



## Medical school curriculum characteristics associated with intentions and frequency of tobacco dependence treatment among 3rd year U.S. medical students



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### ARTICLE INFO

Available online 5 January 2015

#### Keywords:

Tobacco dependence treatment  
Medical school curriculum and education  
Medical students

### ABSTRACT

**Objective.** Physicians play a critical role in addressing tobacco dependence, yet report limited training. Tobacco dependence treatment curricula for medical students could improve performance in this area. This study identified student and medical school tobacco treatment curricula characteristics associated with intentions and use of the 5As for tobacco treatment among 3rd year U.S. medical students.

**Methods.** Third year medical students ( $N = 1065$ , 49.3% male) from 10 U.S. medical schools completed a survey in 2009–2010 assessing student characteristics, including demographics, tobacco treatment knowledge, and self-efficacy. Tobacco curricula characteristics assessed included amount and type of classroom instruction, frequency of tobacco treatment observation, instruction, and perception of preceptors as role models.

**Results.** Greater tobacco treatment knowledge, self-efficacy, and curriculum-specific variables were associated with 5A intentions, while younger age, tobacco treatment self-efficacy, intentions, and each curriculum-specific variable were associated with greater 5A behaviors. When controlling for important student variables, greater frequency of receiving 5A instruction ( $OR = 1.07$ ; 95%CI 1.01–1.12) and perception of preceptors as excellent role models in tobacco treatment ( $OR = 1.35$ ; 95%CI 1.04–1.75) were significant curriculum predictors of 5A intentions. Greater 5A instruction ( $B = .06$  (.03);  $p < .05$ ) and observation of tobacco treatment ( $B = .35$  (.02);  $p < .001$ ) were significant curriculum predictors of greater 5A behaviors.

**Conclusions.** Greater exposure to tobacco treatment teaching during medical school is associated with both greater intentions to use and practice tobacco 5As. Clerkship preceptors, or those physicians who provide training to medical students, may be particularly influential when they personally model and instruct students in tobacco dependence treatment.

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### Introduction

Physician-delivered tobacco dependence treatment (Ask, Advise, Assess, Assist, and Arrange or the 5As) is associated with patient

smoking cessation (Stead et al., 2013; Services TTFoCP, 2001; Fiore et al., 2008) and is recommended by the U.S. Public Health Service Clinical Guideline: Treating Tobacco Use and Dependence (Fiore et al., 2008). Yet, despite its effectiveness, physicians, particularly in the U.S., rarely provide consistent or adequate tobacco dependence treatment (Colleges AoAM, 2007; Ferketich et al., 2006; Thorndike et al., 2007, 1998; Centers for Disease C, Prevention, 2013; Goldstein et al., 1997; Tong et al., 2010). Reasons for this vary and include limited time and resources, (Schnoll et al., 2006; Vogt et al., 2005; Ward et al., 2002) but many primarily report limited training as a significant barrier to

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effectively providing this intervention (Cantor et al., 1993; Lancaster et al., 2000; Pbert, 2003; Cornuz et al., 2002).

Because physicians who receive tobacco dependence treatment training are more likely to use and adhere to treatment guidelines and recommendations compared to untrained physicians (Carson et al., 2012), medical schools can be an optimal time to provide this training. The medical school setting includes opportunity for multiple classroom or online didactics, interaction with standardized patients, small-group discussions with faculty, and opportunities to observe and be instructed by clerkship preceptors. However, reviews of tobacco dependence treatment education in U.S. medical schools found limited educational efforts and missed opportunities to provide tobacco dependence treatment training to medical students (Ferry et al., 1999; Griffith et al., 2013; Fiore et al., 1994; Geller et al., 2008; Powers et al., 2004; Richmond et al., 2009; Richmond et al., 1998; Spangler et al., 2002; Springer et al., 2008). For example, Spangler et al. (2002) found instructional gaps (e.g. few practice opportunities) resulting in only short-term retention of tobacco treatment intervention skills by students (Spangler et al., 2002).

In response to this gap, the Interagency Committee on Smoking and Health published a National Action Plan in 2002–2003 that included the recommendation that the knowledge and skill for providing tobacco dependence treatment be a core graduation requirement for all new physicians and other health care professionals (Fiore et al., 2004). Yet, this and other medical school educational initiatives to enhance medical student knowledge (e.g. preventive medicine), resulted in a typically packed curriculum, that does not necessarily enhance tobacco treatment educational efforts (Council, 2004; Pipas et al., 2004; Pomrehn et al., 2000). Medical schools are now streamlining teaching efforts because adding hours to the curriculum is unrealistic (Benbassat and Baomal, 2012; Langdale et al., 2003). It would be beneficial if medical schools had more effective models to teach tobacco dependence treatment, but such models are presently unknown. Examining which types of learning experiences are best associated with tobacco dependence treatment intentions and increased behaviors by medical students during medical school may help guide curricula reform in tobacco dependence treatment education.

