Cover Page for Protocol and Statistical Plan

Official Title:	Efficacy of Nurse-Delivered Brief Behavioral Treatment to Self-Manage Insomnia in Cancer Survivors
NCT number:	NCT03810365
Document Type:	Study Protocol and Statistical Plan
Date of the Document:	9-26-2023

University at Buffalo
The State University of New York
University at Buffalo Institutional Review Board (UBIRB)
Office of Research Compliance | Clinical and Translational Research Center Room 5018
875 Ellicott St. | Buffalo, NY 14203
UB Federalwide Assurance ID#: FWA00008824

Complete Research Protocol (HRP-503)

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Template Instructions

Sections that do not apply:

- *In several sections, the addition of checkboxes for* ***Not Applicable*** *have been added to the template as responses.*
    - *If an N/A checkbox is present, select the appropriate justification from the list.*
    - *If an N/A checkbox is not present, or if none of the existing checkboxes apply to your study, you must write in your own justification.*
- *In addition:*
    - *For research where the only study procedures are records/chart review: Sections 19, 20, 22, 23, 24, 25, 31, and 32 do not apply.*
    - *For exempt research: Sections 31 and 32 do not apply.*

Studies with multiple participant groups:

- *If this study involves multiple participant groups (e.g. parents and children), provide information in applicable sections for each participant group. Clearly label responses when they differ. For example:*

  Response:

  This is not a study involving multiple participant groups.

Formatting:

- *Do not remove template instructions or section headings when they do not apply to your study.*

If you are pasting information from other documents using the "Merge Formatting" Paste option will maintain the formatting of the response boxes.

Amendments:

- *When making modifications or revisions to this and other documents, use the* ***Track Changes*** *function in Microsoft Word.*
- *Update the version date or number* ***on Page 3.***

PROTOCOL TITLE:

Include the full protocol title.

Response:

Efficacy of Nurse-Delivered Brief Behavioral Treatment to Self-Manage Insomnia in Cancer Survivors.

PRINCIPAL INVESTIGATOR:

Name
Department
Telephone Number
Email Address

Response:

~~Grace Dean, PhD, RN~~Suzanne Dickerson, PhD, RN

School of Nursing

716-829-~~3235~~3254

~~gdean~~sdickers@buffalo.edu

VERSION:

Include the version date or number.

Response:

~~April 14, 2022~~ ~~September 15, 2022~~1/18/23

GRANT APPLICABILITY:

Indicate whether this protocol is funded by a grant (e.g. NIH, foundation grant). For a grant with multiple aims, indicate which aims are covered by this research proposal.

NOTE: This question does not apply to studies funded by a sponsor contract.

Include a copy of the grant proposal with your submission.

Response:

1 R01 NR018215-01 all aims of the study are covered by this research proposal.

RESEARCH REPOSITORY:

Indicate where the research files will be kept, including when the study has been closed. The repository should include, at minimum, copies of IRB correspondence (approval, determination letters) as well as signed consent documents. This documentation should be maintained for 3 years after the study has been closed.

Response:

All paper documentations will be kept in a locked cabinet in the PI's office. All electronic documentations will be kept on a password-protected drive within the School of Nursing

Location: ~~321D~~ 301E Wende Hall

Address: 3435 Main Street

Buffalo, NY, 14214

Department: School of Nursing

1.0 Objectives

1.1 Describe the purpose, specific aims, or objectives of this research.

Response:

Specific Aim 1: To determine the efficacy of Brief Behavioral Treatment for Insomnia (BBTI), experimental condition, compared to Healthy Eating Program (HEP), attention control, on insomnia severity in cancer survivors with insomnia.

Specific Aim 2: To determine predictors for efficacy of BBTI.

Specific Aim 3: To evaluate BBTI implementation with a focus on characterization of the patient- and provider-level facilitators and barriers.

1.2 State the hypotheses to be tested, if applicable.

NOTE: A hypothesis is a specific, testable prediction about what you expect to happen in your study that corresponds with your above listed objectives.

Response:

Hypothesis 1: Participants receiving BBTI will exhibit significant and durable improvement in insomnia severity index (key variable), sleep quality, mood, and functional status and quality of life measures over HEP.

Hypothesis 2: Selective demographics (older age), disease stage (stage I), treatment-related (surgery only), mood (nondepressed) and positive beliefs about sleep (needing less than 8-hours of sleep) will predict BBTI efficacy.

2.0 Scientific Endpoints

2.1 Describe the scientific endpoint(s), the main result or occurrence under study.

NOTE: Scientific endpoints are outcomes defined before the study begins to determine whether the objectives of the study have been met and to draw conclusions from the data. Include primary and secondary endpoints. Some example endpoints are: reduction of symptoms, improvement in quality of life, or survival. Your response should ***not*** *be a date.*

Response:

The scientific endpoints for this study are improvements in sleep, mood, functional status and quality of life.

3.0 Background

3.1 Provide the scientific or scholarly background, rationale, and significance of the research based on the existing literature and how it will contribute to existing knowledge. Describe any gaps in current knowledge. Include relevant preliminary findings or prior research by the investigator.

Response: Insomnia has devastating effects on health, function and well-being (1). Insomnia symptoms occur in one-third of the general population and 10-15% meet criteria for insomnia disorder, marked by chronic sleep disturbances that causes distress and impair their daytime functioning (2). Symptoms and side effects of cancer and cancer treatments render cancer survivors at increased risk for insomnia disorder (3-5). An estimated 40% of cancer survivors report sleep disturbances years after completing treatment (6). Consequently, interventions to address insomnia in cancer survivors are essential. Treatments for insomnia include pharmacologic and non-pharmacologic therapies that are equally efficacious; however, hypnotic medications such as benzodiazepine receptor agonists have potentially serious adverse effects including tolerance, drowsiness and cognitive impairment (7). Non-pharmacologic interventions, preferred by both patients and clinicians, include Cognitive Behavioral Therapy for Insomnia (CBTI), considered the "gold standard," which requires expert training to deliver and multiple individual sessions (8, 9). Research in non-cancer populations revealed that CBTI is safe, efficacious, and durable (10, 11). However, CBTI is not widely available due to a lack of trained professionals and the high cost of treatment (12). Thus, a major gap in the field of oncology is an alternative to CBTI that is nurse-delivered, rigorously tested, low cost, durable, and having high treatment fidelity. Our preliminary data using Brief Behavioral Treatment for Insomnia (BBTI), a multicomponent intervention that integrates circadian science and behavioral principles of conditioned learning, revealed clinically significant improvements in insomnia severity, total sleep time, and sleep quality without the negative effects commonly reported with hypnotic medications in lung cancer survivors (13). Additionally, BBTI has been tested in several other pilot studies including older adults with chronic insomnia (14), treatment-resistant insomnia (15), and veterans with PTSD and insomnia (16). However, before BBTI is ready for translation into cancer nursing clinical practice, additional research on efficacy

and durability of BBTI is required. We hypothesize that exposing cancer survivors with insomnia to BBTI can help them self-manage their behavior to improve their sleep and quality of life.

Preliminary Studies The multidisciplinary team assembled for the current project has conducted four studies that involved a homogeneous sample of lung cancer survivors and patients receiving chemotherapy for advanced lung cancer(43-46). These studies established that lung cancer survivors (n=76) experienced middle insomnia (i.e., difficulty maintaining sleep) while patients receiving chemotherapy for lung cancer (n=50) had early (i.e., difficulty falling asleep) and middle (difficulty staying asleep) insomnia(43, 46). Additionally, these studies revealed that lung cancer patients with poor sleep scored significantly lower on measures of quality of life than lung cancer patients with good sleep(47). Eighty-five percent of patients with non-small cell lung cancer (NSCLC) in a longitudinal mixed method study had pre-existing insomnia related to anxiety, cancer- and treatment-related symptoms, and poor sleep hygiene practices(45).

