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Electronic Cigarette Use Among Couseled Tobacco Users Hospitalized in 2015

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Abstract

Objectives: Few studies have examined the prevalence of electronic cigarette use among the inpatient population regardless of the patients' cessation goals. The objectives of this study were to examine the prevalence of electronic cigarette use among counseled tobacco users admitted to 2 academic hospitals.

Methods: Cross-sectional data of hospitalized adult tobacco users who were admitted between January 1, 2015 and December 31, 2015 and who received bedside tobacco cessation counseling from a tobacco treatment service counselor were examined. Demographic and smoking history items were compared as a function of electronic cigarette use using chi-square and independent *t* tests. Logistic regression was used to test independent associations with electronic cigarette use.

Results: Of 2194 hospitalized tobacco users counseled, 22% had used an electronic cigarette. Most of these patients used electronic cigarettes to quit or reduce use of combustible cigarettes. Adjusted odds of electronic cigarette use were higher for females (adjusted odds ratio [AOR] 0.60 for male patients, 95% confidence interval [CI] 0.47–0.76), younger patients (AOR 0.98 for older patients, 95% CI 0.97–0.99), and individuals who initiated tobacco use earlier in life (AOR 0.97 for later smoking initiation, 95% CI 0.95–0.99).

Conclusions: Screening hospitalized cigarette smokers for electronic cigarette use offers an opportunity to counsel all patients on evidence-based quit aids. Young, female patients are most likely to use electronic cigarettes and may benefit most from directed discussions about electronic cigarette use and Federal Drug Administration-approved cessation methods during smoking cessation counseling.

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Keywords

e-cigarettes; electronic cigarettes; hospitalized smokers; patients; smoking; tobacco

Electronic cigarettes (e-cigarettes) are increasingly popular among tobacco users (King et al., 2015; Rigotti et al., 2015) and because of the tobacco-free policies of hospitals, some patients are asking health care providers for permission to use them in the hospital (Haber and Ortiz, 2014). However, e-cigarettes are not approved by the US Federal Drug Administration (FDA) as an effective smoking cessation aid (FDA, 2016) and most hospitals currently ban their use (Meernik et al., 2015). As the FDA moves to regulate e-cigarettes, understanding which patients are using them and if patients believe they are an effective quit aid is important for clinicians in both inpatient and outpatient settings who are responsible for providing appropriate and targeted smoking cessation counseling. Hospitalization provides a period of abstinence and an opportunity to offer counseling and medications for smoking cessation (DHHS, 2008). To provide evidence-based tobacco treatment during an inpatient stay, it is essential to determine if patients are using e-cigarettes as a quit aid, instead of or in addition to FDA-approved tobacco cessation medications.

Evidence from the National Health Interview Survey suggests that cigarette smokers with medical comorbidities are more likely to use e-cigarettes (Kruse et al., 2017), yet few studies have examined the prevalence of e-cigarette use among inpatient smokers (Harrington et al., 2014; Baumann et al., 2015). In 1 study conducted in Birmingham, Alabama in 2012–2013, hospitalized smokers reported that they expected e-cigarettes to be less effective at relieving negative affect and satisfying nicotine cravings and that the taste would not be as pleasant as combustible cigarettes (Hendricks et al., 2015). Rigotti and colleagues (2015) examined past 30-day e-cigarette use among 4660 smokers enrolled in a consortium of hospital-based cessation trials (CHART) from 2010 to 2013. The prevalence of e-cigarette use varied by geographic location in these studies, but overall was higher in younger, White, and more educated patients (Harrington et al., 2014; Baumann et al., 2015; Rigotti et al., 2015). E-cigarette use was also more prevalent among patients who were heavier cigarette smokers (Rigotti et al., 2015) and many patients reported using e-cigarettes as a quit aid (Harrington et al., 2014).

