Contemporary Clinical Trials 50 (2016) 54–65

Contents lists available at ScienceDirect

Contemporary Clinical Trials

journal homepage: www.elsevier.com/locate/conclintrial

Integrating tobacco treatment into cancer care: Study protocol for a randomized controlled comparative effectiveness trial

Elyse R. Park PhD, MPH [a,b,f,g,h,i,*], Jamie S. Ostroff PhD [c], Giselle K. Perez PhD [a,f,g], Kelly A. Hyland BA [d], Nancy A. Rigotti MD [a,b,i], Sarah Borderud MPH [c], Susan Regan PhD [a], Alona Muzikansky MA [e], Emily R. Friedman BA [a,f], Douglas E. Levy PhD [a], Susan Holland MA [c], Justin Eusebio BA, MA [f], Lisa Peterson BS [c], Julia Rabin BA [a,f], Jacob Miller-Sobel BS [c], Irina Gonzalez MD [g], Laura Malloy LICSW [h], Maureen O'Brien RN, MS [c], Suhana de León-Sanchez RN, NP [c], C. Will Whitlock RN, NP [c]

[a] Mongan Institute for Health Policy, Massachusetts General Hospital, Boston, MA, United States
[b] Tobacco Research and Treatment Center, Massachusetts General Hospital, Boston, MA, United States
[c] Department of Psychiatry & Behavioral Sciences, Tobacco Treatment Program, Memorial Sloan Kettering Cancer Center, New York, NY, United States
[d] H. Lee Moffitt Cancer Center and Research Institute, University of South Florida, Tampa, FL, United States
[e] Biostatistics Center, Massachusetts General Hospital, Boston, MA, United States
[f] Cancer Outcomes Research Program, Massachusetts General Hospital, Boston, MA, United States
[g] Department of Psychiatry, Massachusetts General Hospital, Boston, MA, United States
[h] Benson-Henry Institute for Mind Body Medicine, Massachusetts General Hospital, Boston, MA, United States
[i] Department of Medicine, Harvard Medical School, Boston, MA, United States

ARTICLE INFO

Article history:
Received 10 May 2016
Received in revised form 14 July 2016
Accepted 17 July 2016
Available online 19 July 2016

Keywords:
Smoking cessation
Tobacco treatment
Cancer patients
Randomized controlled trial
Motivational interviewing
Pharmacotherapy

ABSTRACT

Background: Despite the well-established risks of persistent smoking, 10–30% of cancer patients continue to smoke after diagnosis. Evidence-based tobacco treatment has yet to be integrated into routine oncology care. This paper describes the protocol, manualized treatment, evaluation plan, and overall study design of comparing the effectiveness and cost of two treatments across two major cancer centers.

Methods/design: A two-arm, two-site randomized controlled comparative effectiveness trial is testing the hypothesis that an Intensive Treatment (IT) intervention is more effective than a Standard Treatment (ST) intervention in helping recently diagnosed cancer patients quit smoking. Both interventions include 4 weekly counseling sessions and FDA-approved smoking cessation medication advice. The IT includes an additional 4 biweekly and 3 monthly booster sessions as well as dispensal of the recommended FDA-approved smoking cessation medication at no cost. The trial is enrolling patients with suspected or newly diagnosed cancer who have smoked a cigarette in the past 30 days. Participants are randomly assigned to receive the ST or IT condition. Tobacco cessation outcomes are assessed at 3 and 6 months. The primary study outcome is 7-day point prevalence biochemically-validated tobacco abstinence. Secondary study outcomes include the incremental cost-effectiveness of the IT vs. ST.

Discussion: This trial will answer key questions about delivering tobacco treatment interventions to newly diagnosed cancer patients. If found to be efficacious and cost-effective, this treatment will serve as a model to be integrated into oncology care settings nation-wide, as we strive to improve treatment outcomes and quality of life for cancer patients.