The NIH-funded (1R15NR013779) pilot RCT involved lung cancer survivors who were more than 6 weeks post-surgery for stage I or II NSCLC and $\geq$ 1-year since any other cancer treatment. Recruitment occurred during a routine survivorship clinic visit. Participants (n=44) were screened for sleep disorders with the Sleep Disorders Symptom Checklist(48), ApneaLink plus (AHI<15) and Insomnia Severity Index $\geq$8. BBTI was manualized and content about the impact of melatonin, cortisol and nicotine on sleep for lung cancer survivors was added and the attention control intervention, Healthy Eating Program (HEP), was developed(13). No significant differences in baseline ISI were noted between groups (p=0.11). Posttreatment ISI mean score was 15.07 +/- 4.42 for the control group and 6.94 +/-5.27 for the BBTI group (p<0.001; ES=1.61). Quality of life, using the Functional Assessment of Cancer Therapy-Lung (FACT-L), revealed nonsignificant baseline scores (p=0.52), but control group mean scores decreased (74.67 +/- 26.40) while BBTI group mean scores increased (90.73 +/-21.35) which revealed a significant between group difference (p<0.046). Patients receiving BBTI improved FACT-L by 6.6 points and patients receiving the attention control declined by 14.5 points.

Taken together these previous studies confirm that insomnia was common in this homogeneous sample of cancer survivors. BBTI significantly reduced insomnia and improved quality and QOL at the post treatment measure. However, durability in the efficacy of BBTI was not assessed at 3-months or 12-months post-treatment. Additionally, current sleep literature does not include studies using BBTI in heterogeneous samples of cancer survivors with insomnia. This research team has the knowledge and experience to conduct and deliver the proposed RCT. In fact, this team includes researchers with expertise in the areas of nursing, medical oncology, pulmonary/sleep medicine and biostatistics. The NIH-funded PI is an advanced practice nurse with more than 20 years of clinical experience and 15 years of cancer-related fatigue, sleep and circadian rhythms and QOL research. The PI is collaborating with Suzanne Dickerson, DNS, RN, Professor and Chair of Biobehavioral Health and Clinical Sciences, University at

Buffalo, School of Nursing, a qualitative researcher, Alan Aquilina, MD, a pulmonologist, sleep clinician and Co-Director of the University at Buffalo Sleep Fellowship Program; Mary Reid, PhD, Professor of Oncology, Roswell Park Comprehensive Care Center (RPCCC) and Gregory Wilding, PhD, Professor and Chair, Department of Biostatistics, University at Buffalo. The PI has an established record of collaboration with clinicians and researchers from RPCCC and the University at Buffalo, NY.

3.2 Include complete citations or references.

Response:

1. Institute of Medicine CoSMaR, Board on Health Sciences, Policy. *Sleep disorders and sleep deprivation: an unmet public health problem.* Washington, DC: National Academy of Sciences; 2006.

2. Ohayon MM. *Epidemiology of insomnia: what we know and what we still need to learn.* Sleep Med Rev. 2002;6(2):97-111. PubMed PMID: 12531146.

3. Davidson JR, MacLean AW, Brundage MD, Schulze K. *Sleep disturbance in cancer patients.* Soc Sci Med. 2002;54(9):1309-21. PubMed PMID: 12058848.

4. Irwin MR, Olmstead RE, Ganz PA, Haque R. *Sleep disturbance, inflammation and depression risk in cancer survivors.* Brain Behav Immun. 2013;30 Suppl:S58-67. doi: 10.1016/j.bbi.2012.05.002. PubMed PMID: 22634367; PubMed Central PMCID: PMC3435451.

5. Stepanski EJ, Walker MS, Schwartzberg LS, Blakely LJ, Ong JC, Houts AC. *The relation of trouble sleeping, depressed mood, pain, and fatigue in patients with cancer.* J Clin Sleep Med. 2009;5(2):132-6. PubMed PMID: 19968046; PubMed Central PMCID: PMC2670332.

6. Palesh OG, Roscoe JA, Mustian KM, Roth T, Savard J, Ancoli-Israel S, Heckler C, Purnell JQ, Janelsins MC, Morrow GR. *Prevalence, demographics, and psychological associations of sleep disruption in patients with cancer: University of Rochester Cancer Center-Community Clinical Oncology Program.* J Clin Oncol. 2010;28(2):292-8. Epub 2009/11/26. doi: JCO.2009.22.5011 [pii]

10.1200/JCO.2009.22.5011. PubMed PMID: 19933917; PubMed Central PMCID: PMC2815717.

7. Edinger JD, Means MK. *Cognitive-behavioral therapy for primary insomnia.* Clin Psychol Rev. 2005;25(5):539-58. Epub 2005/06/14. doi: 10.1016/j.cpr.2005.04.003. PubMed PMID: 15951083.

8. Morin CM, Bootzin RR, Buysse DJ, Edinger JD, Espie CA, Lichstein KL. *Psychological and behavioral treatment of insomnia:update*

of the recent evidence (1998-2004). Sleep. 2006;29(11):1398-414. Epub 2006/12/14. PubMed PMID: 17162986.

9. Morin CM, Bootzin RR, Buysse DJ, Edinger JD, Espie CA, Lichstein KL. Psychological and behavioral treatment of insomnia:update of the recent evidence (1998-2004). Sleep. 2006;29(11):1398-414. Epub 2006/12/14. PubMed PMID: 17162986.

10. Edinger JD, Sampson WS. A primary care "friendly" cognitive behavioral insomnia therapy. Sleep. 2003;26(2):177-82. Epub 2003/04/10. PubMed PMID: 12683477.

11. Edinger JD, Wohlgemuth WK, Radtke RA, Coffman CJ, Carney CE. Dose-response effects of cognitive-behavioral insomnia therapy: a randomized clinical trial. Sleep. 2007;30(2):203-12. Epub 2007/03/01. PubMed PMID: 17326546.

12. Morin CM, Belanger L, LeBlanc M, Ivers H, Savard J, Espie CA, Merette C, Baillargeon L, Gregoire JP. The natural history of insomnia: a population-based 3-year longitudinal study. Arch Intern Med. 2009;169(5):447-53. doi: 10.1001/archinternmed.2008.610. PubMed PMID: 19273774.

13. Dean GE, Weiss C, Klimpf M, Alameri R, Ziegler P, Steinbrenner LM, Dexter E, Dillon S, Jungquist CR, Dickerson SS. Nurse-delivered brief behavioral treatment for insomnia in lung cancer survivors. Behavioral Sleep Medicine. in review.

14. Buysse DJ, Germain A, Moul DE, Franzen PL, Brar LK, Fletcher ME, Begley A, Houck PR, Mazumdar S, Reynolds CF, 3rd, Monk TH. Efficacy of brief behavioral treatment for chronic insomnia in older adults. Arch Intern Med. 2011;171(10):887-95. doi: 10.1001/archinternmed.2010.535. PubMed PMID: 21263078; PubMed Central PMCID: PMC3101289.

15. Wang J, Wei Q, Wu X, Zhong Z, Li G. Brief behavioral treatment for patients with treatment-resistant insomnia. Neuropsychiatric disease and treatment. 2016;12:1967-75. doi: 10.2147/NDT.S110571. PubMed PMID: 27536119; PubMed Central PMCID: PMC4977084.

16. Germain A, Shear MK, Hall M, Buysse DJ. Effects of a brief behavioral treatment for PTSD-related sleep disturbances: a pilot study. Behaviour research and therapy. 2007;45(3):627-32. Epub 2006/06/17. doi: 10.1016/j.brat.2006.04.009. PubMed PMID: 16777060.

43. Dean GE, Finnell DS, Scribner M, Wang YJ, Steinbrenner LM, Gooneratne NS. Sleep in Lung Cancer: The Role of Anxiety, Alcohol and Tobacco. Journal of Addictions Nursing. 2010;21:130-8. doi: 10.3109/10884601003777620.

