Content and Methods used to Train Tobacco Cessation Treatment Providers: An International Survey

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Abstract

Introduction—There are limited existing data describing the training methods used to educate tobacco cessation treatment providers around the world.

Aims—To measure the prevalence of tobacco cessation treatment content, skills training and teaching methods reported by tobacco treatment training programs across the world.

Methods—Web-based survey in May-September 2013 among tobacco cessation training experts across six geographic regions and four World Bank income levels. Response rate was 73% (84 of 115 countries contacted).

Results—Of 104 individual programs from 84 countries, most reported teaching brief advice (78%) and one-to-one counseling (74%); telephone counseling was uncommon (33%). Overall, teaching of knowledge topics was more commonly reported than skills training. Programs in lower income countries less often reported teaching about medications, behavioral treatments and...
biomarkers and less often reported skills-based training about interviewing clients, medication management, biomarker measurement, assessing client outcomes, and assisting clients with co-morbidities. Programs reported a median 15 hours of training. Face-to-face training was common (85%); online programs were rare (19%). Almost half (47%) included no learner assessment. Only 35% offered continuing education.

**Conclusion**—Nearly all programs reported teaching evidence-based treatment modalities in a face-to-face format. Few programs delivered training online or offered continuing education. Skills-based training was less common among low- and middle-income countries (LMICs). There is a large unmet need for tobacco treatment training protocols which emphasize practical skills, and which are more rapidly scalable than face-to-face training in LMICs.

**Keywords**
tobacco cessation; training

### 1. Introduction

Tobacco is a major global health threat that is predicted to kill up to one billion people this century (WHO, 2008). The Framework Convention on Tobacco Control promotes methods for reducing the harms of tobacco through both prevention of tobacco initiation and assistance for current users to quit (WHO, 2003). Helping tobacco users to quit will reduce tobacco-related mortality faster than prevention alone (WHO, 2008) with the most effective method of quitting being a combination of behavioral support plus medication (Fiore, 2008).

To meet the challenge of assisting nearly one billion tobacco users to quit (Ng, 2014), an ethical case exists for public taxation, indoor air policies, and advertising bans to be complemented by a workforce of individuals trained in tobacco cessation treatment (Bitton and Eyal 2013). Not all training methods are equally effective at producing a workforce for promoting cessation (McDermott, 2013; Cornuz, 2002; Wilson, 1988; Olano-Espinoza, 2013; Carson, 2012). Evidence-based training promotes better clinical practice and better cessation outcomes (Michie, 2011; West, 2011; West, 2010). There are limited existing data describing the training methods and content used to educate tobacco cessation treatment providers around the world. Our objectives for this study are to measure the prevalence of tobacco cessation treatment content, skills training and teaching methods reported by tobacco treatment training programs around the world and to compare programs across income levels.

### 2. Methods

#### 2.1 Sample

We identified individuals involved in tobacco control and training around the world using a strategic non-probability sampling approach (Kruse, 2015). Individuals included treatment specialists, government officials, and members of the Framework Convention Alliance and who either participated in prior tobacco treatment and tobacco control surveys administered by the research team (Piné-Abata, 2013; Rigotti, 2009; Raw, 2009; Raw, 2009), were contacts of the research team, or were recommended by a range of tobacco control...
organizations. We reasoned that these individuals were likely to be knowledgeable about tobacco cessation treatment training in their countries. We identified 197 individuals involved in tobacco control from 122 countries spanning all six World Health Organization regions (WHO, 2015) and four World Bank income levels (World Bank, 2014). Individuals were invited to participate by email. From this sample, we excluded invalid emails (N=28) and ineligible contacts (i.e. those not involved in training programs, N=37). We also invited respondents to provide contact information for additional individuals involved with training programs in their countries (N=58). Our final response rate denominators were 190 individual program contacts in 115 countries.

