiratory Symptoms Experience Scale.





Summary of Findings

Better Outcomes for QT/ES vs. CS

Worse Outcomes for QT/ES vs. CS



Online Survey Cohort

- Lower RSES Scores
- Higher PROMIS-10 Global Physical Health Scores
- Higher PROMIS-10 General Health Scores (QT only)

- Higher ever CVDs
- Higher ever dental diseases
- Higher ever other diseases
- Higher ever respiratory diseases (QT only)



Linked-EHR Cohort

- Lower pre-index any respiratory disease (ES only)

- Higher pre- and post-index HCRU
- Higher pre-index any CVD and any mental health diagnosis (ES only)
- Higher post-index any CVD diagnosis
- Higher post-index any respiratory disease diagnosis (QT only)
- Quicker time to hospitalization
- Quicker time to any CVD diagnosis
- Quicker time to multiple, specific CVD diagnoses (QT only)
- Quicker time to COPD diagnosis (QT only)
- Higher rates of incident post-index CVD diagnoses (Multiple CVDs for QT; only Hypercholesterolemia/Dyslipidemia for ES)

CS=Continuing Smokers; COPD=Chronic Obstructive Pulmonary Disease; CVD=Cardiovascular disease; ES=ENDS Switchers; EHR=Electronic Health Records; HCRU=Healthcare Resource Utilization; IPTW=Inverse Probability of Treatment Weighting; PROMIS-10=Patient-Reported Outcomes Measurement Information System® Global Health 10 scale; QT=Quitters; RSES=Respiratory Symptoms Experience Scale.



Altria

Quitting and Switching Groups Self-Reported Fewer Respiratory Symptoms and Better Perceived Health/Wellness, but Higher Ever Disease Burden (Survey Cohort)

Continuous Outcomes ¹		CS (N = 1312)	ES (N = 744)		QT (N = 417)	
			Beta ² (95% CI)	p-value	Beta ² (95% CI)	p-value
RSES Score						
Morning cough	Ref		-0.51 (-0.60, -0.42)	<0.001	-0.45 (-0.56, -0.34)	<0.001
Coughed frequently	Ref		-0.42 (-0.51, -0.33)	<0.001	-0.39 (-0.50, -0.28)	<0.001
Shortness of breath	Ref		-0.06 (-0.16, 0.03)	0.167	0.08 (-0.03, 0.19)	0.145
Easily winded	Ref		-0.09 (-0.19, -0.00)	0.042	0.13 (0.02, 0.23)	0.023
Wheezing	Ref		-0.35 (-0.44, -0.26)	<0.001	-0.20 (-0.31, -0.09)	<0.001
Summary score	Ref		-0.35 (-0.44, -0.26)	<0.001	-0.20 (-0.31, -0.09)	<0.001
PROMIS-10						
PROMIS-10 general health score	Ref		0.03 (-0.06, 0.12)	0.472	0.23 (0.12, 0.34)	<0.001
PROMIS-10 overall quality of life	Ref		0.04 (-0.06, 0.13)	0.441	0.00 (-0.11, 0.11)	0.973
GPH score	Ref		0.11 (0.01, 0.22)	0.032	0.21 (0.09, 0.34)	<0.001
GPH t-score	Ref		0.12 (0.01, 0.22)	0.026	0.21 (0.09, 0.34)	<0.001
GMH score	Ref		0.07 (-0.02, 0.16)	0.106	0.04 (-0.07, 0.15)	0.453
GMH t-score	Ref		0.07 (-0.02, 0.16)	0.103	0.04 (-0.07, 0.14)	0.511

1. The unweighted linear models have been adjusted for age, sex, race/ethnicity, income, urbanicity, marital status, and years smoked.

2. Indicates that these linear models' inputs have been scaled to estimate standardized regression coefficients.

CI=Confidence interval; CS=Continuing smokers; ES=ENDS switchers; GMH=Global mental health; GPH: Global physical health; PROMIS-10=Patient-Reported Outcomes Measurement Information System® Global Health 10 scale; QT=Quitters; RSES=Respiratory symptom experience scale

Bolded values indicate significance at $p < 0.05$; **blue** indicates better outcomes for ES and/or QT compared to CS.