44. Dean GE, Redeker NS, Wang YJ, Rogers AE, Gooneratne NS. Sleep, mood and quality of life in patients receiving treatment for lung cancer. Oncology Nursing Forum.(2013);40(5):441-451.

45. Dickerson SS, Sabbah EA, Ziegler P, Chen H, Steinbrenner LM, Dean GE. Sleep is not a priority when living my life after a diagnosis of lung cancer. Oncology Nursing Forum. (2012);39(5):492-499.

46. Gooneratne NS, Dean GE, Rogers AE, Nkwuo JE, Coyne JC, Kaiser LR. Sleep and quality of life in long-term lung cancer survivors. Lung Cancer. 2007. PubMed PMID: 17765353.

47. Gooneratne NS, Dean GE, Rogers AE, Nkwuo JE, Coyne JC, Kaiser LR. Sleep and quality of life in long-term lung cancer survivors. Lung Cancer. 2007;58(3):403-10. doi: 10.1016/j.lungcan.2007.07.011. PubMed PMID: 17765353; PubMed Central PMCID: PMC2206246.

48. Klingman KJ, Jungquist CR, Perlis ML. Introducing the Sleep Disorders Symptom Checklist-25: A Primary Care Friendly and Comprehensive Screener for Sleep Disorders. Sleep Medicine Research. 2017;8(1):17-25. doi: https://doi.org/10.17241/smr.2017.00010.

4.0 Study Design

4.1 Describe and explain the study design (e.g. case-control, cross-sectional, ethnographic, experimental, interventional, longitudinal, observational).

Response:

This is a longitudinal, randomized, efficacy trial. The experimental intervention, BBTI (attached), is being used to help participants with insomnia to sleep better. To receive this treatment, participants need to be enrolled in the study. The attention control intervention, HEP (attached), is not expected to improve sleep.

Baseline measures will be obtained prior to the intervention.

All of the multi-components of BBTI will be delivered individually in the clinic setting or online during a 45-minute session.

Outcome measures will be completed 1-month and again at 3-months and 12-months post-intervention. Each participant will complete one-week of: 1) Sleep diaries; 2) wrist actigraphy; and 3) a study packet with questionnaires on insomnia severity, sleep quality, insomnia symptoms, and beliefs about sleep, functional performance and quality of life. Additionally, two REDCap emails at 6-months and 9-months from the intervention will be sent to ensure patient safety and encourage participant retention. The emails will ask the participants to answer a safety question we currently ask at each previous data collection with a "Yes" or "No"

answer: Do you find that your sleepiness is bad enough that you are at risk of falling asleep while driving or doing something hazardous or harmful?

Additionally, we will ask 2 questions from the Sleep Diary about their sleep: Please rate over the past week: Restful sleep 0-4 (4=excellent) and Sleep quality 0-4 (4=excellent).

5.0 Local Number of Subjects

5.1 Indicate the total number of subjects that will be enrolled or records that will be reviewed locally.

Response:

The total number of subjects enrolled in the study will be 158, with 79 subjects from each group (intervention and attention-control group)

5.2 If applicable, indicate how many subjects you expect to screen to reach your target sample (i.e. your screen failure rate).

Response:

As the local study intends to enroll 158 participants, it is expected that 316 people will need to be screened.

5.3 Justify the feasibility of recruiting the proposed number of eligible subjects within the anticipated recruitment period. For example, how many potential subjects do you have access to? What percentage of those potential subjects do you need to recruit?

Response:

There are approximately 4,000 cancer survivors scheduled for care in the RPCCC' survivorship clinic annually. Half of these survivors will not be eligible for the study. That leaves approximately 2000 potentially eligible participants to recruit. As only 158 participants are needed over a 3-year recruitment period, the pool of survivors appears feasible.

6.0 Inclusion and Exclusion Criteria

*6.1 Describe the criteria that define who will be **included** in your final study sample.*

NOTE: This may be done in bullet point fashion.

Response:

1. Age ≥ 18 years of age

2. ≥ 1-month from surgery and ≥ 1-month from any other treatment (except for hormone treatment or maintenance targeted therapies) for stages I through III: breast, colorectal, and prostate cancers and stages I through IV: lung cancer.

3. Meet published criteria for chronic insomnia: sleep latency > 30 minutes or wake after sleep onset of > 30 mins for ≥ 3 nights/week for at least 1-month

4. ApneaLink Screening Apnea Hyponea Index < 15

5. Ability to complete data collection instruments

*6.2 Describe the criteria that define who will be **excluded** from your final study sample.*

NOTE: This may be done in bullet point fashion.

Response:

1. Other pre-existing sleep disorders except insomnia or obstructive sleep apnea who are CPAP-compliant => 4-hours/night use

2. Unstable medical or psychiatric illness, fibromyalgia, history of seizures, current substance abuse

3. Engaged in night or rotating shift work

4. Travel across two or more time zones within 1 month prior to study participation

5. Inability to complete data collection measures independently

6. Individuals with conditions affecting the non-dominant arm (use of wrist actigraph)

6.3 Indicate specifically whether you will include any of the following special populations in your study using the checkboxes below.

NOTE: Members of special populations may not be targeted for enrollment in your study unless you indicate this in your inclusion criteria.

Response:

Not applicable: None of the following special populations will be recruited in the current study.

☐ Adults unable to consent

☐ Individuals who are not yet adults (infants, children, teenagers)

☒ Pregnant women

☐ Prisoners

6.4 Indicate whether you will include non-English speaking individuals in your study. ***Provide justification if you will exclude non-English speaking individuals.***

*In order to meet one of the primary ethical principles of equitable selection of subjects, non-English speaking individuals may **not** be routinely excluded from research as a matter of convenience.*

In cases where the research is of therapeutic intent or is designed to investigate areas that would necessarily require certain populations who may not speak English, the researcher is required to make efforts to recruit

and include non-English speaking individuals. However, there are studies in which it would be reasonable to limit subjects to those who speak English. Some examples include pilot studies, small unfunded studies with validated instruments not available in other languages, studies with numerous questionnaires, and some non-therapeutic studies which offer no direct benefit.

Response:

Persons who do not speak English are currently excluded from this research based on numerous questionnaires in this RCT.

7.0 Vulnerable Populations

If the research involves special populations that are considered vulnerable, ***describe the safeguards included to protect their rights and welfare.***

NOTE: You should refer to the appropriate checklists, referenced below, to ensure you have provided adequate detail regarding safeguards and protections. You do not, however, need to provide these checklists to the IRB.

7.1 For research that involves ***pregnant women,*** *safeguards include:*
NOTE CHECKLIST: Pregnant Women (HRP-412)

Response:

There is no possible harm on the pregnancy due to assessing daytime sleepiness before and after the intervention, and using paper survey/interview procedures so no additional procedures are needed for their protection.

☐ **N/A**: This research does not involve pregnant women.

7.2 For research that involves ***neonates of uncertain viability or non-viable neonates,*** *safeguards include:*
NOTE CHECKLISTS: Non-Viable Neonates (HRP-413), or Neonates of Uncertain Viability (HRP-414)

Response:

Not applicable: This research does not involve non-viable neonates or neonates of uncertain viability.

☒ **N/A:** This research does not involve non-viable neonates or neonates of uncertain viability.

7.3 For research that involves ***prisoners****, safeguards include:*
NOTE CHECKLIST: Prisoners (HRP-415)

Response:

Not applicable: This research does not involve prisoners.

☒ **N/A:** This research does not involve prisoners.

7.4 For research that involves ***persons who have not attained the legal age for consent to treatments or procedures involved in the research ("children")****, safeguards include:*
NOTE CHECKLIST: Children (HRP-416)

Response:

Not applicable: This research does not involve persons who have not attained the legal age for consent.

☒ **N/A:** This research does not involve persons who have not attained the legal age for consent to treatments or procedures ("children").

