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Community Pharmacy Technicians' Engagement in the Delivery of Brief Tobacco Cessation Interventions: Results of a Randomized Trial

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Abstract

Background: In recent years, the role of community pharmacy technicians has expanded to include involvement in the provision of brief tobacco cessation interventions. While technicians appear to be a key component in this service, their level of engagement and associated perceptions of this new role have not been described.

Objective: To compare pharmacy technicians' frequency of involvement in brief tobacco cessation interventions delivered in a community pharmacy setting, as a function of training approach, and to characterize their perceptions of this expanded role, including barriers to implementation.

Methods: Twenty California-based grocery store chain pharmacies were randomized to receive (a) written training materials-only [minimal] or (b) written training materials plus live training with coaching and active monitoring by pharmacy management [intensive]. After written materials were distributed to the sites, tobacco cessation interventions were documented prospectively for 12 weeks post-training.

Results: Over the 12-week study, technicians (n=50) documented their involvement in 524 interventions (57.7% of 908 total), with the minimal group accounting for 56.1% and the intensive group accounting for 43.9% ($p < 0.001$). The number of individual technicians who reported at least one intervention was 16 (of 26; 61.5%) in the minimal group and 24 (of 24; 100%) in the intensive group ($p < 0.001$). At the conclusion of the study, 100% of technicians in the intensive group self-rated their ability to interact with patients about quitting smoking as good, very good, or excellent compared to 73.9% in the minimal group ($p = 0.10$).

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Conclusion: In both study arms, technicians documented high numbers of tobacco cessation interventions. The higher proportion of technicians providing one or more interventions in the intensive group suggests a greater overall engagement in the process, relative to those receiving minimal training. Technicians can play a key role in the delivery of tobacco cessation interventions in community pharmacies.

Keywords

Community pharmacy; tobacco cessation; pharmacy technician

Introduction

Tobacco use continues to be a leading preventable cause of death and disease worldwide, and decades of research highlight a clear need for clinician involvement to enhance patients' chances of quitting successfully.[1,2] As a result, the pharmacy profession has systematically attempted to advance its role in tobacco cessation through integration of comprehensive cessation training within pharmacy school curricula[3,4] and delivery of continuing education programs for licensed pharmacists.[5-8] A growing body of evidence suggests that pharmacists are not only effective in assisting patients with quitting,[9-13] but that services rendered in pharmacies are also cost-effective.[14,15] Furthermore, community pharmacists are viewed as trusted and readily accessible healthcare providers, rendering them well positioned to provide tobacco cessation interventions to their patients.[16,17] Because pharmacy technicians are typically the first point of contact with individuals who approach the pharmacy counter, it has been suggested that having pharmacy technicians assess patients' tobacco use status is essential to the overall process of providing cessation services in pharmacies.[18-20]

In recent years, the roles and responsibilities for community pharmacy technicians have grown,[21,22] and in some states, the legal scope of practice has expanded to include activities previously allowed only by pharmacists, such as administering immunizations, point-of-care testing, receiving verbal prescriptions, transferring prescriptions to or from other pharmacies, and having technicians check each other's accuracy with prescription refills ("tech-check-tech").[23-27] With respect to tobacco cessation, it has been demonstrated that through training, technicians can achieve improved knowledge, attitudes, and self-efficacy related to helping tobacco users to quit.[28] They are well positioned to assist with implementation of brief tobacco cessation interventions, by asking patients about tobacco use, advising tobacco users to quit, and referring interested patients to either the pharmacist and/or the tobacco quitline. This "Ask-Advise-Refer" (AAR) approach has been integrated in a wide range of patient care settings, and a randomized trial in 64 community pharmacies found this model to be effective in increasing the number of tobacco quitline callers who report having been referred to the quitline by a pharmacy.[18] While technicians appear to be a key component in community pharmacy-based AAR models, their level of involvement in tobacco cessation interventions and associated perceptions of this new role have yet to be described.