Binary Disease Outcomes ¹	CS (N = 1312)	ES (N = 744)		QT (N = 417)	
		aOR (95% CI)	p-value	aOR (95% CI)	p-value
Respiratory health conditions (ever)					
COPD, emphysema, or chronic bronchitis	Ref	0.94 (0.69, 1.27)	0.684	1.56 (1.14, 2.14)	0.006
Injury to the airway or lung	Ref	1.52 (0.70, 3.19)	0.274	3.52 (1.82, 6.81)	<0.001
Interstitial lung disease	Ref	1.73 (0.21, 11.30)	0.566	6.14 (1.44, 31.05)	0.016
Cardiovascular health conditions (ever)					
High blood pressure	Ref	1.34 (1.10, 1.64)	0.004	1.42 (1.12, 1.79)	0.004
High cholesterol	Ref	1.46 (1.17, 1.83)	<0.001	2.01 (1.57, 2.57)	<0.001
Heart attack	Ref	1.06 (0.60, 1.85)	0.828	1.97 (1.17, 3.26)	0.009
Congestive heart failure	Ref	1.55 (0.85, 2.75)	0.144	1.82 (1.00, 3.21)	0.044
Some other heart condition	Ref	1.65 (1.11, 2.45)	0.012	2.33 (1.54, 3.49)	<0.001
Dental health conditions (ever)					
Periodontal (gum) disease	Ref	1.64 (1.29, 2.09)	<0.001	1.69 (1.27, 2.24)	<0.001
Tooth loss	Ref	1.44 (1.18, 1.76)	<0.001	0.94 (0.74, 1.20)	0.640
Other health conditions (ever)					
Anxiety	Ref	1.60 (1.30, 1.96)	<0.001	1.20 (0.95, 1.53)	0.129
Depression	Ref	1.69 (1.39, 2.07)	<0.001	1.50 (1.18, 1.90)	<0.001
Insomnia or other sleep disorder	Ref	1.73 (1.39, 2.14)	<0.001	1.43 (1.10, 1.85)	0.007
Post-traumatic stress disorder	Ref	1.48 (1.20, 1.82)	<0.001	1.23 (0.95, 1.60)	0.113
Sleep apnea	Ref	1.18 (0.89, 1.56)	0.256	2.34 (1.75, 3.11)	<0.001
Diabetes	Ref	1.16 (0.88, 1.52)	0.302	1.88 (1.41, 2.50)	<0.001
Thyroid disease	Ref	1.99 (1.38, 2.87)	<0.001	3.09 (2.09, 4.57)	<0.001
Osteoporosis	Ref	1.86 (1.18, 2.92)	0.007	1.58 (0.95, 2.59)	0.072
Conditions that lead to a surgery	Ref	1.90 (1.48, 2.44)	<0.001	2.39 (1.80, 3.16)	<0.001
Any cancer other than oral or lung cancer	Ref	1.63 (1.05, 2.51)	0.027	2.07 (1.31, 3.25)	0.002

1. The unweighted logistic models have been adjusted for age, sex, race/ethnicity, income, urbanicity, marital status, and years smoked.

aOR=Adjusted odds ratio; CI=Confidence interval; COPD=Chronic obstructive pulmonary disorder,

CS=Continuing smokers; ES=ENDS switchers; QT: Quitters.

Bolded values indicate significance at $p < 0.05$, *italicized values* indicate significance at $0.05 < p < 0.10$; **orange** indicates worse outcomes for ES and/or QT compared to CS.



Quitting and Switching Groups Had Higher Rates of HCRU at Baseline and During Follow-up (Linked-EHR Cohort)

HCRU Count Outcomes ¹	CS (N = 352)	ES (N = 329)			QT (N = 192)		
		aRR	95% CI	p-value	aRR	95% CI	p-value
Period prior to the index date							
# hospitalizations, 360 days	Ref	1.87	1.64, 2.14	<0.001	1.70	1.45, 1.99	<0.001
# ER visits, 360 days	Ref	*	*	*	*	*	*
# physician's office visits, 30 days	Ref	1.51	1.29, 1.77	<0.001	1.85	1.55, 2.21	<0.001
# physician's office visits, 180 days	Ref	1.28	1.20, 1.37	<0.001	1.13	1.04, 1.22	0.005
# physician's office visits, 360 days	Ref	1.19	1.13, 1.26	<0.001	1.11	1.05, 1.18	<0.001
Period after the index date							
# hospitalizations, 360 days	Ref	2.00	1.76, 2.27	<0.001	2.39	2.08, 2.74	<0.001
# ER visits, 360 days	Ref	1.28	1.02, 1.62	0.033	1.36	1.06, 1.75	0.016
# physician's office visits, 30 days	Ref	1.18	1.01, 1.37	0.038	1.99	1.69, 2.34	<0.001
# physician's office visits, 180 days	Ref	1.37	1.28, 1.46	<0.001	1.63	1.52, 1.75	<0.001
# physician's office visits, 360 days	Ref	1.37	1.31, 1.44	<0.001	1.68	1.59, 1.77	<0.001

1. The unweighted Poisson models have been adjusted for age, sex, race/ethnicity, income, urbanicity, marital status, years smoked, Charlson Comorbidity Score (before index), and presence of COPD (before index).