*7.5 For research that involves **cognitively impaired adults**, safeguards include:*
NOTE CHECKLIST: Cognitively Impaired Adults (HRP-417)

Response:

Not applicable: This research does not involve cognitively impaired adults.

☒ **N/A:** This research does not involve cognitively impaired adults.

*7.6 Consider if other specifically targeted populations such as students, employees of a specific firm, or educationally or economically disadvantaged persons are vulnerable. **Provide information regarding their safeguards and protections, including safeguards to eliminate coercion or undue influence.***

Response:

Not applicable: This research does not involve these populations.

8.0 Eligibility Screening

*8.1 Describe **screening procedures** for determining subjects' eligibility. Screening refers to determining if prospective participants meet inclusion and exclusion criteria.*

📎 *Include all relevant screening documents with your submission (e.g. screening protocol, script, questionnaire).*

Response: Screening for inclusion criteria includes a YES response to the following questions:

Are at least 18 years of age?

Insomnia Severity Index>7 and/or Holland Sleep Disorders Screening Questionnaire>4.0

Do you have a diagnosis of breast, colorectal, or prostate cancer stage I, II or III; or lung cancer stage I-IV?

Have you had your cancer surgically removed at least 1-month ago?

Has it been more than one month since you completed cancer treatment (except for hormone treatment or maintenance targeted therapies)?

Screening for exclusion criteria includes a NO response to the following questions:

Do you have sleep disorders other than insomnia or obstructive sleep apnea who are CPAP-compliant => 4-hours/night use?

Do you have any poorly managed medical/psychiatric illnesses, fibromyalgia, or a history of seizures?

Are you currently exceeding alcohol or abusing drugs?

Do you engage in shift work of traveled >1 time zone past month?

Are you able to wear an actigraph on your non-dominant wrist?

1. The PI or Study Coordinator will use the Recruitment Script and Participant Eligibility Screening Form (instruments attached) to screen all eligible participants and the Holland Sleep Disorders Questionnaire (HSDQ), a valid, reliable and accurate diagnostic measure based on the International Classification of Sleep Disorder (ICSD-2) to determine the presence of insomnia, sleep apnea or any other sleep disorder. Depending on the scores, participants will be enrolled, require additional screening (sleep apnea) or referred to their provider for additional sleep disorders diagnoses.

2. Individuals who screen positive for sleep apnea and insomnia will be invited to wear the small portable ApneaLink Plus device overnight for one night in their home to screen for sleep apnea before continuing in the study. All results of the ApneaLink Plus overnight studies will be reviewed by Drs. Aquilina (consultant) and Dean (PI) after electronic scoring. Participants with moderate-severe sleep apnea (≥ 15 episodes/hour) will be referred for further evaluation and possible positive airway pressure treatment. Patients with moderate-severe sleep apnea will not be recruited in the proposed study.

3. If a participant's result to the screening indicate that they are not eligible, they will be thanked for their interest and provided 2 copies of the ApneaLink Plus report: one for themselves and a copy for their provider.

In addition, Buffalo Research Registry, Research Match, and i2b2 have been added to screen for eligible participants. For i2b2, the Institute of Healthcare Informatics team will provide contact information for the eligible participants. The provider will be contacted for approval using the Physician Permission Letter (draft letter attached). If the provider does not object, patients will be contacted by mail (draft letter attached) and then by telephone. As a result of HRP-611 Partial HIPAA Waiver, we will prescreen clinic patients at Roswell Park Comprehensive Cancer Center.

☐ **N/A:** There is no screening as part of this protocol.

9.0 Recruitment Methods

☐ **N/A:** This is a records review only, and subjects will not be recruited. NOTE: If you select this option, please make sure that all records review procedures and inclusion/exclusion screening are adequately described in other sections.

9.1 Describe when, where, and how potential subjects will be recruited.

NOTE: Recruitment refers to how you are identifying potential participants and introducing them to the study. Include specific methods you will use (e.g. searching charts for specific ICD code numbers, Research Participant Groups, posted advertisements, etc.).

Response:

Recruitment flyers (attached) will be distributed to institutions/organizations in WNY where participants are likely to be encountered like Cancer centers, community centers, Senior centers, VFW posts, etc. Study recruiters will review clinic schedules and prescreen medical records for cancer diagnosis, stage of disease and last treatment date to highlight potentially eligible participants for clinic staff. Clinicians involved in medical management of cancer survivors and their staff, will identify potential eligible participants, briefly explain the study, and obtain agreement from potential participants to be contacted. The PI or Study Coordinator will then contact the eligible participant to obtain their affirmative response of their interest in participating and then arrange to meet each potential participant in the clinic or at their home, if preferred. Additionally, given the shelter-in-place situation and some previous patients had difficulty returning to the clinic for the face-to face intervention, we will now offer the option of verbal consent and online teaching.

The following Research Participants Groups will be added: Buffalo Research Registry, Research Match, and i2b2. For i2b2, following IRB approval, the Institute of Healthcare Informatics team will provide contact information for the eligible participants. The provider will be contacted for approval using the Physician Permission Letter (draft letter attached). If the provider does not object, patients will be contacted by mail (draft letter attached) and then by telephone.

9.2 Describe how you will protect the privacy interests of prospective subjects during the recruitment process.

NOTE: Privacy refers to an individual's right to control access to him or herself.

Response:

Prospective eligible participants will only be approached by clinic staff regarding their interest in study participation. Only after eligible participants give consent to clinic staff will the PI or Study Coordinator screen the individual. Interested participants will be contacted in person or by telephone for the initial screening with study personnel (PI or Study Coordinator). If approached in person, eligible participants will be screened in a private clinic room with or without family members. Each subject in all phases of the study will be assigned a unique study identification number to be used on all data forms. All personally identifiable information will be kept strictly confidential. The HRP-611 Partial HIPAA Waiver has been added to document how privacy will be protected during the recruitment process for the new recruitment methods.

9.3 Identify any materials that will be used to recruit subjects.

NOTE: Examples include scripts for telephone calls, in person announcements / presentations, email invitations.

For advertisements, include the final copy of printed advertisements with your submission. When advertisements are taped for broadcast, attach the final audio/video tape. NOTE: You may submit the wording of the advertisement prior

to taping to ensure there will be no IRB-required revisions, provided the IRB also reviews and approves the final version.

Response:

Insomnia Recruitment flyer attached. Eligibility Recruitment Script attached. Letter to eligible patients in i2b2 database attached. Research Match-Contact Message will be a recruitment flyer.

10.0 Procedures Involved

*10.1 Provide a description of **all research procedures or activities** being performed and when they are performed once a subject is screened and determined to be eligible. Provide as much detail as possible.*

NOTE: This should serve as a blueprint for your study and include enough detail so that another investigator could pick up your protocol and replicate the research. For studies that have multiple or complex visits or procedures, consider the addition of a schedule of events table in in your response.

Response:

Following informed consent, in order to rule-out sleep apnea as a confounder, all eligible participants will be offered screening for sleep apnea with the ApneaLink Plus for one night. Following a negative screen for sleep apnea, demographics, diagnoses, treatments, comorbidities, etc. will be extracted from the Electronic Health Record (EHR) using the Medical Record Review Questionnaire (to verify certain self-report data); beliefs about sleep will be determined by Dysfunctional Beliefs and Attitudes about Sleep; mood, anxiety and depression will be measured with Hospital Anxiety and Depression Scale; pain and quality of life will be determined by Functional Assessment of Cancer Therapy-G; sleep quality will be measured with Pittsburgh Sleep Quality Index; daily sleep will be assessed with 7-day sleep diary; objective sleep will be evaluated with 7-day actigraph; fatigue will be assessed with Profile of Mood States; and daytime sleepiness will be determined by the Epworth Sleepiness Scale (Johns 1991).