2.2 Survey Instrument

In the 28-item survey we asked about training methods including whether programs covered seven knowledge topics, seven treatment skills, harm reduction, work with diverse populations, and professional development (Appendix A). For respondents with more than one program, we asked them to respond about their most comprehensive program. The topics were adapted from the 11 core competencies outlined by the Association for the Treatment of Tobacco Use and Dependence (ATTUD, 2005). Some competencies covered multiple distinct topics and were assessed with multiple items. We did not ask about the law and ethics competency because we reasoned that some countries would not have regulations applicable to the tobacco treatment setting. The language was simplified with the help of an ATTUD member for an earlier training survey (Rigotti, 2009) and the items were revised again based on pre-testing and expert opinion by our research team.

Three research assistants in the Massachusetts General Hospital Tobacco Research and Treatment Center and 42 UK National Centre for Smoking Cessation and Training trainers pre-tested the survey. The survey was developed in English and professionally translated to Spanish and French. Two native-speakers also fluent in English reviewed the translated versions, and any discrepancies in meaning between versions were edited.

2.3 Data Collection

Individual subjects were invited by email between May and September 2013 to complete a web-based survey. We offered no remuneration. The Lifeguide program (http://lifeguide.ecs.soton.ac.uk/) was used to administer the survey. Non-responders were contacted biweekly on up to five occasions, with reminder emails containing both a link to the web-based survey and a word document version of the survey for subjects preferring to return the survey by email attachment. Completion of the survey implied consent.

2.4 Analysis

We calculated descriptive statistics of program content and compared those characteristics across World Bank income levels (high, upper-middle, lower-middle, and low-income) using the Cochran-Armitage test for trends and the Kruskal-Wallis chi-square test for continuous variables. Analyses were performed using SAS version 9.3 (Cary, NC).
3. Results

3.1 Response rate

We received individual responses about 122 training programs (64%) in 84 different countries (73%) with between one and 11 individual response(s) per country. Among the 84 countries, over half (N=52, 62%) were low- or middle-income countries (LMICs) (Appendix B). Neither the individual nor country response rates differed significantly by income level or region. Most individuals (91%, N=111) responded in English, 6% (N=7) in French, and 3% (N=4) in Spanish. Many (48%, N=50) respondents reported having multiple roles in their training program including: trainer (52%, N=54), program manager (42%, N=44), researcher (32%, N=33), administrator (20%, N=21), and funder (5%, N=5).

3.2 Trainees

Overall, healthcare workers (doctors, nurses, dentists, mid-level clinicians including clinical officers and physicians assistants, pharmacists, psychologists, respiratory therapists, or students of these professions) were the most commonly reported trainees (84%, N=87). Programs in lower income countries were less likely to report training healthcare workers (high-income 91% [N = 50], UM 80% [N = 24], LM 73% [N = 8], low 63% [N = 5], Cochran–Armitage trend test = 2.4, P = .01). Over half of individual programs (54%, N=56) reported training individuals outside the healthcare system including religious leaders, teachers, and community health workers. Many programs reported training tobacco treatment specialists (33%, N=34) and addictions specialists (23%, N=24).

3.3 Treatment modalities

The majority of programs reported teaching brief advice (78%) and one-to-one counseling (74%); teaching about telephone counseling was uncommon (33%) (Table 1). Few programs reported teaching learners to deliver cessation assistance online (15%) or using social media (14%). Group counseling was more often reported in high-income countries (p=0.04).

3.4 Training content

All seven topics and seven skills were taught by a majority of programs (Table 1). Several educational topics were less often reported by programs in lower-income countries (Figure 1). The most commonly reported topics in low-income countries were consequences of tobacco use, benefits of stopping, and reasons people use tobacco (Table 1).

Overall, skills-based training was less common than teaching topics. Programs in lower-income countries were less likely to report training learners in how to interview tobacco users, how to manage medications, practical skills such as CO monitoring, how to keep records and measure program results, and how to refer or work with community resources for tobacco users with co-morbidities (Table 1). Teaching of harm reduction methods was reported by 51% of programs (N=53) and there was no difference by income level. Most programs reported including content for assisting one or more special populations (Table 2). Higher-income countries more often reported training learners to assist tobacco users with mental health problems and pregnant women.
### 3.5 Training methods

Most programs (85%, N=88) train providers using face-to-face methods for a median of 15 hours (interquartile range [IQR]: 7-24) (Table 3). Online training was relatively rare (19%, N=20). Lower income countries reported fewer training hours (p=0.01). Half (53%, N=55) of programs reported an end-of-program assessment for learners. This was most commonly a multiple choice exam (35%, N=36), 20% (N=21) used essay exam. One-quarter (N=25, 24%) assessed learners by observing counseling skills. Most programs (56%, N=58) reported certification was available. We did not specify whether this was a certificate of participation or a more formal certification (e.g. Tobacco Treatment Specialist). Recertification or training renewal requirements were rare (17%, N=18).

