

Current Status and Faculty Perspectives on Tobacco Cessation Training in U.S. Pharmacy Programs

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Abstract

To examine (1) the nature, instructional formats, and evaluation approaches used for tobacco cessation education, (2) faculty judgments regarding whether current instruction is sufficient, and (3) faculty willingness to expand or revise curricular content in response to pharmacists' recently broadened authority to prescribe tobacco cessation therapies. A single faculty member from each college or school of pharmacy who had primary responsibility for tobacco cessation instruction was invited to complete a national, internet-based survey. Survey questions addressed multiple components of tobacco-related education and assessed faculty interest in participating in a train-the-trainer program, as well as in embedding Tobacco Treatment Specialist instruction within their institution's curriculum. A total of 132 faculty members responded (93.0% response rate). Nearly all respondents (98.5%) reported inclusion of tobacco cessation instruction in required coursework, whereas 15.2% indicated that content was offered through elective courses. The median number of structured instructional hours was 5.0 (range, 1.0–18.0). One-third of respondents (33.3%) evaluated student proficiency using objective structured clinical examinations. Most faculty (83.8%) believed that their institution had adequate expertise to deliver comprehensive tobacco cessation education. Almost all respondents (98.5%) expressed interest in attending a train-the-trainer program to update pharmacy faculty on current pharmacist-led tobacco cessation practices, and 95.4% were interested in incorporating Tobacco Treatment Specialist training into the Doctor of Pharmacy curriculum. As pharmacists' clinical responsibilities related to prescribing tobacco cessation medications continue to grow, the enhancement of tobacco-related instruction within Doctor of Pharmacy programs is warranted. Faculty respondents demonstrated strong interest in expanding curricular content to ensure graduates are prepared to practice at the full scope of their professional authority when addressing tobacco use and dependence.

Keywords: Tobacco cessation, Smoking cessation, Pharmacy, Education, Curriculum

Introduction

Tobacco consumption remains the most prominent preventable contributor to illness and death in the United States (US), accounting for more than 480,000 deaths annually and producing an estimated \$288.9 billion in yearly costs related to healthcare expenditures and productivity losses from premature mortality [1]. Although public health initiatives have reduced overall

tobacco use, approximately 46.0 million US adults (18.7%) were current tobacco users in 2021 [2]. These figures highlight the continued need for greater involvement of healthcare professionals in tobacco cessation counseling, which represents one of the most effective intervention strategies available [3–7].

Pharmacists, given their accessibility within community healthcare settings, are well-positioned to support patients seeking to quit tobacco use through counseling and pharmacologic therapy. In recent years, pharmacists' professional responsibilities have expanded to include prescribing authority for tobacco cessation medications. As of March 2023, autonomous prescribing had been implemented or was under development in 17 states, with 9 of those states permitting pharmacists to prescribe all

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US Food and Drug Administration–approved cessation therapies [8].

Prior research indicates that healthcare providers who receive specialized education in tobacco dependence treatment are more likely to implement cessation interventions in routine practice [9]. Over the past two decades, pharmacy has distinguished itself as the only health profession to consistently integrate comprehensive tobacco cessation education into core professional curricula [10–14]. This achievement has been largely facilitated by the development and national dissemination of a standardized training program for health professional students—the Rx for Change: Clinician-Assisted Tobacco Cessation program (<https://rxforchange.ucsf.edu>) [15]—which has maintained widespread adoption for more than 20 years [14, 16–18].

Between 2003 and 2005, a national initiative trained faculty members ($n = 191$) from 89 of 91 US colleges and schools of pharmacy (97.8%) through a 2.5-day train-the-trainer program designed to prepare instructors to deliver Rx for Change curricular materials [13]. More than a decade later, a 2016 national survey conducted by the American Association of Colleges of Pharmacy estimated that 73.5% of institutions continued to use Rx for Change resources within their Doctor of Pharmacy (PharmD) programs, underscoring the durability of a shared curricular framework [14]. However, the rapid expansion in the number of pharmacy schools over the past 25 years, together with pharmacists' increasing involvement in prescribing tobacco cessation medications [19, 20], necessitates an updated evaluation of the current educational environment.