*Indicates model could not converge, more often than not due to sparse (zero-inflated) outcomes.

aRR=Adjusted rate ratio; CI=Confidence interval; CS=Continuing smokers; EHR=Electronic Health Records; ER=Emergency room; ES=ENDS switchers; HCRU=Healthcare Resource Utilization; QT=Quitters.

Bolded values indicate significance at $p < 0.05$; **orange** indicates worse outcomes for ES and/or QT.

Quitting and Switching Groups Had Higher Disease Burden at Baseline and During Follow-up (Linked-EHR Cohort)

Binary Disease Outcomes ¹	CS N = 352	ES N = 329			QT N = 192		
		aHR	95% CI	p-value	aHR	95% CI	p-value
Period prior to the index date							
Any cardiovascular condition	ref	1.56	0.97, 2.54	0.067	1.18	0.68, 2.03	0.549
Any mental health condition	ref	1.53	1.00, 2.36	0.050	1.40	0.85, 2.28	0.180
Any respiratory condition	ref	0.40	0.18, 0.86	0.022	1.11	0.48, 2.51	0.801
Period after the index date							
Any cardiovascular condition	ref	1.89	1.20, 2.98	0.006	2.88	1.79, 4.66	<0.001
Any mental health condition	ref	1.09	0.72, 1.66	0.676	1.33	0.82, 2.13	0.242
Any respiratory condition	ref	1.23	0.68, 2.25	0.493	2.75	1.51, 5.07	0.001

1. The unweighted logistic models have been adjusted for age, sex, race/ethnicity, income, urbanicity, marital status, years smoked, Charlson Comorbidity Score (before index), and presence of COPD (before index).

*Indicates model could not converge, more often than not due to sparse (zero-inflated) outcomes.

aHR=Adjusted hazard ratio; CI=Confidence interval; COPD=Chronic obstructive pulmonary disease;

CS=Continuing smokers; ER=Emergency room; ES=ENDS switchers; QT=Quitters.

Bolded values indicate significance at $p \leq 0.05$; *Italicized values* indicate values approaching significance at $p > 0.05$, but $p < 0.10$; **orange** indicates worse outcomes for ES and/or QT; **blue** indicates better outcomes for ES and/or QT.

Time-to-Event HCRU/ Disease Outcomes ^{1,2}	CS N = 352	ES N = 329			QT N = 192		
		aHR	95% CI	p-value	aHR	95% CI	p-value
All-cause HCRU							
Hospitalization	ref	1.43	1.05, 1.94	0.023	1.58	1.14, 2.21	0.006
ER visit	ref	0.92	0.66, 1.28	0.629	0.81	0.56, 1.16	0.250
Physician's office visit	ref	1.04	0.84, 1.29	0.712	1.19	0.94, 1.51	0.153
Disease-related outcomes							
Any cardiovascular condition	ref	1.38	0.96, 1.99	0.079	1.87	1.28, 2.73	0.001
Atrial fibrillation	ref	2.48	0.19, 32.51	0.490	2.03	0.09, 45.62	0.657
Coronary artery disease	ref	0.85	0.15, 4.95	0.858	4.26	1.20, 15.05	0.025
Hypercholesterolemia/ Dyslipidemia	ref	1.48	0.89, 2.48	0.134	1.79	1.06, 3.03	0.029
Hypertension	ref	1.04	0.68, 1.59	0.857	1.47	0.96, 2.25	0.078
Peripheral arterial disease	ref	1.11	0.64, 1.95	0.706	1.89	1.08, 3.32	0.027
Any mental health condition	ref	0.91	0.64, 1.30	0.600	0.89	0.59, 1.34	0.579
Alcohol/drug abuse	ref	0.97	0.62, 1.51	0.894	0.69	0.40, 1.19	0.179
Anxiety disorders	ref	0.81	0.50, 1.32	0.397	1.19	0.70, 2.03	0.515
Mood disorders	ref	0.89	0.14, 5.83	0.907	0.77	0.06, 9.77	0.838
Any respiratory condition	ref	0.91	0.52, 1.58	0.735	1.09	0.61, 1.95	0.767
Asthma	ref	0.87	0.43, 1.77	0.700	1.07	0.50, 2.31	0.855
COPD	ref	1.07	0.43, 2.66	0.880	2.90	1.40, 6.00	0.004
Respiratory infections	ref	0.77	0.35, 1.67	0.507	0.72	0.30, 1.70	0.451

1. The unweighted Cox models have been adjusted for age, sex, race/ethnicity, income, urbanicity, marital status, years smoked, Charlson Comorbidity score (before index), and presence of COPD (before index)

2. Survival time for survival models defined as the time to first instance of relevant encounter or condition, or the end of follow-up

*Indicates model could not converge, more often than not due to sparse (zero-inflated or infrequent) outcomes.

aHR=Adjusted hazard ratio; CI=Confidence interval; COPD=Chronic obstructive pulmonary disease; CS=Continuing smokers; ER=Emergency room; ES=ENDS switchers; HCRU=Healthcare Resource Utilization; QT=Quitters.