The current study was conducted within the context of a 20-site randomized trial comparing two training approaches for pharmacists and pharmacy technicians. The objectives of this

study were to compare technicians' frequency of involvement in brief tobacco cessation interventions delivered in a community pharmacy setting, by training approach, and to characterize their perceptions of this expanded role, including barriers to implementation.

Methods

Study sample

Grocery store pharmacies in California owned by a large national chain constituted the eligible study population. To be included in the study, sites had to have (a) a private counseling area, (b) the ability to relocate the non-prescription nicotine replacement therapy (NRT) medications from the customer service area at the front of the store to the pharmacy area, and (c) no planned construction projects in the store during the 12-week study. Stores in Los Angeles County were excluded, because a concurrent tobacco cessation program by the county health department had been implemented to distribute free NRT. Of 286 pharmacy locations in California, 52 met the eligibility criteria for the study. Of these, 20 were randomly selected (10 from Northern California, 10 from Southern California) and randomized, within strata defined by average weekly prescription volume (in quintiles, range 400-1599), for pharmacy personnel (pharmacists and technicians) to receive either: (a) written materials-only training [minimal] or (b) written materials plus a 4-hour live training along with active monitoring and coaching by pharmacy management [intensive] (Figure 1). Technicians hired after the study launch, those with scheduled leaves of absence greater than 6 weeks, and casual employees (working ≤6 hours weekly) were excluded from the study.

Minimal intervention group.—In the minimal intervention group, participating personnel at the 10 pharmacies were required to complete a self-study training module designed for pharmacy technicians. This web-based training program provided one hour of continuing education credit and was completed in the pharmacy breakroom during paid working hours. The module was case-based and addressed the health consequences of smoking, nicotine withdrawal symptoms, drug interactions with tobacco smoke, assisting patients with quitting, and medications for cessation. Pharmacy personnel were required to read the Smoking Cessation Services Best Practices Binder, which included: (a) an overview of the AAR tobacco cessation patient care service, (b) procedures for implementing the service (e.g., training, workflow, documentation), and (c) intervention documentation forms.

Intensive intervention group.—In addition to the training materials provided to the minimal intervention group, pharmacy personnel in the intensive intervention group participated in a live training session delivered by two faculty members from the University of California, San Francisco (UCSF) School of Pharmacy (RLC, LAK) and a trainer from Pharmacy Corporate Leadership (PV). Pharmacists and technicians were trained in tandem to emphasize the importance of team-based care in delivering the tobacco cessation service. The program provided four hours of continuing education credit and was designed to supplement material covered in the self-study module, including: (a) a detailed review of the AAR intervention model, (b) information about tobacco quitlines, (c) interactive case-studies with videos depicting model interventions in community pharmacy settings, and (d) detailed instructions for operationalizing and documenting the tobacco cessation

interventions. Participants from individual stores worked in teams during role playing exercises to practice tobacco cessation counseling skills. To demonstrate competency, participants completed a skills evaluation with course faculty at the conclusion of the training. This consisted of three role-playing assessments in which, using a standard script and associated scoring rubric, faculty served as patients who were either ready or not ready to quit using tobacco. After each assessment, participants received tailored feedback and coaching to promote self-efficacy for delivering cessation interventions in the pharmacy.

As part of routine ongoing contact with stores, pharmacy personnel in the intensive group also received active monitoring and coaching from regional pharmacy management through weekly telephone calls and monthly site visits. These stores also received a weekly metrics report via e-mail, detailing individual performance for all 10 stores in the intensive study arm with respect to documentation of smoking status in the pharmacy profile and weekly and cumulative totals for cessation interventions. In addition, corporate leadership conducted in-person site visits four weeks after the live training sessions. Regional pharmacy managers were instructed to coach and motivate stores with documented low levels of engagement and to congratulate and encourage continued efforts among stores providing higher number of tobacco cessation interventions.