Accordingly, the present study conducted a national survey of faculty members at colleges and schools of pharmacy to assess (1) existing tobacco cessation content, instructional strategies, and assessment practices; (2) faculty perceptions regarding the adequacy of current tobacco cessation education; and (3) faculty interest in, and perceived need for, revising or expanding curricular offerings in light of pharmacists' evolving prescribing responsibilities. Findings from this study aim to inform future efforts to align pharmacy education with the profession's expanding role in tobacco cessation care.

Materials and Methods

This investigation targeted faculty from all 142 accredited Doctor of Pharmacy (PharmD) programs

located in the United States. Eligible participants were defined as instructors with responsibility for tobacco cessation instruction within the professional curriculum. Potential respondents were identified using publicly available institutional webpages, professional referrals, or direct communication with department chairs or academic administrators. Each identified individual received an email invitation requesting survey participation if they served as the primary tobacco cessation instructor. When contacted, faculty indicated that they were either (1) not the appropriate respondent or (2) unable to complete the survey; they were asked to refer a suitable colleague at their institution.

Recruitment followed a structured protocol consisting of one initial email containing the informed consent documentation and survey link, followed by three reminder emails and up to two telephone contact attempts. Faculty who completed the approximately 10-minute questionnaire received a \$30 Amazon.com gift card in recognition of their time. Ethical approval for all study procedures was granted by the Human Research Protection Program at Purdue University. Data collection was conducted using Qualtrics software during the Spring and Summer terms of 2022.

Survey items were adapted from previously published instruments evaluating tobacco cessation instruction in pharmacy education [21–23]. Measures captured institutional characteristics, the extent and nature of tobacco cessation content, and methods used for instruction and evaluation. The instrument also assessed respondents' interest in (1) participating in a future train-the-trainer initiative and (2) expanding curricular depth related to tobacco cessation.

Pharmacy programs were categorized according to the size of the entering PharmD cohort for the 2021–2022 academic year. Information regarding institutional enrollment and public or private designation was obtained from databases maintained by the American Association of Colleges of Pharmacy [24].

Respondents indicated whether tobacco cessation topics were incorporated into required courses, electives dedicated exclusively to tobacco cessation, or other elective offerings that included tobacco-related material. Faculty also reported the total number of hours devoted to tobacco cessation instruction within required coursework during the 2021–2022 academic year, as well as the professional year(s) in which this instruction occurred.

Participants were asked to report whether the Rx for Change program was used in required coursework to teach tobacco cessation. Those who confirmed its use identified specific instructional components employed, including: (1) slide-based lectures, (2) role-play case exercises, (3) supplemental handouts, (4) a video message from the Surgeon General, (5) recorded counseling demonstrations, (6) tobacco trigger tape video scenarios, (7) experiential skills training using placebo products or nicotine replacement therapy samples, (8) tobacco-focused virtual patient cases, and (9) tobacco-related standardized patient activities, objective standardized patient encounters, or Objective Structured Clinical Examination (OSCE) cases.

Faculty also reported whether the following topic areas were addressed in required coursework: (1) population-level patterns of tobacco use, (2) tobacco products and electronic nicotine delivery systems, (3) nicotine pharmacology and mechanisms of addiction, (4) medication interactions related to tobacco smoke exposure, (5) comprehensive cessation counseling using the 5 A's framework (ask, advise, assess, assist, arrange), (6) brief counseling approaches such as Ask-Advise-Refer, and (7) pharmacotherapies for tobacco cessation. For each topic included in the core curriculum, respondents evaluated whether coverage was insufficient, appropriate, or excessive.