### 4. Discussion and Conclusions

#### 4.1 Discussion

This international survey of tobacco cessation treatment training programs found that training programs covered a comprehensive range of teaching topics and taught evidence-based treatment methods although topics and methods differed by country income level. The inclusion of practical skills training was less widely reported, particularly among LMICs, and there were potential training deficiencies in total hours of training, learner assessments, continuing education, and availability of online training.

Consistent with prior work (Rigotti, 2009) our study finds that most training programs covered most recommended teaching topics (ATTUD, 2005). Our study adds to the literature by examining differences in topical content by income level. These income differences may reflect the stage of their tobacco epidemic (Thun, 2012). Lower income countries most often reported teaching about the consequences of tobacco use and benefits of cessation and this may reflect less prevalent knowledge of the harms of tobacco among the public in LMICs (Yang, 2009; Sansone, 2012). Programs in higher income countries more often reported higher amounts of pedagogy about behavioral and pharmacologic treatments and biomarker assessment compared to lower income countries where these resources may not be widely available. It is worth highlighting that medications and biomarkers are not covered 100% of the time in high income countries where these resources are widely available (WHO, 2008). Furthermore, in LMICs where medications are not accessible, training providers to deliver behavioral cessation support may be the most efficacious treatment available to reduce the harms of tobacco use (Awaisu, 2011; Siddiqi, 2013).

Skills-based training was not as commonly reported as tobacco cessation knowledge building, particularly among LMICs. This may reflect local resources, as described above, with less training in skills of medication management and CO monitoring where medications and biomarker measurement are not available. We also don't know whether face-to-face training methods were strictly lectures or whether they included more skills-oriented methods like case discussions or role-playing. Prior work measuring medical student tobacco training has shown lectures are the most often used teaching method while role-playing or practice with real clients is less common (Richmond, 2009). Although knowledge building is necessary, it may be insufficient as a driver of behavior change among...
treatment providers or smokers (NCSCT, 2013). Programs which involve role-playing or other skills-based training have been associated with greater provider behavior change than lecture based programs (Spangler, 2002) and skills-based tobacco dependence training improves cessation outcomes (Brose, 2014).

In addition to the need for more widespread skills-based training, our survey identified four other potential training shortfalls: hours of training offered, learner assessments, continuing education, and availability of online materials. Even in high-income countries, median hours of training are below the 30 hours training standards recommend (NCSCT, 2013) and more hours of training improves cessation outcomes (Lancaster, 2000). Only one-quarter of programs assessed learners by observation of skills and less than half of programs had any end of program assessment. Requirements to retrain providers were also rare. One-off training programs without continuing education may be only minimally effective at changing provider behavior (Herie, 2012; Miller, 2006). Finally, in-person training was the norm. Meeting the growing needs of smokers in LMICs will require more rapidly scalable training methods. Online programs could enable more hours of training content to be delivered inexpensively to a wide audience. Linking online programs to skills-based training and continuing education, where possible, could further increase the effectiveness of trainees (Brose, 2014).

A key strength of this study is its large sample size, including training programs from all income levels and all regions. To our knowledge, there are no other surveys measuring tobacco treatment training methods around the world. The study also has limitations, though. It is a non-probability sample that may not be representative of the entire population of training programs. However, no comprehensive list of training programs exists. Our sample may over-represent countries with more comprehensive tobacco control programs and less sophisticated programs may be excluded. Finally, data are self-reported and we cannot validate the accuracy of responses.