Study Measures

Documented tobacco cessation services.—In documenting tobacco cessation services, reported data included which pharmacy personnel were involved with each patient encounter, the date of service, and services provided (AAR model with or without medication counseling by a pharmacist). One paper-based form was completed per patient per visit, and these data were used to quantify the number and types of interventions completed per technician weekly and cumulatively over the 12-week study period. For the purpose of this report, interventions that did not include a technician (i.e., pharmacist only) were excluded. To be considered, encounters had to involve discussion of tobacco cessation and/or the state tobacco quitline. Interventions in which patients were only provided with a card or brochure with information about the tobacco quitline were not included in the analysis.

Study questionnaires.—Using digital tablets, web-based questionnaires were administered by field study staff and completed by pharmacy personnel at baseline, post-training, and at 6- and 12-weeks post-training. The post-training assessment was administered to both arms simultaneously, although the minimal arm received no additional training other than the receipt of written training materials after the baseline survey was completed.

Questionnaire items assessed technicians' demographics and perceived: (a) role in helping patients quit smoking, (b) self-efficacy for providing tobacco cessation assistance, and (c) barriers to implementing the AAR patient care model. Respondents rated their "overall ability to interact with patients about quitting smoking" using a 5-point scale (1=poor, 2=fair, 3=good, 4=very good, 5=excellent). Self-efficacy, adapted from measures used in a prior study,[18,29] was computed as an average of responses across a 9-item scale. Response

options for these items, which assessed technicians' self-efficacy for engaging in various components of the AAR model, ranged from 0=cannot do at all to 10=highly certain can do.

Technicians also rated the importance of several potential barriers: lack of available time, lack of training, discomfort in asking patients about tobacco use, lack of pharmacy staff's perceived importance of cessation counseling as applicable to their job, and lack of self-efficacy for counseling patients about quitting. Each was rated using a 5-point scale (1=not at all important, 2=a little important, 3=moderately important, 4=very important, 5=extremely important). Lastly, technicians were asked (yes or no) whether they believed: (a) they had become more interested in tobacco cessation (as a result of participating in the study), (b) the pharmacy profession should become more active in helping patients quit smoking, and (c) the AAR approach should be implemented at other pharmacies within the chain nationwide.

Statistical analysis.—Data were analyzed using Microsoft Excel, Version 16.0 (tobacco cessation interventions) and IBM SPSS Statistics for Windows, Version 26.0[30] (questionnaire data). Simple summary statistics were computed, and self-efficacy scale scores were created as an average of contributing items. Fisher's Exact or Chi-squared tests were used, as appropriate, to test for group differences in the number of interventions provided.

Study procedures were approved by the University of California, San Francisco Institutional Review Board.

Results

Study participants

Fifty pharmacy technicians completing a baseline and post-training questionnaire were included in the analyses (Table 1). At baseline, no statistically significant between-group differences were observed. Surveys were completed by 92.3% of the minimal group and 100% of the intensive group at the 6-week assessment and 92.3% of the minimal group and 95.8% of the intensive group at the 12-week assessment (Figure 2).

Frequency of documented interventions: Tobacco cessation and/or California Smoker's Helpline

Of 908 recorded tobacco cessation interventions during the 12-week study period, technicians (with or without pharmacists) were involved in 524 (57.7%); of these, 294 (56.1%) occurred in the minimal group and 230 (43.9%) occurred in the intensive group ($p<0.001$). Among reported encounters where only a technician was involved, 218 (74.1% of 294) occurred in the minimal group and 188 (81.8% of 230) occurred in the intensive group ($p=0.04$). The peak number of interventions per week for the minimal group was observed 2 weeks after receipt of written training materials (n=46 interventions) and at 4-weeks post-training for the intensive group (n=41 interventions) (Figure 3).

The number of technicians who reported at least one intervention was 16 (of 26; 61.5%) in the minimal group and 24 (of 24; 100%) in the intensive group ($p<0.001$). The median

number of interventions documented per reporting technician was 9.5 (range, 1-67) and 6 (range, 1-32) in the minimal and intensive groups, respectively. Of the 118 encounters that involved a pharmacist, 18.6% included counseling for non-prescription NRT, and 5.1% included counseling for prescription cessation medications.

