Academic Detailing Interventions Improve Tobacco Use Treatment among Physicians Working in Underserved Communities

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Abstract

Rationale: Tobacco use disproportionately affects the poor, who are, in turn, least likely to receive cessation treatment from providers. Providers caring for low-income populations perform simple components of tobacco use treatment (e.g., assessing tobacco use) with reasonable frequency. However, performance of complex treatment behaviors, such as pharmacologic prescription and follow-up arrangement, remains suboptimal.

Objectives: Evaluate the influence of academic detailing (AD), a university-based, noncommercial, educational outreach intervention, on primary care physicians' complex treatment practice behaviors within an urban care setting.

Methods: Trained academic detailers made in-person visits to targeted primary care practices, delivering verbal and written instruction emphasizing three key messages related to tobacco treatment. Physicians' self-reported frequency of simple and complex treatment behaviors were assessed using a seven-item questionnaire, before and 2 months after AD.

Results: Between May 2011 and March 2012, baseline AD visits were made to 217 physicians, 109 (50%) of whom also received follow-up AD. Mean frequency scores for complex behaviors increased significantly, from 2.63 to 2.92, corresponding to a clinically significant 30% increase in the number of respondents who endorsed "almost always" or "always" ($P < 0.001$). Improvement in mean simple behavior frequency scores was also noted (3.98 vs. 4.13; $P = 0.035$). Sex and practice type appear to influence reported complex behavior frequency at baseline, whereas only practice type influenced improvement in complex behavior scores at follow up.

Conclusions: This study demonstrates the feasibility and potential effectiveness of a low-cost and highly disseminable intervention to improve clinician behavior in the context of treating nicotine dependence in underserved communities.

Keywords: academic training; nicotine; physician's practice patterns; smoking cessation; tobacco use disorder

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Reductions in the prevalence of smoking and its consequences have progressed heterogeneously across population subgroups (1, 2). A disproportionate number of the poor and disadvantaged continue to smoke, compared with more economically secure populations (3). In fact, Medicaid recipients smoke at

nearly double the rate of the general U.S. population (36 vs. 21%, respectively), and are less likely to receive cessation treatment from their healthcare providers (4). Philadelphia has the highest rate of adult smoking among the 10 largest U.S. cities and a high proportion of Medicaid recipients who smoke,

making tobacco use interventions an urgent public health priority for the region (5).

System-level strategies to improve provider engagement in tobacco dependence treatment have most certainly contributed to the decrease in smoking prevalence. The U.S. Public Health Service

clinical practice guideline, *Treating Tobacco Use and Dependence: 2008 Update* (6), recommends that clinicians consistently identify and document patients' tobacco use status, and treat tobacco users employing a "5As" framework for longitudinal care (ask, advise, assess, assist, and arrange). Although providers' performance of the straightforward, simple components of the framework (i.e., ask, advise, and assess) has improved over the past 10 years, performance of the more complex, second-order components of the framework (i.e., assist and arrange follow-up) remains suboptimal (7). For example, the Centers for Disease Control and Prevention reports that, although 62.7% of outpatient visits included tobacco screening, only 20.9% of current tobacco users received counseling and 7.6% received a prescription for cessation pharmacotherapy during their visit (8). Self-reported estimates of 5A performance rates tend to be higher across all categories; however, the pattern of discrepancy between simple and complex behaviors remains comparable, with self-assessment of simple behavior rates more than double that of self-assessed complex behaviors (9).

Various methods for influencing physician behaviors have been evaluated. Academic detailing (AD) is a university-based, noncommercial educational outreach strategy, generally accepted as useful in shaping physician behavior patterns (10, 11). Unlike more traditional educational approaches, AD interactions are designed to be very brief (3–5 min) and highly personalized, and focus on correcting misunderstandings about a specific medication or condition. When performed by public health agencies, AD has been useful in addressing a variety of issues, including intimate partner violence screening, lifestyle change counseling, and medication adherence (12). Creative AD outreach campaigns have been employed within large, diverse physician populations to increase tobacco Quitline referrals (13), and to increase smoking cessation counseling and prescribing (14). However, little is known about how such AD interventions impact performance of complex tobacco treatment behaviors among primary care physicians engaged in the care of urban, economically disadvantaged communities.