1. Introduction

Smoking is responsible for approximately one in five deaths each year in the United States [1,2]. Thirty percent of cancer deaths in the United States in 2015 will be caused by tobacco use [3]. Persistent smoking following a cancer diagnosis is associated with diminished effectiveness of cancer treatment, increased risks of recurrence and second primary cancer diagnoses [4–10], decreased overall survival [11–14], diminished quality of life [11,15,16], and increased complications from surgery, radiation, and chemotherapy [17–23].

* Corresponding author.
E-mail addresses: epark@mgh.harvard.edu (E.R. Park), ostroffj@mskcc.org (J.S. Ostroff), gperez@mgh.harvard.edu (G.K. Perez), khyland@mail.usf.edu (K.A. Hyland), nrigotti@partners.org (N.A. Rigotti), borderus@mskcc.org (S. Borderud), sregan@mgh.harvard.edu (S. Regan), amuzikansky@mgh.harvard.edu (A. Muzikansky), erfriedman@mgh.harvard.edu (E.R. Friedman), dlevy3@mgh.harvard.edu (D.E. Levy), hollands@mskcc.org (S. Holland), jeusebio@mgh.harvard.edu (J. Eusebio), petersol@mskcc.org (L. Peterson), jtrabin@mgh.harvard.edu (J. Rabin), millersj@mskcc.org (J. Miller-Sobel), igonzalez4@mgh.harvard.edu (I. Gonzalez), lmalloy@mgh.harvard.edu (L. Malloy), obrienm@mskcc.org (M. O'Brien), deleonss@mskcc.org (S. de León-Sanchez), whitlocc@mskcc.org (C.W. Whitlock).

http://dx.doi.org/10.1016/j.cct.2016.07.016
1551-7144/

Despite the risks of persistent smoking, approximately 10% to 30% of cancer patients continue to smoke after a cancer diagnosis [11,24–26]. Studies utilizing national datasets have shown that approximately 1 in 10 cancer survivors smoke [27–29]. Currently, tobacco treatment is not well-integrated into cancer care. Several leading oncology organizations have identified this as a missed opportunity for addressing an important modifiable behavior associated with poorer cancer outcomes [30–32]. Many cancer patients who smoke are not asked about their smoking status, are not advised to quit [33,34], and do not get proper assistance to quit or stay quit [35,36]. These findings are notable, as many cancer patients who smoke want to quit smoking [37–41]. A recent prospective study among participants from the Cancer Prevention Study-II Nutrition Cohort reported high rates of quitting behavior among smokers with cancer in the 2–4 years following a cancer diagnosis [14]. Patient, physician and system level factors impede the delivery of effective tobacco cessation programs during cancer care [35,42–44]. Only half of NCI-designated comprehensive cancer centers, in 2009, had any type of tobacco treatment program [45].

The 2008 U.S. Public Health Service Treating Tobacco Use and Dependence Clinical Practice Guideline (PHS) recommends that evidence-based tobacco treatment, including combined medication and multiple counseling sessions, be delivered to all smokers in health care settings [46]. Unfortunately, little progress has been made with integrating these guidelines into cancer care settings. With few exceptions [47], smoking cessation studies with cancer patients have been limited by very small sample sizes and delayed tobacco treatment initiation [48]. It is critical to start tobacco treatment as close to the time of diagnosis as possible, since the closer cessation is to the time of diagnosis, the higher the likelihood for continued abstinence [11,37,38,49,50] which, in turn, improves cancer treatment outcomes. It is critical to provide quit support to patients at the time of diagnosis, as cessation is an actionable health behavior that patients can control and engage in to protect their health [14]. Additionally, intensive interventions over time are needed, as approximately half of patients who quit at the time of their diagnosis relapse soon after completion of their cancer treatment [51]. Previous studies have further iterated the need for rigorous trials testing the efficacy of individualized, intensive cessation interventions with follow-up over time among this population [52–56].

Thus, the primary study aim is to compare the effectiveness of two tobacco treatments integrated into cancer care in producing tobacco abstinence at 6 months. We hypothesize that the Intensive Treatment (IT) condition will significantly increase the proportion of smokers with biochemically-confirmed, 7-day point-prevalence tobacco abstinence at 6 months compared to the Standard Treatment (ST) condition. Secondary aims are to: a) explore mechanisms through which each treatment promotes abstinence; b) understand variations in abstinence outcomes by subpopulation; c) examine components of treatment that promote abstinence; and d) identify the percentage and associated characteristics of smokers who enroll and adhere to tobacco treatment. Lastly, we will compare the cost per quit within each treatment group.