Technicians' perceptions of their involvement in tobacco cessation services

At the conclusion of the study, 100% of technicians in the intensive group self-rated their ability to interact with patients about quitting smoking as good, very good, or excellent compared to 73.9% in the minimal group ($p = 0.10$). Participants believed that pharmacy technicians can play an important role in helping patients quit, with no significant differences between groups (78.3% in the minimal group agreed/strongly agreed and 80.9% in the intensive group agreed/strongly agreed, $p = 0.94$). Additionally, technicians reported high levels of self-efficacy for implementing the AAR model, with mean self-efficacy scores being high at baseline (7.7 in the minimal group and 7.7 in the intensive group, $p = 0.99$). While mean self-efficacy scores remained high across the study period for both groups, those in the intensive group had significantly higher scores at the end of the study period (at 12 weeks, 7.5 in the minimal group and 8.9 in the intensive group, $p = 0.02$). Across both intervention arms, the two most commonly reported barriers to implementing the cessation model were insufficient time (61.5% in the minimal group and 54.2% in the intensive group, $p = 0.61$) and lack of training (56.0% in the minimal group and 54.2% in the intensive group, $p = 0.29$), with no significant differences between groups (Table 2).

As a result of participating in the study, 56.5% of responding technicians in the minimal group and 66.7% in the intensive group indicated that they had become more interested in tobacco cessation ($p = 0.49$), and overall, technicians believed that the pharmacy profession should become more active in helping patients quit smoking (73.9% in the minimal group and 81.0% in the intensive group, $p = 0.58$). Most (87.0% in the minimal group and 80.0% in the intensive group, $p = 0.54$) also believed the AAR cessation model should be implemented at other pharmacies within the chain across the country.

Discussion

Over the past decade, pharmacy technician roles have evolved beyond traditional dispensing responsibilities to include direct patient care activities such as immunization administration,[27] warfarin monitoring,[24] and naloxone distribution and education.[31] The results of the present study suggest that technicians, functioning within their scope of practice, are also capable of delivering brief tobacco cessation interventions in community pharmacy settings.

While the total number of tobacco cessation interventions provided solely by technicians was similar for the intensive and minimal groups, there were differences in the level of individual participation between the study arms. All technicians in the intensive group documented at least one intervention (compared with 62% of technicians in the minimal arm) suggesting a greater overall level of engagement. One potential explanation for this difference could be that increased participation is a result of the live, in-person training experience, which could enhance self-efficacy for speaking with patients about quitting

smoking. While technicians in the intensive group had higher perceived self-efficacy at the conclusion of the study, both intervention arms reported high self-efficacy throughout the study. However, the active monitoring and coaching component, which was unique to the intensive group, could have led to increased engagement, because technicians in this group might have had a greater level of accountability to integrate interventions into workflow than those in the minimal group. This finding is consistent with previous literature, reporting that provider feedback and coaching are associated with increased delivery of tobacco cessation services in other settings.[32,33] This is further supported by the observation of a spike in tobacco cessation interventions that occurred at 4-weeks post-training for the intensive group, which coincided with a site visit by corporate management to observe study progress. Interventions delivered by pharmacy personnel in the minimal group peaked 2 weeks after receipt of the written training materials and gradually declined thereafter. In contrast, pharmacy staff in the intensive group did not appreciably implement the tobacco cessation service until after the live training program and site visit by corporate leadership. While the minimal group did participate in similar number of interventions, we advocate for a training model that incorporates ongoing feedback and coaching by pharmacy management.