Many of the previous studies only examined e-cigarette use in patients who were enrolled in a clinical trial, restricting study participation to patients who were motivated to quit smoking (eg, Rigotti et al., 2015). Other studies included patients who agreed to participate in a research study (eg, Harrington et al., 2014; Baumann et al., 2015) or excluded tobacco-using patients who had never heard of e-cigarettes (eg, Hendricks et al., 2015). Consequently, these results may not generalize to all hospitalized smokers. The aim of this study was to characterize e-cigarette use in a large sample of tobacco users admitted to 2 academic hospitals in Western Pennsylvania using data from the electronic health record. All patients in this study were identified as tobacco users upon admission to these hospitals and received Tobacco Treatment Service (TTS) counseling as part of usual care. E-cigarette use was assessed as part of this counseling. The goal of the study was to examine e-cigarette use

among counseled tobacco users to identify opportunities for enhanced delivery of personalized evidence-based counseling in the inpatient setting.

METHODS

This was an observational study which included a cohort of all identified tobacco users admitted to UPMC Presbyterian and UPMC Montefiore Hospitals from January 1, 2015 to December 31, 2015 eligible for tobacco treatment counseling. At admission, tobacco use status is obtained by nursing staff during the mandatory admission assessment and recorded in the electronic health record following meaningful use criteria. Approximately 24% of patients are identified as current smokers across all hospital units and diagnoses. All patients identified as smokers are eligible for counseling from a certified TTS counselor. Bedside counseling from a TTS counselor is the first opportunity during a patient stay to collect information on e-cigarette use. Data on e-cigarette use were obtained by TTS counselors for 2194 patients who received more than brief (3 minutes) inpatient counseling (DHHS, 2008) at the bedside. This study was conducted under an approved protocol with the UPMC QI Institutional Review Board (#1069/1972).

TTS counselors proactively approach patients at the bedside. Patients who are alert and available in their room when TTS counselors arrive are more likely to receive counseling. Other providers may provide tobacco treatment while patients are admitted; however, documentation in the electronic health record is not standardized across providers and does not include the use of e-cigarettes. Approximately 40% of tobacco users in the hospital receive some TTS counseling; of these patients, 75% receive intensive counseling. Patients are not seen by the TTS for reasons including discharge before the TTS attends the bedside because of short length of stay (1 day), discharge from intensive care unit or deceased, unavailable despite several consult attempts, clinically inappropriate for counseling, admitted on weekends or holidays outside of TTS hours, or other reasons such as staff shortages and administrative time. A small number of patients refuse (<2%) the consult. The second column of Supplemental Table 1, <http://links.lww.com/JAM/A60> provides demographic characteristics for the group of patients who received brief counseling.

TTS counseling is delivered using motivational interviewing. The counselor makes recommendations for medications, but responsibility for ordering tobacco treatment medications remains with the inpatient care team. The TTS clinical interview assessed combustible cigarette smoking history, including age of combustible cigarette smoking initiation, and use of any other tobacco products (cigars, hookahs, pipes, and smokeless tobacco). Two common markers of tobacco dependence (Kozlowski et al., 1994) were also ascertained: cigarettes per day and time to first cigarette (minutes before patient smokes first cigarette of the day upon waking). E-cigarette use was measured by asking, ‘‘Have you ever used an electronic cigarette?’’ (yes/no). Patients who responded yes were asked the reason for use. Stated reasons were recoded into a categorical response (to quit, cut down, use in non-smoking area, experiment).

Demographic information included age (18 years or older), sex, (male/female), and race. Race was recoded into a dichotomous variable because of the lower proportions of racial/

ethnic minority patients in this sample, with White as the reference group because of previous reports of higher prevalence of e-cigarette use among White hospitalized smokers (Harrington et al., 2014; Baumann et al., 2015; Rigotti et al., 2015). Information about the hospital stay included length of stay (days), insurance (private, Medicare/Medicaid, veteran, other public), and primary diagnosis (smoking-related disease vs not smoking-related, corresponding with the 2014 Surgeon General's Report, DHHS, 2014). Primary diagnosis was examined as a correlate of e-cigarette use because perceptions of vulnerability to smoking related diseases and diagnosis of a smoking related disease (in younger, medically ill smokers) are associated with cessation (Borrelli et al., 2010; Gregor and Borrelli, 2012). However, it is unknown if hospitalized smokers with or without a smoking-related primary diagnosis are more likely to have tried e-cigarettes.