One week, after baseline assessments, each participant will be randomized by the biostatistician. Participants will then be scheduled for either the brief behavioral therapy for insomnia (BBTI) session (experiment) or the healthy eating program (HEP) session (control). Each intervention is approximately 45-minutes and will be delivered in the clinical setting, online teaching or home.

At the end of the interventions, each participant will be provided weekly sleep diaries to complete for 2-weeks and arrange for 2-follow up telephone calls using the Telephone Follow Up Script (attached). Each telephone contact will begin by reminding participants that their participation is voluntary and they may skip items they wish. Telephone

contacts are not recorded, but the research assistant will orally ask the participant to respond to the questions in the Telephone Follow Up Script and record responses as described in 10.2. Study packets with questionnaires will be repeated approximately one-month, 3-months and 12-months after the intervention. Patient Evaluation Questionnaire will be administered 1-month and at end of study. Following the one-month data collection, the interventionist will contact participants to provide feedback on sleep diary data. In addition, two REDCap emails at 6-months and 9-months from the intervention will be sent to ensure patient safety and encourage participant retention. The emails will ask the participants to answer a safety question we currently ask at each previous data collection with a "Yes" or "No" answer: Do you find that your sleepiness is bad enough that you are at risk of falling asleep while driving or doing something hazardous or harmful? Additionally, we will ask 2 questions from the Sleep Diary about their sleep: Please rate over the past week: Restful sleep 0-4 (4=excellent) and Sleep quality 0-4 (4=excellent).

10.2 Describe what data will be collected.

NOTE: For studies with multiple data collection points or long-term follow up, consider the addition of a schedule or table in your response.

Response:

Data include apnea/hypopnea index, movement (i.e. actigraphs), self-report sleep diaries and sleep, mood and quality of life questionnaires. Two-semi-structured telephone interviews will be conducted. For each interview, the data will be the participant's oral responses to the questions of the interview instruments as recorded in the research assistant's handwritten notes.

Table 3. Study Variables, Measures, and Time Frames

Variable	Measure	Pre	1-Month	3-Months	6-Months	9-Months	12-Months
Predisposing factors Sleep history Age, sex, race/ethnicity	Holland Sleep Disorders Questionnaire /ApneaLink Plus Medical Record Review Questionnaire	X X					
Precipitating factors Cancer stage/treatment	Medical Record Review Questionnaire	X					

Alcohol/nicotine/caffeine Comorbidities Medications							
Perpetuating factors Beliefs about sleep	Dysfunctional Beliefs and Attitudes about Sleep	X	X	X			X
Neurocognitive factors Symptoms: depression, anxiety and pain	Hospital Anxiety and Depression Scale (anxiety and depression), Functional Assessment of Cancer Therapy (pain)	X X	X X	X X			X X
Insomnia characteristics Subjective sleep (insomnia severity, sleep quality) Objective sleep (sleep efficiency)	Insomnia Severity Index, Pittsburgh Sleep Quality Index, Sleep diary (daily) Actigraphy-Actiwatch Spectrum Safety emails	X X X	X X X	X X X	 X	 X	X X X
Vulnerability for physical-psychiatric problems Fatigue Sleepiness Disrupted mood Functional status Quality of life	Profile of Mood States Fatigue Subscale Epworth Sleepiness Scale Hospital Anxiety and Depression Scale Functional Assessment of Cancer Therapy-G Functional Assessment of Cancer Therapy-G	X X X X X	X X X X X	X X X X X			X X X X X
Telephone Follow Up	Script		X				
Patient Evaluation Questionnaire	Perceptions of study		X				X

	effectiveness						

10.3 List any instruments or measurement tools used to collect data (e.g. questionnaire, interview guide, validated instrument, data collection form).
Include copies of these documents with your submission.

Response:

Attachment – Participant Eligibility Screening Form

Attachment – Eligibility Recruitment Script

Attachment – Holland Sleep Disorders Questionnaire

Attachment – ApneaLink Plus

Attachment – Medical Record Review Questionnaire

Attachment – Dysfunctional Beliefs and Attitudes about Sleep Scale

Attachment – Hospital Anxiety and Depression Scale

Attachment – Functional Assessment of Cancer Therapy – General

Attachment – Insomnia Severity Index (ISI)

Attachment – Sleep Diary

Attachment – Actigraphy=Actiwatch Spectrum

Attachment – Pittsburgh Sleep Quality Index (PSQI)

Attachment – Profile Mood States Fatigue Subscale (POMS-F)

Attachment – Epworth Sleepiness Scale (ESS)

Attachment -Presentation: Brief Behavioral Treatment Insomnia (BBTI) and Healthy Eating Program (HEP)

Attachment -Phone Follow Up Scripts

Attachment -Patient Evaluation Questionnaire

10.4 Describe any source records that will be used to collect data about subjects (e.g. school records, electronic medical records).

Response:

Electronic health record at Roswell Park Comprehensive Cancer Center

*10.5 Indicate whether or not **individual** subject results, such as results of investigational diagnostic tests, genetic tests, or incidental findings will be shared with subjects or others (e.g., the subject's primary care physician) and if so, describe how these will be shared.*

Response:

If the results of ApneaLink Plus reveals AHI >15, the participant will be provided 2 copies of the ApneaLink Plus report: one for themselves and a copy for their provider.

*10.6 Indicate whether or not **study** results will be shared with subjects or others, and if so, describe how these will be shared.*

Response:

Results of the study will be published via abstract, poster and manuscript to journals. All results will be aggregated and de-identified.

11.0 Study Timelines

11.1 Describe the anticipated duration needed to enroll all study subjects.

Response:

The enrollment period is planned for 3 years.

11.2 Describe the duration of an individual subject's participation in the study. Include length of study visits, and overall study follow-up time.

Response:

One week of data collection at home by the participant. Randomization to an intervention involving one 45-minute individual session with two 30-minute telephone calls delivered 1- and 2-weeks after the intervention concluding with a 1-month, 3-month and 12-month follow up in person or by mail. Following the one-month data collection, the interventionist will contact participants to provide feedback on BBTI and PASS programs.

Participation will involve approximately 11-12 hours over a 13-month time period.

11.3 Describe the estimated duration for the investigators to complete this study (i.e. all data is collected and all analyses have been completed).

Response:

The estimated duration for the investigators to complete this study is 5 years.

12.0 Setting

12.1 Describe all facilities/sites where you will be conducting research procedures. Include a description of the security and privacy of the facilities (e.g. locked facility, limited access, privacy barriers). Facility, department, and type of room are relevant. Do not abbreviate facility names.

NOTE: Examples of acceptable response may be: "A classroom setting in the Department of Psychology equipped with a computer with relevant survey administration software," "The angiogram suite at Buffalo General Medical Center, a fully accredited tertiary care institution within New York State with badge access," or, "Community Center meeting hall."

Response:

The location will be a private conference room at either RPCI, other cancer provider in WNY, or internet-delivered.

12.2 For research conducted outside of UB and its affiliates, describe:

- *Site-specific regulations or customs affecting the research*
- *Local scientific and ethical review structure*

NOTE: This question is referring to UB affiliated research taking place outside UB, i.e. research conducted in the community, school-based research, international research, etc. It is not referring to multi-site research. UB affiliated institutions include Kaleida Health, ECMC, and Roswell Park Cancer Institute.

Response:

While the study occurs outside of UB, there are no site specific regulations or customs and no local review structures.

☐ **N/A:** This study is not conducted outside of UB or its affiliates.

13.0 Community-Based Participatory Research

13.1 Describe involvement of the community in the design and conduct of the research.

NOTE: Community-Based Participatory Research (CBPR) is a collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community, has the aim of combining knowledge with action and achieving social change to improve health outcomes and eliminate health disparities.

Response:

Not Applicable" This study does not utilize CBPR.

☒ **N/A:** This study does not utilize CBPR.