Instructional formats used to deliver tobacco-related material within required courses were assessed using non-mutually exclusive response options, including: (1) live classroom instruction, (2) asynchronous learning formats such as recorded lectures or webinars, (3) assigned readings, (4) discussion of clinical cases, (5) Rx for Change virtual patient modules, (6) student role-play counseling exercises, and (7) standardized patient counseling encounters accompanied by structured feedback.

Respondents identified the approaches used to assess student competence in tobacco cessation counseling. Assessment options included multiple-choice examinations, short-answer tests, case-based multiple-choice items, case-based short-answer responses, oral examinations, and OSCEs. Multiple selections were permitted.

Faculty were asked to indicate whether they believed their institution possessed sufficient expertise to deliver comprehensive tobacco cessation education, with response options of yes, no, or unsure. Additional survey items measured interest in (1) attending a train-the-

trainer program focused on current pharmacist-led tobacco cessation practices, with travel costs covered, and (2) integrating Tobacco Treatment Specialist (TTS) training into the PharmD curriculum if instructional resources and guidance were provided at no cost. To support informed responses, participants were directed to the Association for the Treatment of Tobacco Use and Dependence (ATTUD) website [25]. ATTUD defines a TTS as "a professional who possesses the skills, knowledge, and training to provide effective, evidence-based interventions for tobacco dependence across a range of intensities" [25], and who also contributes to educating others involved in tobacco cessation care. Response options included interested, interested but requiring additional information, and not interested.

Survey data were summarized using descriptive statistical methods. All analyses were performed with IBM SPSS Statistics, version 28.0.

Results and Discussion

Among the 142 colleges and schools of pharmacy invited to participate, 132 completed the survey, yielding a response rate of 93.0%. Of the responding institutions, 67 (50.8%) were publicly funded, and 65 (49.2%) were privately funded. The median size of the entering PharmD class for the 2021–2022 academic year was 78.5 students (range, 14–310). Respondents represented pharmacy programs in all but one of the 46 states that host at least one school of pharmacy.

Nearly all respondents (98.5%) reported that tobacco education and cessation intervention skills were included within required coursework, while 15.2% indicated inclusion within elective courses. Four institutions (3.0%) offered an elective devoted exclusively to tobacco cessation education and intervention. During the 2021–2022 academic year, the median total number of instructional hours dedicated to tobacco-related material within required courses was 5.0 h (range, 1–18), with 39.2% of programs meeting the recommended minimum threshold of 6.0 h [26]. Tobacco-related content was delivered during the first professional year in 55.5% of programs, the second year in 57.4%, and the third year in 31.5%.

A total of 76 respondents (57.6%) reported current use of Rx for Change materials to teach tobacco cessation in required coursework. Among these programs, the most frequently utilized components included ancillary student handouts (90.8%), PowerPoint lecture slides

(89.3%), and role-play case scenarios (54.8%). Additional Rx for Change elements reported as being used included experiential skills training with placebo products or nicotine replacement therapy samples (40.5%), recorded counseling demonstration videos (37.0%), tobacco-specific virtual patient modules (24.3%), tobacco trigger tape video vignettes (23.3%), tobacco-focused standardized patients, objective standardized patients, or OSCE cases (17.8%), and the Surgeon General's welcome message video (13.7%).

Faculty were asked to identify tobacco-related topics included in the core curriculum and, when applicable, to

rate the adequacy of coverage as insufficient, appropriate, or excessive (**Table 1**). The most consistently addressed content areas were medications for smoking cessation (100%), comprehensive counseling strategies (94.7%), and nicotine pharmacology and addiction principles (93.2%). Coverage of tobacco product types, including e-cigarettes and vaping devices, was most frequently identified as inadequate, as reported by 29.2% of respondents.

Table 1. Tobacco-related topics addressed in core curriculum and respondents' perceived adequacy of coverage (n = 132).