Missingness was compared across all the variables of interest, found to be non-significant, and was thus not adjusted for in the multivariable analysis. Demographic and smoking history items were compared as a function of e-cigarette use using chi-square for categorical variables, and independent t tests for continuous variables. Statistically significant ($P < 0.05$) bivariate relationships were entered into a multivariable logistic regression model to test independent associations with e-cigarette use. Data analysis was conducted using Stata 14.1 SE (StataCorp, College Station, TX).

RESULTS

One-quarter of inpatients were documented as current tobacco users: 40% received any TTS counseling, and 75% of these patients received intensive TTS counseling. As seen in Table 1, 22% of hospitalized smokers had tried e-cigarettes, and those individuals were more likely to be younger, female, White, and have a smoking-related primary diagnosis (significant bivariate associations). More than half of the smokers (52%) had used an e-cigarette to quit, and 23% reported use to cut down on smoking combustible cigarettes. However, all of the participants were current tobacco users, regardless of their experience with e-cigarettes. The final model for a logistic regression predicting ever e-cigarette use is presented in Table 2. The adjusted odds of e-cigarette use were higher for females (adjusted odds ratio [AOR] 0.60 for male patients, 95% CI 0.47–0.76), younger patients (AOR 0.98 for older patients, 95% CI 0.97–0.99), and individuals who initiated tobacco use earlier in life (AOR 0.97 for later smoking initiation, 95% CI 0.95–0.99).

The analytic sample ($n = 2194$) was compared to the remaining patients identified in the electronic health record as smokers ($n = 5079$). Patients excluded from the study were younger (48 vs 50 years old), less likely to have a smoking related primary diagnosis, less likely to have a stay >4 days, and less likely to be covered by Medicare/Medicaid. There were no differences in race/ethnicity. Patients excluded from the analysis were just as likely to be daily smokers (Supplemental Table 1, <http://links.lww.com/JAM/A60>).

DISCUSSION

In this study, 22% of the smokers admitted to the hospital who were counseled by the TTS had ever used e-cigarettes—more than the 18% reported in the 2010 to 2013 data from the 5

hospitals included in the CHART study (Rigotti et al., 2015), but fewer than the 45% to 49% reported in the 2012–2013 data from Birmingham, Alabama (Harrington et al., 2014; Baumann et al., 2015). Consistent with previous studies of hospitalized smokers (Harrington et al., 2014; Prochaska and Grana, 2014; Rigotti et al., 2015, 2017), patients who had used e-cigarettes were younger than patients who had never used them. Additionally, female patients were more likely to have used e-cigarettes, which is consistent with results of an online survey indicating that women in general are more likely to report e-cigarette use to manage their mood, stress and weight (Piñeiro et al., 2016).

The data from the smokers included in this study are more representative of inpatients who receive tobacco counseling than data from previous medical record studies excluding smokers who did not intend to stay quit at discharge (29% of the current sample) or restricting analyses to those who consent to participate in a research study. The patients included in the analysis are more comparable than the patients selected for the CHART studies, because all of the patients in this study were eligible to be interviewed by the TTS, and they did not have to consent to participate in a research study or RCT. Two-thirds of the patients receiving counseling in this hospital were on Medicare/Medicaid, and it is important to characterize use of e-cigarettes, combustible cigarettes and other tobacco products in this low income population. In contrast to the earlier studies (Harrington et al., 2014; Baumann et al., 2015; Rigotti et al., 2015), White patients were *not* more likely to have tried e-cigarettes than racial/ethnic minority patients, after adjusting for current age and age at initiation of tobacco use.

In previous research on e-cigarette use in hospitalized smokers, patient age was included as a covariate in models predicting e-cigarette use. However, age at initiation of smoking combustible tobacco was not previously considered. In the current study, patients who reported an earlier age at smoking initiation were more likely to have tried e-cigarettes. On average, White adolescents initiate combustible cigarette use earlier than minority youth, even though rates of use are similar for White and African Americans by age 30 (Chen and Jacobson, 2012; Keyes et al., 2015). Nonetheless, earlier initiation of smoking is associated with greater risk of tobacco dependence (Breslau et al., 1993; Hu et al., 2006) and thus may be important to consider in models predicting the correlates of novel tobacco and nicotine product use.