4.2 Conclusions

Training programs offered comprehensive coverage of tobacco cessation knowledge although topics covered varied by setting. Low and middle-income countries appear to have a large unmet need for tobacco cessation training programs which emphasize practical skills for tobacco treatment providers. We also identified potential shortfalls in hours of training offered, learner assessment, continuing education and reliance on face-to-face methods. Consideration should be given to development of training modalities which offer more hours of training, learner assessments, retraining opportunities and which can be more quickly disseminated than face-to-face programs, such as online training. Addressing these shortfalls in training programs in all countries may speed progress toward reducing the harms of tobacco.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.
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References

World Health Organization. [Accessed July 17, 2015] WHO report on the global tobacco epidemic 2008: The MPOWER package. Secondary WHO report on the global tobacco epidemic 2008: The MPOWER package. 2008. [Accessed July 17, 2015]

World Health Organization. Geneva: World Health Organization; 2003. WHO Framework Convention on Tobacco Control. http://www.who.int/fctc/text_download/en/ [Accessed July 17, 2015]

Fiore, MC., Jaen, CR., Baker, T., et al. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services; 2008. Treating Tobacco Use and Dependence: 2008 Update.

Ng M, Freeman MK, Fleming TD, et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. J Amer Med Assoc. 2014; 311:183–92. DOI: 10.1001/jama.2013.284692

Bitton A, Eyal N. Too Poor To Treat? The Complex Ethics of Cost-Effective Tobacco Policy in the Developing World. Public Health Ethics. 2013; 4:109–20. DOI: 10.1093/phe/phr014

McDermott MS, Beard E, Brose LS, et al. Factors associated with differences in quit rates between “specialist” and “community” stop-smoking practitioners in the english stop-smoking services. Nicotine Tob Res. 2013; 15:1239–47. DOI: 10.1093/ntr/nts262 [PubMed: 23239841]

Cornuz J, Humair JP, Seematter L, et al. Efficacy of resident training in smoking cessation: a randomized, controlled trial of a program based on application of behavioral theory and practice with standardized patients. Ann Intern Med. 2002; 136:429–37. [PubMed: 11900495]

Wilson DM, Taylor DW, Gilbert JR, et al. A randomized trial of a family physician intervention for smoking cessation. J Amer Med Assoc. 1988; 260:1570–4.

Olano-Espinosa E, Matilla-Pardo B, Minue C, et al. Effectiveness of a health professional training program for treatment of tobacco addiction. Nicotine Tob Res. 2013; 15:1682–9. DOI: 10.1093/ntr/ntt040 [PubMed: 23547275]

Carson KV, Verbiest ME, Crone MR, et al. Training health professionals in smoking cessation. Cochrane Database Syst Rev. 2012; 5:CD000214.doi: 10.1002/14651858.CD000214.pub2

Michie S, Churchill S, West R. Identifying evidence-based competences required to deliver behavioural support for smoking cessation. Ann Behav Med. 2011; 41:59–70. DOI: 10.1007/s12160-010-9235-z [PubMed: 20936389]

West R, Evans A, Michie S. Behavior change techniques used in group-based behavioral support by the English stop-smoking services and preliminary assessment of association with short-term quit outcomes. Nicotine Tob Res. 2011; 13:1316–20. DOI: 10.1093/ntr/ntr120 [PubMed: 21742650]

West R, Walia A, Hyder N, et al. Behavior change techniques used by the English Stop Smoking Services and their associations with short-term quit outcomes. Nicotine Tob Res. 2010; 12:742–7. DOI: 10.1093/ntr/ntt074 [PubMed: 20478957]

Kruse GR, Rigotti NA, Raw M, et al. Tobacco Dependence Treatment Training Programs: An International Survey. Nicotine Tob Res. 2015; Epub ahead of print. doi: 10.1093/ntr/ntv142

Pine-Abata H, McNeill A, Murray R, et al. A survey of tobacco dependence treatment services in 121 countries. Addiction. 2013; 108:1476–84. DOI: 10.1111/add.12172 [PubMed: 23451932]