Technicians in both intervention arms reported a high level of self-efficacy for implementing AAR interventions. This is not surprising, given the relatively simple and brief nature of the framework. These findings are consistent with that of prior research, in which pharmacy technicians who participated in a continuing education program on tobacco cessation reported improved attitudes and self-efficacy for assisting patients with quitting.[28]

While results of our study suggest that technicians can play an important role in supporting cessation services in community pharmacies, additional contextual factors may impede full implementation of tobacco cessation interventions in practice. Consistent with previous research, we found that technicians felt that limited time and lack of training were barriers to implementation of these services.[34] Despite the evidence of the effectiveness of the AAR model in pharmacy settings,[18] there has been limited research addressing how organizational factors facilitate or impede integration of these processes in to standard workflows.[34] According to best-practices for tobacco cessation, system-level strategies to support integration of tobacco cessation services into practice include standard identification systems, provider education, reminder systems, feedback, and dedicated staff.[1] To facilitate integration of cessation services, pharmacy dispensing software should include a dedicated field for documentation of tobacco use[35] and capacity for screening for drug interactions with tobacco use.[36] Furthermore, as supported by our findings, involving leadership to provide monitoring, feedback, and support could also help to ensure buy-in and follow through with new processes. Lastly, system-level strategies should account for specific social-cultural factors of patients being served.

Limitations

Despite the robust randomized trial design, the generalizability of the study results is limited by the small number of technicians and the relatively short (12-week) follow-up period. Opportunities to speak with patients about tobacco cessation likely was impacted by this, because patients who fill 90-day quantities of medications might have visited their pharmacy

only once during the study period. It is not possible to estimate the independent impact of the live training experience, because it was coupled with active monitoring by pharmacy management. Furthermore, the study was conducted in California, which has a lower prevalence of smoking compared to the national average (10.1%[37] vs 14.0%[38]) and can vary widely (5.6% to 25.1%), depending on the region in which the pharmacy was located.[39] Additionally, tobacco cessation intervention data were derived from pharmacy personnel self-reports, which does not allow for assessment of the quality of the interventions and might have differed between the groups. Future studies should consider the use additional measures, to estimate the extent to which the tobacco cessation interventions are delivered as intended. Lastly, we did not measure patient-level outcomes (e.g., intention to quit or actual quitting) as a part of this study. However, our prior work found that cessation services delivered in community pharmacies do result in increased numbers of calls to the tobacco quitline.[18]

Conclusion

Technicians documented high numbers of tobacco cessation interventions in both study arms, thereby demonstrating their utility in the process regardless of the type of training that is provided. In comparison to those receiving written training materials only, the higher proportion of technicians providing one or more interventions in the intensive group could suggest a greater level of engagement in the process, although it cannot be determined whether this is a result of the training approach or the monitoring process. Overall, these results do suggest that technicians can play a key role in the delivery of brief tobacco cessation interventions in community pharmacies.

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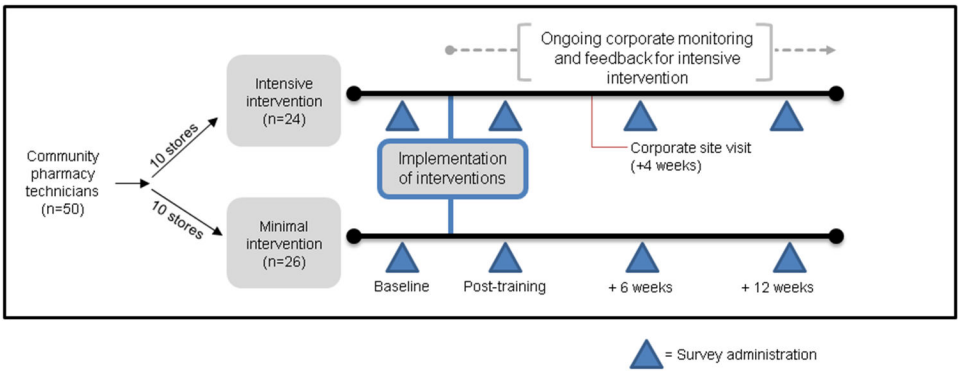

Figure 1.
Longitudinal study design.