Most of the patients in this study who had tried e-cigarettes reported using e-cigarettes to cut down (52%) or quit smoking (23%) combustible cigarettes; however, in this study, they were just as likely to be daily smokers, and smoked as many cigarettes per day as never-users of e-cigarettes. Similarly, dual users of e-cigarettes and combustible cigarettes in recent clinical trials were no more likely to quit combustible cigarettes at follow-up (Manzoli et al., 2016; Rigotti et al., 2017). Our findings are consistent with studies in the general population and within specific disease states such as acute coronary artery syndrome, serious mental illness and head and neck cancer (Prochaska and Grana, 2014; Busch et al., 2016; Manzoli et al., 2016; McQueen et al., 2016). This gap in unsuccessful cessation while using e-cigarettes represents an important opportunity for understanding patient's motivations for e-cigarette use, and an area where counselors can offer education on evidence-based quit aids.

CONCLUSIONS

Counseling of patients who use tobacco should include education about the effectiveness of evidence-based smoking cessation strategies compared with the limited evidence for the effectiveness of e-cigarette use (Manzoli et al., 2016). Clinicians need to address patients' concerns and barriers for quitting smoking that may influence their choice to use e-cigarettes. For example, female e-cigarette users report use to help with mood, weight, and stress management (Busch et al., 2016). Given that half of the patients who had tried e-cigarettes in the current sample reported using them as a cessation aid and yet continued to smoke combustible tobacco, clinicians should explore whether patients are forgoing use of evidence-based nicotine replacement therapy. Future research should examine reasons some patients prefer e-cigarettes in place of or in addition to approved evidence-based tobacco cessation medications.

Limitations

Although this study is distinct in that it examines e-cigarette use in a large population of hospitalized smokers, regardless of their enrollment in a research study or intention to quit, there are several limitations to consider. The data on electronic and combustible cigarette use were self-report with no biomechanical verification. Nonetheless, many studies have documented the fidelity of self-reported smoking (eg, Fendrich et al., 2005; Yeager and Krosnick, 2010; Wong et al., 2012). Another concern was the use of any previous e-cigarette use, an outcome variable reflecting both regular and experimental use. Future work should examine frequency of use, or utilize a higher threshold such as use on at least 5 days in the past month (Amato et al., 2015). Another limitation of the study is that the catchment area for the hospital did not include sufficient numbers of patients from other race/ethnicities for statistical analysis. There is evidence that factors associated with different race/ethnicities such as level of acculturation (Lam et al., 2016) may predict e-cigarette use. As documentation of e-cigarette use in the electronic health record becomes more common and standardized (Windén et al., 2015), surveillance of e-cigarette use will likely improve and further demographic comparisons will become possible. No prospective information was collected on smoking cessation in this study, to determine if e-cigarette use was associated with decrease in combustible cigarettes use over time. However, ever e-cigarette users in this study were just as likely to be daily combustible cigarette smokers and smoked as many cigarettes per day as non-users of e-cigarettes.

Clinical Implications

All tobacco users should be screened for e-cigarette use during their hospitalization and offered smoking cessation counseling, including the use of FDA-approved medications for smoking cessation. Patients who began smoking at a younger age and female patients may be trying e-cigarettes to try to quit smoking, and may benefit most from directed discussions about e-cigarette use during smoking cessation counseling.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