2. Design and methods

2.1. Study design

The Smokefree Support Study is an ongoing two-site, randomized controlled trial comparing the effectiveness of an Intensive Treatment (IT) versus Standard Treatment (ST) in helping recently diagnosed cancer patients become smokefree.

2.2. Conceptual framework

In order to guide the development of a tobacco treatment intervention in the context of a cancer diagnosis, we combine a coping with illness model and a health behavior change model (Fig. 1). The Self-regulation Model (SRM), a framework widely used to study patients' coping with cancer [57,58], focuses on the dynamic process between beliefs, emotions and coping. It postulates that individuals form illness representations (e.g., What is it?) that guide their behavioral responses to an illness and then engage in strategies (e.g., What can I do that will make me feel better?) to reduce distress. Illness representations can be influenced by environmental (e.g., others' smoking in the home) and physical (e.g., shortness of breath) factors. Parallel processing between illness beliefs and emotions leads to a coping response (e.g., quitting) and subsequent monitoring of the success of coping efforts. Applying the SRM to a cancer diagnosis: changes in beliefs about cancer outcomes (e.g., quitting smoking reduces risk of treatment complications) may lead to engagement in quitting as a strategy to cope with the cognitive and emotional threat of cancer. Furthermore, if individuals' evaluation of the effects of quitting, physical changes (e.g., breathing and pain have improved), and environmental influences (people are no longer smoking in their home) make them feel better, then they will be more likely to stay quit. If quitting smoking decreases an individual's sense of shame and related anxiety, this will increase the chances that he/she will stay quit. The Health Belief Model (HBM) [59] has been widely used to study smoking cessation, and it focuses on health beliefs that underlie behavior change. The HBM posits that when faced with a health threat, individuals are more likely to change a behavior if they feel the threat is serious, they are at risk, they are able to make the change, and the change would decrease their risk. Applying the HBM to a cancer diagnosis: smokers will be more likely to engage in tobacco treatment and quit if they 1) believe that continued smoking after a cancer diagnosis is a serious threat to their health; 2) understand that continuing to smoke puts them at risk for poor outcomes (i.e., treatment complications, cancer recurrence); 3) are confident that they can quit; and 4) believe that quitting will reduce their risk of poor outcomes.

2.3. Setting

Participants are being recruited from two academic medical centers - the Massachusetts General Hospital (MGH) Cancer Center located in Boston, MA and the Memorial Sloan Kettering Cancer Center (MSKCC) located in New York City, NY. This trial is currently open to enrollment and began enrolling subjects in November of 2013.

2.4. Inclusion/exclusion criteria

Study inclusion and exclusion criteria are detailed in Table 1. Eligibility criteria for smoking and cancer characteristics have been selected to be as inclusive as possible in efforts to maximize our reach. Of note, patients are eligible if they are willing to discuss changing their smoking behavior; patients are not required to be willing to quit upon enrollment. Patients with psychiatric disorders are eligible as long as there are no indications of current uncontrolled illness. Advanced stage of disease is not an exclusion criterion unless it is determined by an oncology clinician that the patient is medically unable to participate.

2.5. Recruitment

Eligible patients are identified and recruited by distinct mechanisms at the two participating institutions: the MGH in Boston, MA and the MSKCC in New York City, NY.

2.5.1. MGH

Potential participants are identified using multiple recruitment approaches, including 1) collection of a smoking status intake form; 2) screening of daily clinic patient lists; and 3) direct provider referrals. Specifically, new patients attending an MGH clinic in the thoracic, gastrointestinal (GI), genitourinary (GU), breast, head/neck, lymphoma, gynecological, or melanoma disease center answers a 2-question smoking status screener with multiple choice response options to the questions: “Do you now smoke cigarettes every day, some days or not