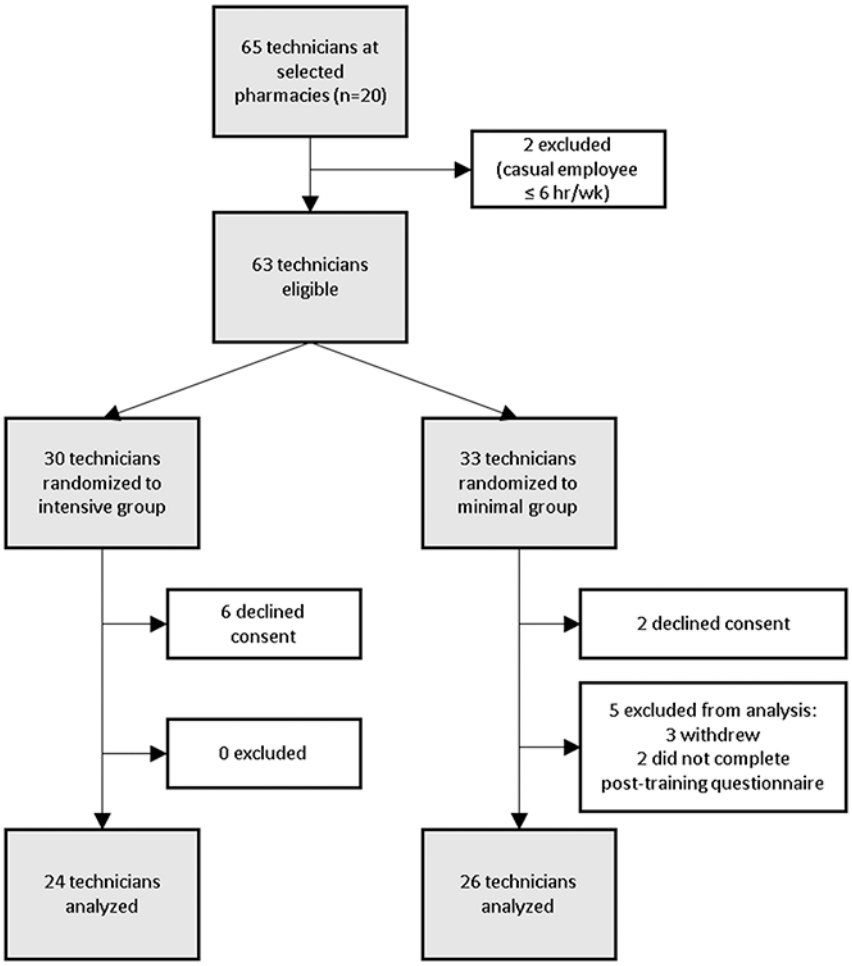

Figure 2.
Technician recruitment, participation, and analyses at 20 pharmacy sites.