- Amato MS, Boyle RG, Levy D. How to define e-cigarette prevalence? Finding clues in the use frequency distribution Tobacco control. 2016; 25:e24–e29. [PubMed: 26085124]
- Baumann AW, Kohler C, Kim YI. Differences in electronic cigarette awareness, use history, and advertisement exposure between black and white hospitalized cigarette smokers J Cancer Educ. 2015; 30:648–654. [PubMed: 25503053]
- Borrelli B, Hayes RB, Dunsiger S. Risk perception and smoking behavior in medically ill smokers: a prospective study Addiction. 2010; 105:1100–1108. [PubMed: 20331572]
- Breslau N, Fenn N, Peterson EL. Early smoking initiation and nicotine dependence in a cohort of young adults Drug Alcohol Depend. 1993; 33:129–137. [PubMed: 8261877]
- Busch AM, Leavens EL, Wagener TL. Prevalence, reasons for use, and risk perception of electronic cigarettes among post-acute coronary syndrome smokers J Cardiopulm Rehabil Prev. 2016; 36:352–357. [PubMed: 27120039]
- Chen P, Jacobson KC. Developmental trajectories of substance use from early adolescence to young adulthood: gender and racial/ethnic differences J Adolesc Health. 2012; 50:154–163. [PubMed: 22265111]
- Department of Health and Human Services. Tobacco Use and Dependence Guideline Panel. Treating Tobacco Use and Dependence: 2008 Update. Rockville, MD: US Department of Health and Human Services; 2008.
- Department of Health and Human Services. The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.
- Fendrich M, Mackesy-Amiti ME, Johnson TP. Tobacco-reporting validity in an epidemiological drug-use survey Addictive Behav. 2005; 30:175–181.
- Food and Drug Administration. *FDA takes significant steps to protect Americans from dangers of tobacco through new regulation. Press Updates.* Page last updated May 10, 2016. Available at: <http://www.fda.gov/newsevents/newsroom/pressannouncements/ucm499234.htm> Accessed May 10, 2016.
- Gregor K, Borrelli B. Barriers to quitting smoking among medically ill smokers J Behav Med. 2012; 35:484–491. [PubMed: 21850514]
- Haber LA, Ortiz GM. Clearing the air: inpatient providers' knowledge, perspectives, and experience with electronic cigarettes J Hosp Med. 2014; 9:805–807. [PubMed: 25352497]
- Harrington KF, Hull NC, Akindoju O. Electronic cigarette awareness, use history, and expected future use among hospitalized cigarette smokers Nicotine Tob Res. 2014; 16:1512–1517. [PubMed: 24827786]
- Hendricks PS, Cases MG, Thorne CB. Hospitalized smokers' expectancies for electronic cigarettes versus tobacco cigarettes Addict Behav. 2015; 41:106–111. [PubMed: 25452052]
- Hu MC, Davies M, Kandel DB. Epidemiology and correlates of daily smoking and nicotine dependence among young adults in the United States Am J Public Health. 2006; 96:299–308. [PubMed: 16380569]
- Keyes KM, Vo T, Wall MM. Racial/ethnic differences in use of alcohol, tobacco, and marijuana: Is there a cross-over from adolescence to adulthood? Soc Sci Med. 2015; 124:132–141. [PubMed: 25461870]

- King BA, Patel R, Nguyen KH. Trends in awareness and use of electronic cigarettes among US adults, 2010–2013 *Nicotine Tob Res.* 2015; 17:219–227. [PubMed: 25239961]
- Kozlowski LT, Porter CQ, Orleans CT. Predicting smoking cessation with self-reported measures of nicotine dependence: FTQ, FTND, and HSI *Drug Alcohol Depend.* 1994; 34:211–216. [PubMed: 8033758]
- Kruse GR, Kalkhoran S, Rigotti NA. Use of electronic cigarettes among US adults with medical comorbidities *Am J Prev Med.* 2017; 52:798–804. [PubMed: 28108191]
- Lam CN, Goldenson NI, Burner E. Cultural buffering as a protective factor against electronic cigarette use among Hispanic emergency department patients *Addict Behav.* 2016; 63:155–160. [PubMed: 27513593]
- Manzoli L, Flacco ME, Ferrante M. Cohort study of electronic cigarette use: effectiveness and safety at 24 months *Tob Control.* 2017; 26:284–292. [PubMed: 27272748]
- McQueen N, Partington EJ, Harrington KF. Smoking cessation and electronic cigarette use among head and neck cancer patients *Otolaryngol Head Neck Surg.* 2016; 154:73–79. [PubMed: 26519457]
- Meernik C, Baker HM, Paci K. Electronic cigarettes on hospital campuses *Int J Environ Res Public Health.* 2015; 13:87.
- Piñeiro B, Correa JB, Simmons VN. Gender differences in use and expectancies of electronic cigarettes: online survey results *Addict Behav.* 2016; 52:91–97. [PubMed: 26406973]
- Prochaska JJ, Grana RA. E-cigarette use among smokers with serious mental illness *PLoS ONE.* 2014; 9:e113013. [PubMed: 25419703]
- Rigotti NA, Chang Y, Tindle HA. Association of electronic cigarette use with smoking cessation among smokers who plan to quit after hospital discharge: a longitudinal analysis. Paper presented at the Society for Research in Nicotine and Tobacco (SRNT) in Florence, Italy on March 9, 2017.
- Rigotti NA, Harrington KF, Richter K. Consortium of Hospitals Advancing Research on Tobacco. Increasing prevalence of electronic cigarette use among smokers hospitalized in 5 US cities, 2010–2013 *Nicotine Tob Res.* 2015; 17:236–244. [PubMed: 25168031]
- Windén TJ, Chen ES, Wang Y. Towards the standardized documentation of e-cigarette use in the electronic health record for population health surveillance and research *AMIA Summits on Translational Science Proceedings.* 2015:199–203.
- Wong SL, Shields M, Leatherdale S. Assessment of validity of self-reported smoking status *Health Rep.* 2012; 23:D1.
- Yeager DS, Krosnick JA. The validity of self-reported nicotine product use in the 2001–2008 National Health and Nutrition Examination Survey *Med Care.* 2010; 48:1128–1132. [PubMed: 20940652]