Respiratory infections include conditions like pneumonia, chronic bronchitis, etc.

Bolded values indicate significance at $p \leq 0.05$; *Italicized values* indicate values approaching significance at $p > 0.05$, but $p < 0.10$; **orange** indicates worse outcomes for ES and/or QT.



Examination of Incident Outcomes Mitigated Differences in Follow-up Disease Burden, but Quitting and Switching Groups Still had Higher Rates of Incident CVD Conditions

Post-IPTW Incident Disease Outcomes per 1,000 person-years ¹	CS vs ES			CS vs QT			ES vs QT		
	CS	ES	p-value ²	CS	QT	p-value	ES	QT	p-value
Any cardiovascular condition	193.17	247.23	0.471	189.80	384.75	0.016	251.01	294.60	0.570
Atherosclerosis	0.00	5.33	>0.999	0.00	7.43	0.422	6.65	4.16	>0.999
Atrial fibrillation	0.00	0.00	>0.999	0.00	0.00	>0.999	0.00	0.00	>0.999
Coronary artery disease	8.89	0.00	0.492	14.06	38.67	0.246	0.00	40.95	0.024
Hypercholesterolemia/Dyslipidemia	48.20	165.58	0.004	52.69	225.95	<0.001	173.43	181.09	>0.999
Hypertension	140.00	129.72	0.864	117.95	280.52	0.010	135.14	190.55	0.304
Peripheral arterial disease	70.17	72.58	>0.999	81.35	185.47	0.026	72.25	170.64	0.033
Any mental health condition	292.02	264.56	0.703	263.47	242.73	0.773	263.68	245.25	0.774
Alcohol/drug abuse	193.84	198.50	>0.999	171.82	125.36	0.489	195.04	111.11	0.169
Anxiety disorders	131.41	127.98	>0.999	113.79	161.30	0.364	132.51	167.13	0.392
Mood disorders	11.39	5.04	0.621	10.76	5.67	>0.999	5.30	17.02	0.569
Any respiratory condition	93.61	128.00	0.472	100.49	150.44	0.342	123.39	165.64	0.380
Asthma	45.48	76.16	0.345	39.71	71.70	0.266	76.58	62.28	>0.999
COPD	20.67	28.92	0.727	23.11	65.08	0.110	20.24	50.96	0.279
Idiopathic pulmonary fibrosis	0.00	0.00	>0.999	0.00	0.00	>0.999	0.00	0.00	>0.999
Interstitial lung disease	0.00	0.00	>0.999	0.00	22.93	0.073	0.00	5.43	0.395
Respiratory infections	87.67	73.86	0.684	86.83	62.72	0.649	73.01	94.14	0.521

1. Post-IPTW Incident Disease-related Events/Person-time Among Those at Risk in the period After the Index Date, with events / person-time among those at risk for disease, per 1,000 person-years (i.e., an unweighted or weighted sum of events/person-days × 365,000). Person-time is defined as the length of time from index to each individual's last condition/encounter after index.

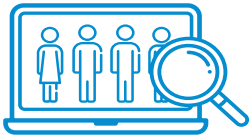
2. Two-sided Poisson test for the difference between two rates.

Bolded values indicate significance at $p < 0.05$, *italicized values* indicate significance at $0.05 < p < 0.10$; **orange** indicates worse outcomes for ES and/or QT vs. CS; **blue** indicates better outcomes for ES vs. QT.

CS=Continuing smokers; ES=ENDS switchers; IPTW=Inverse Probability of Treatment Weighting; QT=Quitters.

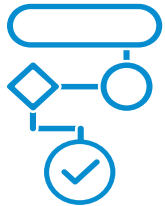


Key Findings & Summary



Survey-EHR Linkage

- Viable approach for RWE studies on SFP transitions and short-term health outcomes that circumvents lack of product use and exposure data in EMR



Divergence of Findings

- Better self-reported respiratory symptoms and wellness after quitting/switching
- Worse self-reported ever disease and pre-/post-index EHR outcomes



Reverse Causation (“Sick Quitter and Sick Switcher” Effects)

- Substantially complicates interpretation of THR RWE studies
- Recommendations: inclusion of self-reported outcomes, quitting group, and pre-/post-index EHR outcomes, longer-term follow-up, focus on incidence

EHR=Electronic Health Records; EMR=Electronic Medical Records; RWE=Real-world evidence; SFP=Smokefree products;; THR=Tobacco harm reduction.





Thank You!