Rigotti NA, Bitton A, Richards AE, et al. An international survey of training programs for treating tobacco dependence. Addiction. 2009; 104:288–96. DOI: 10.1111/j.1360-0443.2008.02442.x [PubMed: 19149826]
Raw, M., Regan, S., Rigotti, N.A., McNeill, A. A survey of tobacco dependence treatment guidelines in 31 countries. *Addiction*. 2009; 104:1243–50. DOI: 10.1111/j.1360-0443.2009.02584.x [PubMed: 19563566]

Raw, M., Regan, S., Rigotti, N.A., McNeill, A. A survey of tobacco dependence treatment services in 36 countries. *Addiction*. 2009; 104:279–87. DOI: 10.1111/j.1360-0443.2008.02443.x [PubMed: 19149825]

World Health Organization. [Accessed July 17, 2015] Alphabetical List of WHO Member States. 2015. http://www.who.int/culture/demography/by_country/en/

World Bank. [Accessed July 17, 2015] About Data: Country and Lending Groups. 2014. http://data.worldbank.org/data-catalog/world-development-indicators?display=graph

Association for the Treatment of Tobacco Use and Dependence (ATTUD). [Accessed July 17, 2015] Core competencies for evidence-based treatment of tobacco dependence. Secondary Core competencies for evidence-based treatment of tobacco dependence. 2005. http://attudaccred.org/Assets/ATTUD-Core-Competencies.pdf

Thun, M., Peto, R., Boreham, J., et al. Stages of the cigarette epidemic on entering its second century. *Tob Control*. 2012; 21:96–101. DOI: 10.1136/tobaccocontrol-2011-050294 [PubMed: 22345230]

Yang, J., Hammond D., Driezen P., et al. Health knowledge and perception of risks among Chinese smokers and non-smokers: findings from the Wave 1 ITC China Survey. *Tob Control*. 2010; 19(Suppl 2):i18–23. DOI: 10.1136/tobaccocontrol-2009.029710 [PubMed: 20935195]

Sansone GC., Raute LJ., Fong GT., et al. Knowledge of health effects and intentions to quit among smokers in India: findings from the Tobacco Control Policy (TCP) India pilot survey. *Int J Environ Res Public Health*. 2012; 9:564–78. DOI: 10.3390/ijerph9020564 [PubMed: 22470310]

Awaisu A., Nik Mohamed MH., Mohamad Noordin N., et al. The SCIDOTS Project: evidence of benefits of an integrated tobacco cessation intervention in tuberculosis care on treatment outcomes. *Subs Abuse Treat Prev Policy*. 2011; 6:26.doi: 10.1186/1747-597X-6-26

Siddqui K., Khan A., Ahmad M., et al. Action to stop smoking in suspected tuberculosis (ASSIST) in Pakistan: a cluster randomized, controlled trial. *Ann Intern Med*. 2013; 158:667–75. DOI: 10.7326/0003-4819-158-9-201305070-00006 [PubMed: 23648948]

Richmond R., Zwar N., Taylor R., et al. Teaching about tobacco in medical schools: a worldwide study. *Drug Alcohol Rev*. 2009; 28:484–97. DOI: 10.1080/09595230903367306 [PubMed: 19737207]

National Centre for Smoking Cessation and Training. NCSCT Training Standard: Learning Outcomes for Training Stop Smoking Practitioners. In: McEwen, A., editor. 2nd. London: Health Development Agency; 2013. http://www.ncsct.co.uk/publication_ncsct-training-standard-learning-outcomes-for-training-stop-smoking-practitioners.php [Accessed July 17, 2015]

Spangler JG., George G., Long Foley K., Crandall SJ. Tobacco Intervention Training: Current Efforts and Gaps in US Medical Schools. *JAMA*. 2002; 288:1102–9. DOI: 10.1001/jama.288.9.1102 [PubMed: 12204079]

Brose LS., West R., Michie S., McEwen A. Changes in success rates of smoking cessation treatment associated with take up of a national evidence-based training programme. *Prev Med*. 2014; 69:1–4. DOI: 10.1016/j.ypmed.2014.08.021 [PubMed: 25152508]

Lancaster T., Silagy C., Fowler G. Training health professionals in smoking cessation. *Cochrane Database Syst Rev*. 2000; 3:CD000214. doi: 10.1002/14651858.CD000214