TABLE 1.
Sample Characteristics by Ever Use of Electronic Cigarette Among Counselor Tobacco Users Hospitalized in 2015

Characteristic	N*	Total	Ever Used	Never Used	P
Age, mean (SD)		2194	481 (21.9)	1713 (78.1)	
Sex, % female		50.2 (14.2)	46.4 (14)	51.3 (14.1)	<0.001
Race, % white		46.1	54.5	45.5	<0.001
Smoking-related primary diagnosis [†] , %		71.6	77.3	70	0.002
Length of stay <5 days, %		19.9	15.8	21	0.012
Insurance type, % Uninsured		32.8	30.2	33.6	0.158
Medicare		5.2	4.4	5.5	0.052
Medicaid		33.3	30.4	34.1	
Commercial/other		34.9	40.1	33.5	
Daily smoker, % yes		26.6	25.2	27	
Quit plan, % try/stay quit	2189	90.7	91.7	90.4	0.391
Age smoking initiated	2177	71	73.2	70.4	0.241
Cigarettes per day, mean (SD)	1699	17.3 (7)	16.2 (5.3)	17.6 (7.4)	<0.001
Time to first cigarette, % <30 minutes	1969	14.8 (10.7)	15.4 (11.1)	14.6 (10.5)	0.158
Ever used other tobacco product	1468	79.8	82.9	78.8	0.095
Reason for e-cigarette use [‡]	2155	14.4	12.2	15	0.137
Cut down	394				
Experiment			22.8		
Use in nonsmoking area			37.3		
Quit attempt			9.6		
			51.5		

Significance tested between e-cigarette ever-users and never-users. ICD-9-CM, international classification of diseases, 9th rev, clinical modification.

* Sample size noted where different.

[†] Smoking-related diagnosis includes ICD-9-CM and ICD-10 codes for cancers, cardiovascular and pulmonary disease, and perinatal conditions as outlined in the 2014 Surgeon General Report.

[‡] More than 1 response possible.

TABLE 2.

Logistic Regression Results for Ever Use of Electronic Cigarettes Among Counseled Tobacco Users Hospitalized in 2015

Variable	OR (95% CI)	AOR (95% CI)
Age	0.98 (0.97–0.98)	0.98 (0.97–0.99)
Male (ref: female)	0.65 (0.53–0.80)	0.60 (0.47–0.76)
White (ref: non-white)	1.46 (1.15–1.85)	1.30 (0.99–1.71)
Smoking related primary diagnosis	0.70 (0.53–0.93)	0.98 (0.71–1.34)
Age of smoking initiation	0.96 (0.95–0.98)	0.97 (0.95–0.99)

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

N = 1642 for multivariable model.