13.2 Describe the composition and involvement of a community advisory board.

Response:

Not Applicable: This study does not have a community advisory board.

☒ **N/A:** This study does not have a community advisory board.

14.0 Resources and Qualifications

*14.1 Describe the qualifications (e.g., education, training, experience, expertise, or certifications) of the Principal Investigator **and** staff to perform the research. When applicable describe their knowledge of the local study sites, culture, and society. Provide enough information to convince the IRB that you have qualified staff for the proposed research.*

NOTE: If you specify a person by name, a change to that person will require prior approval by the IRB. If you specify a person by role (e.g., coordinator, research assistant, co-investigator, or pharmacist), a change to that person will not usually require prior approval by the IRB, provided that the person meets the qualifications described to fulfill their roles.

Response:

The NIH-funded PI is an advanced practice nurse with more than 20 years of clinical experience and 15 years of cancer-related fatigue, sleep and circadian rhythms and QOL research.

The Co-I, Professor of Oncology and Director of the Survivorship Clinic, Roswell Park Comprehensive Care Center

The Co-I, Dr. Suzanne Dickerson, DNS, RN, Professor and Chair of Biobehavioral Health and Clinical Sciences, University at Buffalo, School of Nursing, a sleep scientist and qualitative researcher

The clinical collaborator, pulmonologist, sleep clinician, University at Buffalo Sleep Fellowship Program

The Co-I, PhD, Biostatistician, University at Buffalo.

Describe other resources available to conduct the research.

14.2 Describe the time and effort that the Principal Investigator and research staff will devote to conducting and completing the research.

NOTE: Examples include the percentage of Full Time Equivalents (FTE), hours per week. The question will elicit whether there are appropriate resources to conduct the research.

Response:

The PI has 2~~3~~0% effort, Co-Is each have 5-7% effort, a study coordinator is 100% effort, and Research Assistant is 50% effort.

14.3 Describe the availability of medical or psychological resources that subjects might need as a result of anticipated consequences of the human research, if applicable.

NOTE: One example includes: on-call availability of a counselor or psychologist for a study that screens subjects for depression.

Response:

If the results of ApneaLink Plus reveals AHI >15, the participant will be provided 2 copies of the ApneaLink Plus report: one for themselves and a copy for their provider.

This proposal poses minimal risks. Anxiety and depression will be assessed at baseline, one-, three- and 12-months post-intervention. Scores greater than seven on either scale will be communicated to participants who will be encouraged to contact their health care provider for follow up care. Any participant who exhibits distress will be asked permission by the study team member they are with to refer them for care as appropriate.

14.4 Describe your process to ensure that all persons assisting with the research are adequately informed about the protocol, the research procedures, and their duties and functions.

Response:

Once this study has IRB approval, the PI will provide the protocol to each member of the research team and then meet with each member of the research team individually to tell the PI what their role on the study will be. Participant safety and data safety and monitoring will also be reviewed.

15.0 Other Approvals

15.1 Describe any approvals that will be obtained prior to commencing the research (e.g., school, external site, funding agency, laboratory, radiation safety, or biosafety).

Response:

Roswell Park Comprehensive Cancer Center (RPCCC): Human Subject Research Committees

☐ **N/A:** This study does not require any other approvals.

16.0 Provisions to Protect the Privacy Interests of Subjects

16.1 Describe how you will protect subjects' privacy interests during the course of this research.

NOTE: Privacy refers to an individual's right to control access to him or herself. Privacy applies to the person. Confidentiality refers to how data collected about individuals for the research will be protected by the researcher from release. Confidentiality applies to the data.

Examples of appropriate responses include: "participant only meets with a study coordinator in a classroom setting where no one can overhear", or "the

participant is reminded that they are free to refuse to answer any questions that they do not feel comfortable answering."

Response:

To protect participants' privacy interests during the course of this research, study team members will only meet with the participants in a private clinic room or privately via the internet where no one can overhear the conversation. Additionally, participants will routinely be reminded that they are free to refuse to answer any questions that they feel uncomfortable answering at each data collection period.

16.2 Indicate how the research team is permitted to access any sources of information about the subjects.

NOTE: Examples of appropriate responses include: school permission for review of records, consent of the subject, HIPAA waiver. This question ***does apply*** *to records reviews.*

Response:

Each participant who signs an informed consent will be asked permission by the PI or Study Coordinator to verify diagnostic and treatment information in their electronic medical record. For clinic list prescreening, we have completed a Request for Limited Waiver of the Authorization for the Use of Individually Identifiable Health Information for Subject Recruitment Authorization.

17.0 Data Management and Analysis

17.1 Describe the data analysis plan, including any statistical procedures. This section applies to both quantitative and qualitative analysis.

Response:

Specific Aim 1. The primary analyses involve the statistical assessment of Insomnia Severity Index (ISI) at 1 month and will be based on an analysis of covariance (ANCOVA) model. In taking this approach, we fit the dependent variable as a linear function of independent variables randomized treatment assignment, patient cancer type, the interaction between treatment assignment and cancer type, and baseline ISI level. Rather than utilizing the null distribution associated with the classic F-test for overall treatment differences within the ANCOVA framework, which is dependent on the validity of distributional assumptions, an exact permutation testing approach will be utilized. The randomization mechanism at work is a crucial component in this study in that it will be used to create the randomization distribution by which statistical significance will be determined. For more on this approach see Gail, Tan, and Piantadosi (1988)(120). Reported p-values will be obtained from the permutation distributions of the test statistics based on 10,000 Monte Carlo simulations. As additional analyses, subject covariates will be included as independent variables.

The interaction of treatment group and subject covariates may also be examined in a secondary fashion in order to identify possible differential effects of treatment. The analysis of secondary outcomes will proceed in a similar fashion. All statistical tests will be two-sided and tested at a 0.05 nominal significance level.

Specific Aim 2. Standard multiple regression will be used to determine predictors of efficacious response to BBTI. Standard diagnostic plots will be used to assess model fit and transformations of variables may be considered in order to meet statistical assumptions.

Specific Aim 3. Evaluation of BBTI implementation focused on (a) characterization of the patient- and provider-level facilitators and barriers; and (b) knowledge/skills transfer among staff nurses using focus groups with each of the implementation facilitator groups. Transcript-based analysis, the most rigorous and accurate type of qualitative analysis, will be performed on focus group data. Audio recordings of each focus group meeting will be professionally transcribed verbatim and this text will provide the data for analysis. Prior to analysis, accuracy of the transcripts will be verified by Dr. Dickerson. The research team (Drs. Dean and Dickerson) will read all data repeatedly to achieve immersion and obtain a sense of the whole(121). Then data will be read by highlighting exact words that capture key thoughts or concepts. Next, the researchers will record first impressions, thoughts and initial analysis from the data. Labels for codes will emerge as the process continues. Codes may come directly from the text and become the preliminary coding scheme. Codes will be sorted into categories, which will be used to organize and group codes into meaningful clusters. Final codes will be organized into a hierarchical structure, if possible. Findings will be used to plan for dissemination and sustainability of this intervention. The software, Nvivo, will be used to assist in data management. During years 3 and 5, we will engage implementation facilitators and submit an IRB amendment before implementing aim 3.

17.2 If applicable, provide a power analysis.

NOTE: This may not apply to certain types of studies, including chart/records reviews, survey studies, or observational studies. This question is asked to elicit whether the investigator has an adequate sample size to achieve the study objectives and justify a conclusion.

Response:

The estimate of the variability used for sample size calculations was based on previous results, which showed the standard deviation to be approximately 4.8. Calculations show a sample size of 55 per group (110 total) will allow us to detect differences as small as 3 with 90% power. Since the actual analysis to be performed is based on a model, which incorporates baseline ISI and cancer type, which will account for some of the unexplained variability in the dependent variable, these calculations may be viewed as conservative. Based on our

experience, we expect a 30% drop out rate, thus a total of 158 patients will be enrolled into this study.