Methods

The Philadelphia COPD Initiative is a public health project designed to disseminate simple resources to physicians and patients to improve the identification and treatment of tobacco dependence by primary care practitioners within Philadelphia's low-income communities. From May 2011 through March 2012, two allied health professionals with experience in public health education disseminated high-priority messages about smoking cessation using established AD principles (10). Detailers made in-person visits to targeted practice locations, delivering both verbal and written instruction to physicians that emphasized three key practice messages: (1) reluctance to quit can be overcome by employing a structured approach; (2) effective tobacco use treatment can be accomplished within a 7-minute visit; and (3) tobacco use treatment is a reimbursable service. Visits were conducted either individually or in small groups, and lasted 3–10 minutes, based on physician availability. At the conclusion of the visit, physicians were guided toward web-based, continuing medical education (CME) training activities for initiative participants that included video-modeled behaviors,

guideline summaries, key references, and a guide to solving commonly encountered clinical problems (15). In addition, detailers educated office staff on resources available through Pennsylvania's free Quitline. Office staff received promotional materials, including waiting area pamphlets, public area signage, and preprinted reminder cards with patient-level instruction on accessing Quitline resources.

After the AD visit, each clinic location received a series of at least three reminder letters over a 2-month postvisit period. Each letter encouraged clinicians to take advantage of the initiative's CME opportunities, and was accompanied by prepared "un-ads" designed to directly address the potential influence of focusing effect, impact, omission, and availability biases on physician behavior (Table 1) (10, 16, 17). Un-ads consist of visually arresting images, framed by common misconceptions concerning tobacco use treatment, concluding with a summary of available data controverting the bias. An example is presented in Figure 1. Detailers performed a second in-person visit 2–4 months after the first, reinforcing the key tobacco practice messages.

Table 1. Experience-based techniques for problem solving (heuristics), potentially leading to suboptimal judgments or outcomes related to the treatment of tobacco dependence

Heuristic	Description	Example
Availability bias	Recent or memorable events hold exceptional sway in decision making.	A prior frustration with a patient, reluctant to quit despite significant tobacco-related morbidity, influences the clinician's subsequent assessment of patients' likelihood of quitting.
Focusing effect bias	Decisions are influenced more by short-term concerns than by long-term goals.	A patient with a history of active smoking and poorly controlled hypertension requires an adjustment to his medication regimen. Initiation of tobacco dependence treatment is forgone in favor of ensuring proper understanding and adherence to antihypertensive medications.
Impact bias	Decisions are unduly influenced by inaccurate projections of future states.	A discussion of available tobacco dependence treatments is avoided out of concern over the potential time commitment required, or because of the perceived risk of alienating the patient.
Omission bias	Tendency to prefer inaction in an effort to avoid harm, even when inaction may cause greater harm than action.	Treatment with tobacco dependence pharmacotherapy is avoided because of concerns for possible depressed mood side effects.

Some would have you avoid the problems associated with prescribing tobacco treatment medications.

Not prescribing them is a bigger problem.
Don't be misled into thinking your patients are safer without pharmacologic help.

Years ago, most people believed that smoking was a bad habit, and that the best a doctor could do was hope to encourage their patients to make better decisions. Our current understanding is that tobacco dependence is a *chronic illness of the brain*, with predictable and terrible consequences. **In the case of tobacco dependence, treatment isn't nearly as bad as the disease.**

Just the facts...

- Several analyses have documented the **lack of associated between nicotine patch use and acute cardiovascular events**, even in patients who continue to smoke during treatment. (Arch Int Med 1994)
- Despite popular concerns, the rate of neuropsychiatric side-effects for varenicline appears to be quite low. Use of varenicline, especially in populations without underlying psychiatric conditions, should be **considered safe and efficacious**. (Tonstad 2010)

Visit www.phillycopd.com for practical tips and free CME credit.