Topic	n (%) ^a	Perceived adequacy ^b	Inadequately covered	Adequately covered	Excessively covered
Epidemiology	115 (81.7)		20 (17.4)	92 (80.0)	3 (2.6)
Forms of tobacco and e-cigarettes/vaping	107 (81.1)		31 (29.2)	74 (69.8)	1 (0.9)
Nicotine pharmacology and principles of addiction	123 (93.2)		14 (11.6)	104 (86.0)	3 (2.5)
Drug interactions with tobacco smoke	108 (81.8)		15 (14.2)	92 (85.8)	0
Comprehensive counseling interventions (the 5A's ^c)	125 (94.7)		19 (15.4)	92 (74.8)	12 (9.8)
Brief counseling interventions (Ask-Advise-Refer)	100 (75.8)		16 (16.3)	80 (81.6)	2 (2.0)
Medications for quitting	132 (100.0)		5 (3.8)	117 (90.0)	8 (6.2)

a Number of respondents indicating inclusion of the topic in the core curriculum.

b Not all programs that taught each topic responded to the perceived adequacy item.

c Ask about tobacco use, Advise patients to quit, Assess readiness to quit, Assist with quitting, and Arrange follow-up.

Instructional strategies used to deliver tobacco-related material within required courses included classroom-based lectures (95.4%), case discussion formats (86.0%), assigned readings (65.1%), counseling simulations involving student role-play (64.3%), counseling encounters with standardized patients and structured feedback (38.4%), asynchronous podcasted lectures or webinars (23.4%), and tobacco-specific virtual patient activities (16.7%).

Methods used to assess student competence in tobacco cessation counseling included multiple-choice examinations (100%), case-based multiple-choice assessments (82.9%), OSCEs (33.3%), case-based short-answer examinations (30.5%), short-answer tests (25.2%), and oral examinations (6.8%).

Most respondents reported that their institution possessed sufficient faculty expertise to deliver comprehensive tobacco cessation education (n = 109; 83.8%). Fifteen respondents (11.5%) were uncertain, while 6 (4.6%) indicated that adequate expertise was lacking. Interest in a train-the-trainer program focused on contemporary pharmacist-led tobacco cessation was expressed by 90 respondents (68.2%), whereas 40 (30.3%) desired additional information and 2 (1.5%) were not interested. Regarding integration of Tobacco Treatment Specialist (TTS) training into the PharmD curriculum, 76 respondents (58.0%) expressed interest, 49 (37.4%) indicated interest pending further information, and 6 (4.6%) reported no interest.

As pharmacists' responsibilities in the management of tobacco use and dependence continue to expand, it is

essential that PharmD graduates are equipped with the competencies necessary to support patients seeking to quit. While pharmacists have traditionally been trained to dispense medications and provide counseling for therapies prescribed by other clinicians, current practice expectations increasingly require pharmacists to independently assess appropriateness, select therapy, and prescribe tobacco cessation medications. In addition, many state-level prescribing protocols mandate follow-up with individuals who have recently quit, which requires reassessment of therapy and adjustment of treatment plans to maintain safety and effectiveness [20]. Historically, PharmD curricula have placed limited emphasis on the prescribing components of tobacco cessation care [21].

Given these shifts in professional scope, instructional and assessment approaches must ensure mastery of essential competencies. Nationally, the overall volume of tobacco-related instruction within PharmD programs suggests opportunities for enhancement. The median of 5.0 instructional hours reported in this survey falls below the 6.0 h minimum recommended in 2013 [26], a period when only one state—New Mexico—had granted pharmacists prescriptive authority for tobacco cessation medications [27]. Expanding classroom time within already dense curricula poses challenges; however, alternative strategies exist, such as assigning preparatory web-based modules or readings with accompanying quizzes to establish foundational knowledge prior to in-person sessions. This approach allows classroom time to be devoted to active learning, applied problem-solving, and case-based instruction.