17.3 Describe any procedures that will be used for quality control of collected data.

Response:

Participants will receive detailed verbal and written instructions from the PI and study coordinator on how to wear the actiwatch, complete the sleep diaries and self-report questionnaires. Also provided will be how to contact the PI and study coordinator with questions. Reminders and prompts will be provided to participants to avoid unintentional missing data.

18.0 Confidentiality

A. Confidentiality of Study Data

*Describe the local procedures for maintenance of confidentiality of **study data and any records that will be reviewed for data collection**.*

*18.1 A. Where and how will all data and records be stored? Include information about: password protection, encryption, physical controls, authorization of access, and separation of identifiers and data, as applicable. Include physical (e.g. paper) **and** electronic files.*

Response:

Research materials will be stored in a locked office in either a locked file cabinet or a password-protected computer system. Consent forms with participant identifiers are stored in separate files from de-identified paper data. An excel spreadsheet with screened positive individuals will be kept on a password protected computer file on Roswell Park Cancer Center's Sharepoint Server.

18.2 A. How long will the data be stored?

Response:

Records will be stored for a period of at least 5 years following study completion.

At the end of data collection excel screening excel spreadsheet will be deleted by Roswell's IT.

18.3 A. Who will have access to the data?

Response:

Only the PI and members of the research team will have access to the data and excel screening spreadsheet.

18.4 A. Who is responsible for receipt or transmission of the data?

Response:

The PI and members of the research team are responsible for the receipt and transmission of the data.

18.5 A. How will the data be transported?

Response:

The investigator performing the visit will transport the data securely in a briefcase.

B. Confidentiality of Study Specimens

*Describe the local procedures for maintenance of confidentiality of **study specimens**.*

☒ **N/A:** No specimens will be collected or analyzed in this research. *(Skip to Section 19.0)*

18.6 B. Where and how will all specimens be stored? Include information about: physical controls, authorization of access, and labeling of specimens, as applicable.

Response:

Not Applicable: No Specimens will be collected or analyzed in this research.

18.7 B. How long will the specimens be stored?

Response:

Not Applicable: No Specimens will be collected or analyzed in this research.

18.8 B. Who will have access to the specimens?

Response:

Not Applicable: No Specimens will be collected or analyzed in this research.

18.9 B. Who is responsible for receipt or transmission of the specimens?

Response:

Not Applicable: No Specimens will be collected or analyzed in this research.

18.10 B. How will the specimens be transported?

Response:

Not Applicable: No Specimens will be collected or analyzed in this research.

19.0 Provisions to Monitor the Data to Ensure the Safety of Subjects

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

NOTE: Minimal risk studies may be required to monitor subject safety if the research procedures include procedures that present unique risks to subjects that require monitoring. Some examples include: exercising to exertion, or instruments that elicit suicidality or substance abuse behavior. In such cases, N/A is not an acceptable response.

19.1 Describe the plan to periodically evaluate the data collected regarding both harms and benefits to determine whether subjects remain safe.

Response:

The PI will be responsible for ensuring data integrity and safety monitoring for human subjects and communicating any negative outcomes or any serious events to the IRBs and other offices/agencies. Because of the minimal to low risk associated with this protocol, the data safety and monitoring plan (DSMP) for this project involves a Safety Monitoring Committee (SMC). The SMC will ensure participant safety, ensure the validity and integrity of the data, monitor study progress, and make recommendations regarding appropriate protocol and operational changes which may have substantial effects upon the ultimate interpretation of the study. They will also be responsible for promptly report any serious adverse events to the Institutional Review Boards (IRB) at Roswell Park Cancer Institute and the University at Buffalo.

Weekly reviews of participant accrual will be conducted by the PI during weekly research meetings. If participant accrual and/or retention drop below what is required for successful completion of this study, the PI will alert the statistician and strategies will be developed to overcome the identified problems. Records from subjects recruited during that week will also be scrutinized to insure that all participants are eligible for participation in the study. The PI and members of the research team will be monitoring developments in the literature and results of related studies that may have an impact on the safety of participants or on the ethics for the research study.

19.2 Describe what data are reviewed, including safety data, untoward events, and efficacy data.

Response:

Data review includes eligibility, referral for sleep apnea, referral for low oxygen during sleep, completion of data collection instruments, adherence to intervention, number of follow up phone calls accepted, and outcome measures of efficacy:

sleep, mood, functional status and quality of life. Daytime sleepiness will also be evaluated daily, but monitored weekly. Additionally, as previously mentioned, we are adding a 6 and 9 month follow up email to check on participants' safety. If participants report that they are excessively sleepy, we will provide recommendations to reduce sleepiness by telephone or email.

Because of the minimal to low risk associated with this protocol there are no life-threatening anticipated adverse events for this proposed research project. In the event of an unanticipated adverse event, such as disease-related patient death, it will be reported to and reviewed by the PI, SMC, and referring physician within seven days. Next, the IRBs at Roswell Park Comprehensive Cancer Center and the University at Buffalo as well as sponsoring agencies (NINR) will be notified within 15 days. A thorough investigation will be initiated, including review of the protocol to insure no undue exposure to risk occurred.

19.3 Describe any safety endpoints.

Response:

This low risk intervention may lead to emotional distress in participants who may become frustrated if insomnia does not improve. Anxiety and depression will be assessed at baseline, one, three and 12-months post-intervention. Scores greater than seven on either scale will be communicated to participants who will be encouraged to contact their health care provider for follow up care.

19.4 Describe how the safety information will be collected (e.g., with case report forms, at study visits, by telephone calls with participants).

Response:

The safety information will be collected with self-report surveys, during study visits and by telephone calls with participants.

19.5 Describe the frequency of safety data collection.

Response:

Safety data collection occurs at baseline, weekly then at 1-month, 3-months and 12 months post-intervention.

19.6 Describe who will review the safety data.

Response:

The PI, study coordinator, research assistant and members of the Safety Monitoring Committee.

19.7 Describe the frequency or periodicity of review of cumulative safety data.

Response:

Reviews of cumulative safety data will initially occur weekly, then biweekly and eventually monthly.

19.8 Describe the statistical tests for analyzing the safety data to determine whether harm is occurring.

Response:

Hospital Anxiety and Depression Scale scores will be summarized.

19.9 Describe any conditions that trigger an immediate suspension of the research.

Response:

We do not anticipate any condition that would trigger an immediate suspension of the research.

20.0 Withdrawal of Subjects

☐ **N/A:** This study is not enrolling subjects. This section does not apply.

*20.1 Describe **anticipated** circumstances under which subjects may be withdrawn from the research without their consent.*

Response:

Participants will be withdrawn from the research without their consent if they are unable to complete their responsibilities listed on the consent form or if they falsify responses.

20.2 Describe any procedures for orderly termination.

NOTE: Examples may include return of study drug, exit interview with clinician. Include whether additional follow up is recommended for safety reasons for physical or emotional health.

Response:

The participants that require early termination from the study will receive a telephone call alerting them to the termination and thanking them for their participation. If participants are not available via telephone, a letter notifying them of their termination will be mailed to their home address.

20.3 Describe procedures that will be followed when subjects withdraw from the research, including retention of already collected data, and partial withdrawal from procedures with continued data collection, as applicable.

Response:

It is conceivable that some participants may decide not to fully participate, for example, not participate in the intervention, but complete survey and actigraph data. Their data is still valuable. Data collection would continue and participants would receive appropriate compensation.

21.0 Risks to Subjects

21.1 List the reasonably foreseeable risks, discomforts, hazards, or inconveniences to the subjects related to their participation in the research. Consider physical, psychological, social, legal, and economic risks. Include a description of the probability, magnitude, duration, and reversibility of the risks.

NOTE: Breach of confidentiality is always a risk for identifiable subject data.