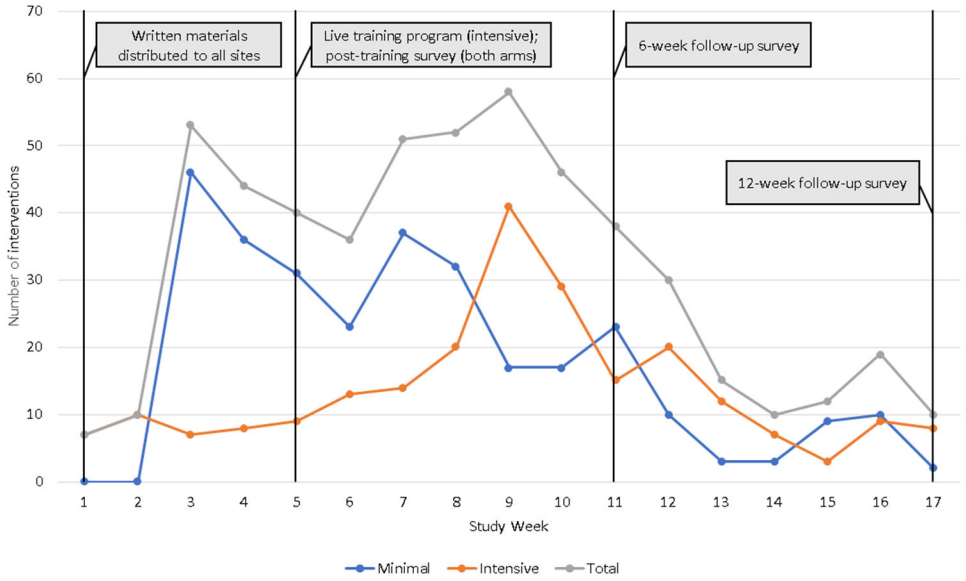

Figure 3.
Smoking cessation interventions, by week.

Table 1.

Study population: baseline pharmacy technician characteristics.

Characteristic	Minimal (%) n = 26	Intensive (%) n = 24	p-value
Gender			
Female	21 (80.8)	18 (75.0)	0.62
Male	5 (19.2)	6 (25.0)	
Age			
Mean	39.0	38.3	0.80
Standard deviation	11.2	12.8	
Range	38 (22-60)	37 (19-56)	
Race			
White	15 (57.7)	14 (58.3)	0.96
Black or African American	0 (0.0)	0 (0.0)	
Asian	3 (11.5)	2 (8.3)	
Native Hawaiian or other Pacific Islander	2 (7.7)	1 (4.2)	
American Indian/Alaska Native	0 (0.0)	0 (0.0)	
More than one race	2 (7.7)	2 (8.3)	
Other/unknown	4 (15.4)	5 (20.8)	
Ethnicity			
Hispanic or Latino	6 (23.1)	11 (45.8)	0.11
Tobacco Use			
Once or more a day	1 (3.8)	2 (8.3)	0.82
Less than one a day	0 (0.0)	0 (0.0)	
Used to but quit	5 (19.2)	4 (16.7)	
Experimented in the past	10 (38.5)	7 (29.2)	
Never tried	10 (38.5)	11 (45.8)	
Hours worked per week			
Mean	32.7	32.2	0.82
Standard deviation	8.4	6.8	
Range	28 (12-40)	25 (15-40)	

Table 2.

Technicians' post-training ratings of perceived barriers to implementing Ask-Advise-Refer,[a] by intervention arm.[b]

Barrier	Minimal (%) n = 26	Intensive (%) n = 24	p-value
Lack of available time			
Not at all important	0 (0.0)	2 (8.3)	0.61
A little important	2 (7.7)	1 (4.2)	
Moderately important	8 (30.8)	8 (33.3)	
Very important	10 (38.5)	9 (37.5)	
Extremely important	6 (23.1)	4 (16.7)	
Lack of training			
Not at all important	2 (8.0)	4 (16.7)	0.29
A little important	4 (16.0)	2 (8.3)	
Moderately important	5 (20.0)	5 (20.8)	
Very important	7 (28.0)	11 (45.8)	
Extremely important	7 (28.0)	2 (8.3)	
Discomfort in asking patients about tobacco use			
Not at all important	3 (11.5)	1 (4.2)	0.88
A little important	5 (19.2)	4 (16.7)	
Moderately important	10 (38.5)	10 (41.7)	
Very important	3 (11.5)	4 (16.7)	
Extremely important	5 (19.2)	5 (20.8)	
Lack of confidence for counseling patients about quitting			
Not at all important	2 (8.0)	2 (8.7)	0.85
A little important	2 (8.0)	1 (4.3)	
Moderately important	8 (32.0)	9 (39.1)	
Very important	7 (28.0)	8 (34.8)	
Extremely important	6 (24.0)	3 (13.0)	

[a]Survey item was worded as: "Please rate the **importance** of each of the following potential barriers to using the 'Ask-Advise-Refer' approach as part of *routine work flow* in your community pharmacy. Note: If you feel that one or more of the barriers listed *does not apply* to your pharmacy, please rate it as "not at all important."

[b]Less than 5% missing data.