Figure 1. Un-ad addressing omission bias in tobacco use treatment. COPD = chronic obstructive pulmonary disease; CME = continuing medical education. Main image reprinted by permission from Dr. Jerry Avorn, National Resource Center for Academic Detailing, Boston, MA.

Outcome measures were assessed at the onset of both the baseline and follow-up visits, before initiating the AD intervention. Primary outcomes were physician self-reported simple and complex tobacco treatment clinical behaviors, assessed using a paper seven-item questionnaire, with responses on a five-point Likert categorical scale of frequency, ranging from “never” (1) to “always” (5). For the primary analysis, questionnaire items were categorized as representing either “simple” (included estimates of ask, assess, and advise frequency) or “complex” (included estimates of pharmacologic prescription, referral to Quitline, follow-up arrangement,

and billing frequency). Secondary outcomes included physician program evaluation. Additional information on related CME outcomes was estimated from the subset of clinicians who participated in the web-based educational activity.

Analysis used Chi-square test of proportions and Wilcoxon test of paired differences. Exploratory analysis used multiple logistic regression to evaluate the impact of individual- and practice-level covariates on outcomes, including physician sex, practice location, practice type, estimated smoking prevalence in practice, intent to make change, and antecedent staff awareness of Quitline. Analyses were

performed using SPSS 21 (IBM, Armonk, NY), with *P* values of 0.05 or less considered statistically significant. No corrections for multiple comparisons were made. The analysis was deemed exempt from review requirements by both the University and the Department of Public Health Institutional Review Boards.

Results

Detailers visited 217 physicians across 84 practices throughout 36 different zip codes in Philadelphia. A total of 272 un-ad reminders were mailed, and 109 physicians (50.2%) completed follow-up visits; 49 participants received a total of 107 credit hours of additional instruction. The program website received 53,834 hits from 3,596 unique visitors during the project period. Nearly all physicians (98%) found the detailing visits useful, and over three-quarters (76%) planned to make practice changes based on the AD visits. Characteristics of the physician population, and the Philadelphia communities they serve, are presented in Table 2.

Physician baseline responses followed the expected pattern, with high self-reported rates of the simple components of the 5A framework, and significantly lower rates of complex behaviors. The categorical median for simple behaviors corresponded to “almost always” on the Likert scale, whereas complex behaviors were rated as “almost never” (mean score of 3.98 vs. 2.63, respectively; $P < 0.001$). After the AD intervention, mean frequency scores for complex behaviors increased significantly, from 2.63 to 2.92 ($P < 0.001$), corresponding to a clinically significant change in the categorical median from “almost never” to “sometimes.” Of particular interest was the rate of referral to the State’s free Quitline services. The AD intervention significantly improved self-assessment scores, from 2.45 to 2.97 ($P < 0.001$), corresponding to a small, but clinically significant, change. A statistical improvement in simple behavior mean scores was also noted (3.98 vs. 4.13; $P = 0.035$).

At baseline, complex behavior self-assessment scores were related to both sex and practice type. Female sex was a strong positive predictor of complex behaviors at baseline ($R^2 = 0.91$; $P = 0.03$), whereas practice type was a more modest correlate

Table 2. Characteristics of the physician/community populations

Characteristics	%
Physician characteristics	
Male sex	53
Practice type	
Solo practice	13
Small group (2–5 physicians)	24
Medium to large (>5 physicians)	5
Academic practice	21
Federally qualified health center	31
Unknown	5
Program acceptance	
Found useful	98
Recommend to others	86
Would like another academic detailing visit	76
Plan at least one change	76
Community characteristics*	
Income below poverty line	26.2
African American	44.3
Hispanic or Latino	13.0
Language other than English	21.2
Did not complete high school	19.6

*Source: U.S. Census 2012 Estimates (available from: <http://quickfacts.census.gov>).