Prior research thus far only has identified student characteristics associated with intentions and tobacco treatment behaviors. These include positive beliefs in preventive medicine, intentions to practice in primary care, greater tobacco knowledge, older age, being a non-smoker, and being female (Frank et al., 2007, 2009). In the current study, our goal was to evaluate if any curriculum characteristics were significantly associated with 5A intentions and behaviors beyond important student-level characteristics. Students reported on a list of curriculum characteristics they experienced during medical school and that included: amount of tobacco classroom instruction, frequency of the use of various instructional methods (i.e. case-based discussions, use of simulated patient encounters, participation in a clinical skills course, and participation in a web-based educational exercise or course), frequency of 5A instruction and observation, frequency of seeing clinic reminders, and perception of their clerkship preceptor/mentor as role models for providing tobacco dependence treatment.

## Methods

### Study design

Study data was collected as part of a 10 medical school group randomized controlled trial (“Medical Students helping patients Quit Tobacco”; R01CA136888, Ockene, PI) designed to evaluate whether a multi-modal tobacco dependence treatment curriculum would enhance student tobacco treatment performance on an Objective Structured Clinical Examination (OSCE) compared to traditional tobacco dependence treatment education. Each component of the curriculum focused on enhancing tobacco knowledge and 5A skills, as well as patient-centered counseling skills. See Hayes et al. (2014) for more information about the larger study.

Data for the current study is pre-intervention self-reported cross-sectional survey data from 3rd year medical students (MS3s) who were in the Class of 2011, at the time of survey administration from our participating medical schools. Surveys were administered between November 2009 and February 2010. It had 100+ items and was completed within 15 to 20 min. Surveys were anonymous and participation was voluntary. All survey items were developed based on our prior research (Geller et al., 2008, 2013). The study received approval from the Institutional Review Board at each participating medical school.

### Measures

#### Student characteristics

**Demographics.** Survey items included gender, age, history of smoking  $\geq 100$  cigarettes (yes or no), current use of any tobacco product, including cigars, pipes, or smokeless tobacco (yes or no), career choice (primary care defined as Family or Internal Medicine, Pediatrics, OB/GYN vs. other), and medical school.

**Tobacco knowledge.** Students answered 32 tobacco-related questions focused on various topics from smoking prevalence rates to treatment clinical guideline recommendations. Total scores are the percentage of correct responses out of 32 items.

**Tobacco counseling self-efficacy.** Students answered the question, “How skilled are you in each 5A (Ask, Advise, Assess, Assist, and Arrange)?” where 1 = not at all skilled, 2 = somewhat skilled, 3 = moderately skilled, and 4 = very skilled. Total scores ranged from 5 to 20.

#### Medical school curriculum characteristics

**Tobacco instruction time.** Students reported on “The amount of time they received any instruction about tobacco and its treatment during their 1st and 2nd years in medical school.” Response choices were: 30 min, 31–60 min, 1 h, 2 h, 3 h, 4 h, 5 h, and  $\geq 5$  h.

**Instructional methods.** For each instructional method, students reported the frequency at which they learned about tobacco dependence counseling: a) case-based discussion, b) simulated patient encounter, c) clinical skills course, and d) web-based education. Response choices were never, once, and more than once.

**Frequency of tobacco dependence counseling instruction.** Students reported the number of times they have been instructed in each 5A specifically. (“How many times have you been instructed in each 5A?”) with responses 1 = none, 2 = 1 to 3 times, 3 = 4 to 9 times; 4 = 10 to 25 times; 5 = >25 times; summed responses range from 5 to 25.

**Frequency of tobacco dependence counseling observation.** Students reported the frequency they observed each 5A skill from their preceptor during medical school, “Please estimate the number of times you have observed each tobacco dependence counseling skill from your preceptors.” 1 = none, 2 = 1 to 3 times; 3 = 4 to 9 times; 4 = 10 to 25 times; 5 = >25 times; summed responses range from 5 to 25.

**Clinic reminders.** Students reported how often they saw chart stickers and/or checklists that prompted them or preceptors to encourage tobacco dependence treatment. Responses were: never, yes, on occasion, and yes, frequently.

**Preceptor/mentor perception.** Students rated their agreement with the statement, “My preceptors/mentors are excellent role models who help their patients quit smoking.” Responses were: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.

**Family medicine or Internal medicine clerkship completion.** Because students rotate through clerkships in their 3rd year, students reported whether they had completed neither, one, or both of these clerkships at the time of the survey.

#### Outcome measures

**Intentions to use 5As for tobacco dependence treatment.** Students reported their level of agreement with the following statement, “I intend to routinely use the 5A brief intervention with patients who smoke”. Response choices were the

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