Herie M., Connolly H., Voci S., et al. Changing practitioner behavior and building capacity in tobacco cessation treatment: the TEACH project. *Patient Educ Couns*. 2012; 86:49–56. DOI: 10.1016/j.pec.2011.04.018 [PubMed: 21612884]

Miller WR., Sorensen JL., Selzer JA., et al. Disseminating evidence-based practices in substance abuse treatment: a review with suggestions. *J Subst Abuse Treat*. 2006; 31:25–39. DOI: 10.1016/j.jsat.2006.03.005 [PubMed: 16814008]
Figure 1. Educational topics covered in training programs by income level
*Cochrane-Armitage trend test p<0.05
Abbreviations: UM-upper middle, LM-lower middle
Table 1

Tobacco cessation treatment training topics and skills covered by income level*

| Topic                                                                 | All | High | UM | LM | Low | p-value  \\ |
|----------------------------------------------------------------------|-----|------|----|----|-----|---------|
| Are trainees taught to deliver the following?                        |     |      |    |    |     |         |
| Evidence based treatment modalities                                 |     |      |    |    |     |         |
| Brief advice                                                        | 78% | 84%  | 70%| 82%| 63% | 0.19    |
| One to one counseling                                                | 74% | 78%  | 70%| 64%| 75% | 0.43    |
| Group treatment                                                     | 48% | 58%  | 40%| 27%| 38% | 0.04    |
| Telephone treatment                                                 | 33% | 38%  | 23%| 36%| 25% | 0.39    |
| Newer treatment modalities                                          |     |      |    |    |     |         |
| Online treatment                                                    | 15% | 16%  | 31%| 9% | 13% | 0.62    |
| Social media                                                        | 14% | 13%  | 20%| 9% | 13% | 0.99    |
| Which topics does your program teach trainees about?                |     |      |    |    |     |         |
| Prevalence and patterns of tobacco use                               | 80% | 87%  | 77%| 64%| 63% | 0.02    |
| Consequences of tobacco use on health                               | 80% | 84%  | 77%| 73%| 75% | 0.34    |
| Benefits of stopping tobacco use                                    | 82% | 87%  | 77%| 73%| 75% | 0.16    |
| Reasons people use tobacco and find it hard to stop, e.g. dependence | 81% | 87%  | 73%| 73%| 75% | 0.15    |
| Biomarkers for tobacco use (e.g. CO or cotinine)                    | 64% | 75%  | 63%| 45%| 25% | 0.002   |
| Medications to aid the quit attempt                                 | 76% | 87%  | 70%| 64%| 38% | <0.001  |
| Behavior support programs to help a tobacco user to quit            | 77% | 85%  | 73%| 64%| 50% | 0.001   |
| Which of the following skills does your program cover?              |     |      |    |    |     |         |
| How to interview a tobacco user to collect the information needed for treatment | 77% | 87%  | 67%| 73%| 50% | 0.01    |
| How to develop a treatment plan for each tobacco user               | 74% | 80%  | 73%| 55%| 63% | 0.08    |
| How to manage medications for tobacco treatment                     | 72% | 80%  | 70%| 64%| 38% | 0.01    |
| How to provide continued support and help tobacco users to prevent relapse | 74% | 82%  | 67%| 64%| 63% | 0.08    |
| Practical skills (such as CO monitoring practice)                   | 63% | 75%  | 57%| 45%| 25% | 0.002   |
| How to keep records of tobacco users treated and measure program results | 59% | 69%  | 50%| 36%| 50% | 0.04    |
| How to refer or work with community resources when treating tobacco users with medical, psychiatric, or psychosocial problems | 53% | 69%  | 40%| 27%| 25% | <0.001  |

* Kruse et al. J Smok Cessat. Author manuscript; available in PMC 2018 June 01.
Abbreviations: UM-upper middle, LM-lower middle, NRT-nicotine replacement therapy

*2014 World Bank Country Income Level: http://data.worldbank.org/data-catalog/world-development-indicators?display=graph