($R^2 = 0.51$; $P = 0.004$). The relationship between sex and complex behavior scores was lost at follow-up, whereas the influence of practice type persisted ($R^2 = 0.69$; $P = 0.009$). Physicians who practiced in federally qualified health center settings were significantly most likely to endorse complex behaviors, followed by physicians practicing in academic settings, followed by private practice physicians in a manner inversely proportional to practice size (Figure 2).

Discussion

AD is an effective strategy for influencing the self-reported rates of complex tobacco treatment behaviors among physicians serving underserved and disadvantaged urban communities with high rates of smoking. The AD educational outreach approach was feasible and well received by physicians who saw it as an appropriate mechanism for changing clinical behaviors. Although physicians reported high baseline frequencies of simple 5A behaviors, rates of complex behaviors were significantly lower. Over 70% of the physicians surveyed endorsed performance of simple behaviors as either “always” or “almost always,” whereas only 29% similarly endorsed

complex behaviors. After AD, over 38% of physicians reported performing complex behaviors “always” or “almost always”—representing a relative 30% increase in endorsement rates. A smaller, but statistically significant, improvement in “always/almost always” endorsement was observed for simple behaviors, increasing from 70% of the cohort to 78% at follow up. The more modest relative 11% increase in simple behavior endorsement was likely a function of the relatively high baseline rates, limiting the potential for improvement.

AD trainings were well received, with physicians both open to additional visits and willing to recommend the activity to colleagues. The strength of the AD approach resides in its ability to reach targeted, high-impact groups of clinicians, with personalized and highly relevant content. AD is a practitioner-centered approach, appropriate for all practice environments, including those without access to grand rounds or other group educational venues. AD is an inexpensive way to potentially increase physician engagement in complex treatment behaviors, and improve the care of a large number of smokers (18). Because the cost effectiveness of AD programs depends on both the relative proportion of patients who lack appropriate care for the target illness and the costs of convincing health professionals to promote therapeutic measures in this target group, the use of AD to promote tobacco use treatment in low socioeconomic status communities is likely to be highly cost effective (19).

Our study has several important limitations. Foremost is the inability to capture patient-level behaviors using this design. Because of concerns over patient confidentiality, we limited our metrics to physician self-report. Because of the effect of social desirability bias, we expect that the absolute rates of individual physician behaviors cannot be reliably estimated from our methods. However, in settings like this, in which there are no financial incentives linked to outcomes, there appears to be reasonable concurrence between *relative* patterns of self-reported behavior and the skills or behaviors demonstrated within the group (20, 21).

Our study was conducted in an urban area with high rates of smoking. Findings may not be generalizable to nonurban providers. However, the sample did include physicians from a mix of practice types and sizes. Further investigation into the influence of practice characteristics on uptake of AD messaging, and the potential for message attenuation over time, is warranted. Another possible limitation is the pre-post design. We sought to limit the potential effect of recall bias by waiting at least 2 months before reassessing behaviors to minimize the extent to which physicians could anchor their responses to the pretest value. Finally, we believe that our design, like that of similar studies to date, has limited potential to shed light on longitudinal process by which complex behaviors change (22). For example, some complex behaviors may indeed be mutable, yet “rate limited.” That is to say that improvement in some complex behaviors (e.g., arranging

Figure 2. Reported frequency scores of complex tobacco dependence treatment behaviors after academic detailing intervention. 1 = never; 2 = almost never; 3 = sometimes; 4 = almost always; 5 = always; FQHC = federally qualified health center; Med/Lg = medium/large. $R^2 = 0.69$; $P = 0.009$. Data are presented as mean $\pm$ SD.

follow-up appointments) may be contingent upon first achieving significant change in others (e.g., billing). Future work should incorporate repeated AD interventions over longer periods of time to evaluate the rate and order in

which AD interventions impact complex behaviors. Nevertheless, the present study demonstrates the feasibility and potential effectiveness of a low-cost and highly disseminable intervention to improve clinician behavior

in the context of treating nicotine dependence in underserved communities. ■

Author disclosures are available with the text of this article at www.atsjournals.org.

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