Respondents described the use of diverse teaching modalities, with more than half relying on materials from the Rx for Change shared tobacco cessation curriculum. Because Rx for Change content undergoes annual updates, its use reduces the burden on individual faculty while ensuring currency. The program has demonstrated broad adoption and sustained utilization for more than 20 years, underscoring its value as a national educational resource [14, 16, 18].

Findings from this investigation offer important insight into how tobacco cessation knowledge and related competencies are evaluated. Specifically, 38.4% of programs reported using case-based counseling or standardized patient encounters with structured feedback, while 33.3% employed tobacco-focused Objective Structured Clinical Examination (OSCE) cases as part of their assessment strategy. One limitation of the

present survey is that it did not capture detailed information regarding the number of OSCE stations or the specific design of standardized patient scenarios. Ideally, a tobacco-focused OSCE would consist of 3 distinct cases, each reflecting a different stage of cessation: an individual not prepared to quit, a patient ready to quit, and a recent quitter. In jurisdictions where pharmacists are authorized to prescribe tobacco cessation medications, OSCE scenarios should be aligned with state-specific prescribing protocols. For instance, in Indiana, North Dakota, and Vermont—states with nearly identical protocols [20]—one station could involve counseling a patient unwilling to quit, a second could require conducting an intake assessment and developing a treatment plan for a motivated patient, and a third could focus on a 14-day follow-up visit with a recent quitter to reassess therapy effectiveness and address cessation challenges. When the implementation of a 3-station OSCE is impractical, tobacco use can be incorporated into OSCE cases focused on tobacco-related conditions such as asthma, cancer, cardiovascular disease, diabetes, or pulmonary disorders. Faculty may access multiple tobacco-specific standardized patient cases, along with OSCE guidance and supplementary tools, through the Rx for Change website (<https://rxforchange.ucsf.edu>) [15]. The majority of respondents indicated that their institutions possessed sufficient faculty expertise to deliver comprehensive tobacco cessation education; however, 6 respondents reported a lack of adequate expertise. Of these programs, 5 were established after the national tobacco cessation train-the-trainer initiatives conducted between 2003 and 2005 [13], and therefore did not benefit from those earlier efforts. Despite widespread confidence in faculty expertise across PharmD programs, more than 95% of respondents expressed interest in both (1) participating in a train-the-trainer program to remain current on advances in tobacco use and dependence treatment and (2) integrating a more advanced level of student training comparable to the 4-day Tobacco Treatment Specialist (TTS) certification program. This high level of interest, combined with substantial variability in instructional hours, topic coverage, and teaching and assessment methods, indicates that pharmacy education could benefit from a renewed national faculty development initiative. Such an effort could focus on creating and disseminating shared instructional resources—such as flipped classroom materials and OSCE-based assessments—that extend beyond the foundational content currently emphasized in

PharmD curricula. Anticipated challenges include aligning curricular priorities across institutions and identifying innovative strategies to integrate expanded tobacco cessation content into already dense curricula. Notably, nearly 20 years have passed since the 2003–2005 Rx for Change faculty training programs, underscoring the need for updated train-the-trainer opportunities for newer faculty now responsible for teaching tobacco cessation.

Key strengths of this study include the high response rate and the ability to identify priority content areas for future faculty development initiatives. Limitations include reliance on self-reported data and the absence of formal validity testing. Additionally, while the brief survey format—along with the use of a financial incentive—likely contributed to strong participation, it restricted the depth of information obtained regarding faculty perspectives and implementation practices. Future investigations should more thoroughly examine faculty experiences and decision-making related to tobacco cessation instruction.

Conclusion

In light of pharmacists' expanded authority to prescribe tobacco cessation medications, substantial interest exists in revising curricular content within US colleges and schools of pharmacy. Faculty report a desire to broaden coursework, particularly with respect to e-cigarettes, vaping products, and other forms of tobacco. Enhancing education related to emerging evidence and evolving treatment strategies will help ensure that PharmD graduates are prepared to practice at the full extent of their licensure when addressing tobacco use and dependence.

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