†Based on Cochrane-Armitage test for trend across high, UM, LM and low country income level.
Table 2

| Tobacco cessation treatment training program work with special populations by income level* |
|---------------------------------|---|---|---|---|---|
| N                              | All | High | UM | LM | Low | p-value‡ |
| Do you offer specific training or information for work with any of the following clients? | | | | | |
| Youth (under 18 years)         | 63% | 67% | 70% | 38% | 43% | 0.11 |
| Clients with mental health problems | 58% | 69% | 57% | 25% | 29% | 0.01 |
| Pregnant women                 | 65% | 75% | 57% | 63% | 29% | 0.02 |
| People in prison               | 10% | 13% | 9%  | 0%  | 14% | 0.63 |
| Racial or ethnic minority groups | 26% | 33% | 17% | 25% | 0%  | 0.05 |
| Hospitalized patients          | 52% | 54% | 57% | 50% | 29% | 0.31 |
| Other groups                   | 10% | 55% | 3%  | 9%  | 25% | 0.47 |

Abbreviations: UM-upper middle, LM-lower middle

*2014 World Bank Country Income Level: http://data.worldbank.org/data-catalog/world-development-indicators?display=graph

‡Based on Cochrane-Armitage test for trend across high, UM, LM and low country income level.
## Table 3

### Tobacco cessation treatment training methods by income level*

| Method                                      | All   | High | UM   | LM   | Low  | p-value† |
|---------------------------------------------|-------|------|------|------|------|----------|
| Face-to-face training                       | 85%   | 91%  | 77%  | 82%  | 75%  | 0.12     |
| Online training                             | 19%   | 20%  | 30%  | 0%   | 0%   | 0.13     |
| How many total hours of training does your program provide? |       |      |      |      |      | 0.01     |
| Total hours-median (IQR)                    | 15 (7-24) | 16 (8-30) | 16 (12-24) | 5 (3-15) | 4 (3-8) |         |
| Are individuals' knowledge and/or skills assessed at the end of the program? |       |      |      |      |      |          |
| Yes, by essay or short answer exam          | 20%   | 22%  | 23%  | 9%   | 13%  | 0.38     |
| Yes, by multiple choice exam                | 35%   | 36%  | 43%  | 18%  | 13%  | 0.16     |
| Yes, by observation of counseling           | 24%   | 20%  | 33%  | 27%  | 13%  | 0.86     |
| Yes, by other methods                       | 14%   | 22%  | 3%   | 9%   | 13%  | 0.14     |
| No, there is no assessment                  | 47%   | 45%  | 43%  | 55%  | 63%  | 0.38     |
| Is certification offered to participants who pass your program? |       |      |      |      |      |         |
| Yes, by program or sponsor institution      | 56%   | 60%  | 57%  | 36%  | 50%  | 0.44     |
| Yes, by external board                      | 8%    | 13%  | 3%   | 0%   | 0%   | 0%       |
| No, certification is not available          | 21%   | 16%  | 23%  | 36%  | 25%  |          |
| Don't know/missing                          | 15%   | 11%  | 17%  | 27%  | 25%  |          |
| Are individuals required by government or a certifying organization to renew the training? |       |      |      |      |      |          |
| Yes, the training has to be repeated        | 4%    | 5%   | 3%   | 0%   | 0%   | 0.45     |
| Yes, an exam has to be repeated             | 1%    | 0%   | 0%   | 0%   | 0%   | 0%       |
| Yes, other training renewal is required     | 13%   | 18%  | 7%   | 9%   | 0%   | 0%       |
| No, it is one time with no follow-up        | 65%   | 64%  | 70%  | 64%  | 63%  |          |
| Don't know/missing                          | 7%    | 39%  | 20%  | 27%  | 25%  |          |

Abbreviations: UM-upper middle, LM-lower middle, IQR-interquartile range

*2014 World Bank Country Income Level: [http://data.worldbank.org/data-catalog/world-development-indicators?display=graph](http://data.worldbank.org/data-catalog/world-development-indicators?display=graph)

†Based on Cochrane-Armitage test for trend, Fisher's exact test, or Kruskal-Wallis chi-square test across high, UM, LM and low country income level.