Response:

A reasonable foreseeable risk is excessive daytime sleepiness early in the study from having night-time sleep curtailed as part of the intervention. Daily sleep diaries provide daily daytime sleepiness measures and the PI and Study Coordinator will monitor for this risk. The known discomforts associated with this study include the possibility that participants may become upset thinking about some of the questions or topics in this study. If this occurs, the participant should notify the research assistant and will then be provided with an appropriate referral for assistance. The skin on the participant's wrist may become irritated by wearing the actigraph. If this occurs, the participant will be advised to remove the actigraph, apply a thin layer of Eurcerin lotion to the affected area and wear the actigraph on the opposite wrist.

All reasonable efforts will be used to protect the confidentiality of the participants' protected health information. Identifiable data is immediately de-identified and de-identified data is stored separately from identifiable data. The results of this research will be published. However, we will keep participants' names and other identifying information confidential.

21.2 Describe procedures performed to lessen the probability or magnitude of risks, including procedures being performed to monitor subjects for safety.

Response:

NA

*21.3 If applicable, indicate **which procedures** may have risks to the subjects that are currently unforeseeable.*

Response:

NA

21.4 If applicable, indicate which research procedures may have risks to an embryo or fetus should the subject be or become pregnant.

Response:

NA

21.5 If applicable, describe risks to others who are not subjects.

Response:

NA

22.0 Potential Benefits to Subjects

22.1 Describe the potential benefits that individual subjects may experience by taking part in the research. Include the probability, magnitude, and duration of the potential benefits. Indicate if there is no direct benefit.

*NOTE: Compensation **cannot** be stated as a benefit.*

Response:

Participants in the experimental group will have a high probability of improvement in sleep and quality of life, but magnitude and duration of these improvements are under investigation. Participants in the control are unlikely to receive direct benefit.

23.0 Compensation for Research-Related Injury

☒ **N/A:** The research procedures for this study do not present risk of research related injury (e.g. survey studies, records review studies). This section does not apply.

*23.1 **If the research procedures carry a risk of research related injury,** describe the available compensation to subjects in the event that such injury should occur.*

Response:

23.2 Provide a copy of contract language, if any, relevant to compensation for research related injury.

*NOTE: If the contract is not yet approved at the time of this submission, submit the current version here. If the contract is later approved with **different language regarding research related injury**, you must modify your response here and submit an amendment to the IRB for review and approval.*

Response: NA

24.0 Economic Burden to Subjects

24.1 Describe any costs that subjects may be responsible for because of participation in the research.

NOTE: Some examples include transportation or parking.

Response:

There are no reasonably anticipated costs to subjects.

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

25.0 Compensation for Participation

25.1 Describe the amount and timing of any compensation to subjects, including monetary, course credit, or gift card compensation.

Response:

Each participant will receive $75 to cover travel and time commitments. Participants will receive $25 at the conclusion of baseline testing, $25 at 1-month follow up and $25 at the conclusion of data collection.

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

☐ **N/A:** There is no compensation for participation. This section does not apply.

26.0 Consent Process

26.1 Indicate whether you will be obtaining consent.

NOTE: This does not refer to consent documentation, but rather whether you will be obtaining permission from subjects to participate in a research study. Consent documentation is addressed in Section 27.0.

☒ ***Yes*** *(If yes, Provide responses to each question in this Section)*
☐ ***No*** *(If no, Skip to Section 27.0)*

26.2 Describe where the consent process will take place. Include steps to maximize subjects' privacy.

Response:

The consent process will take place in a private conference room at either Roswell Park Comprehensive Cancer Center, other cancer provider in WNY, or via telephone and/or the internet.

26.3 Describe how you will ensure that subjects are provided with a sufficient period of time to consider taking part in the research study.

NOTE: It is always a requirement that a prospective subject is given sufficient time to have their questions answered and consider their participation. See "SOP: Informed Consent Process for Research (HRP-090)" Sections 5.5 and 5.6.

Response:

The consent will be administered after a detailed study explanation by the PI or study coordinator. Eligible participants will then be given a minimum of 30 minutes to read over the consent form, at which time the PI or study coordinator will ask if they have any further questions. The final component of the consent process will involve reviewing a brief checklist that outlines the major aspects of the study to confirm that the participant fully understands the study.

26.4 *Describe any process to ensure ongoing consent, defined as a subject's willingness to continue participation for the duration of the research study.*

Response:

At each contact with participants, the PI or study coordinator will routinely remind participants of their volunteer status and ability to withdraw from participation at any time.

26.5 *Indicate whether you will be following "SOP: Informed Consent Process for Research (HRP-090)." If not, or if there are any exceptions or additional details to what is covered in the SOP, describe:*

- *The role of the individuals listed in the application who are involved in the consent process*
- *The time that will be devoted to the consent discussion*
- *Steps that will be taken to minimize the possibility of coercion or undue influence*
- *Steps that will be taken to ensure the subjects' understanding*

Response:

This research will follow SOP: Informed Consent Process for Research.

☒ We have reviewed and will be following "SOP: Informed Consent Process for Research (HRP-090)" with the exception that consent provisions will not be made to conduct consent in languages other than English even if this is preferred by the participant. Eligible participants all must be able to complete data collection instruments which are written in English.

Non-English Speaking Subjects

☐ **N/A:** This study will not enroll Non-English speaking subjects. *(Skip to Section 26.8)*

26.6 Indicate which language(s) other than English are likely to be spoken/understood by your prospective study population or their legally authorized representatives.

NOTE: The response to this Section should correspond with your response to Section 6.4 of this protocol.

Response:

Not Applicable.

26.7 If subjects who do not speak English will be enrolled, describe the process to ensure that the oral and written information provided to those subjects will be in that language. Indicate the language that will be used by those obtaining consent.

NOTE: Guidance is provided on "SOP: Informed Consent Process for Research (HRP-090)."

Response:

Not Applicable.

Cognitively Impaired Adults

☐ **N/A**: This study will not enroll cognitively impaired adults. *(Skip to Section 26.9)*

26.8 Describe the process to determine whether an individual is capable of consent.

Response:

Not Applicable.

Adults Unable to Consent

☐ **N/A**: This study will not enroll adults unable to consent. (*Skip to Section 26.13)*

When a person is not capable of consent due to cognitive impairment, a legally authorized representative should be used to provide consent (Sections 26.9 and 26.10) ***and, where possible, assent of the individual should also be solicited*** *(Sections 26.11 and 26.12).*

26.9 Describe how you will identify a Legally Authorized Representative (LAR). Indicate that you have reviewed the "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)" for research in New York State.

NOTE: Examples of acceptable response includes: verifying the electronic medical record to determine if an LAR is recorded.

Response:

Not Applicable.

☐ We have reviewed and will be following "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."

26.10 ***For research conducted outside of New York State****, provide information that describes which individuals are authorized under applicable law to consent on behalf of a prospective subject to their participation in the research. One method of obtaining this information is to have a legal counsel or authority review your protocol along with the definition of "legally authorized representative" in "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."*

Response:

Not Applicable.

26.11 Describe the process for ***assent of the adults****:*

- *Indicate whether assent will be obtained from all, some, or none of the subjects. If some, indicate which adults will be required to assent and which will not.*

Response:

Not Applicable.

- *If assent will not be obtained from some or all subjects, provide an explanation of why not.*

Response:

Not Applicable.

26.12 Describe whether ***assent of the adult*** *subjects will be documented and the process to document assent.*

NOTE: The IRB allows the person obtaining assent to document assent on the consent document using the "Template Consent Document (HRP-502)" Signature Block for Assent of Adults who are Legally Unable to Consent.

Response:

Not Applicable.

Subjects who are not yet Adults (Infants, Children, and Teenagers)

☐ **N/A**: This study will not enroll subjects who are not yet adults. *(Skip to Section 27.0)*

*26.13 Describe the criteria that will be used to determine **whether a prospective subject has not attained the legal age for consent to treatments or procedures involved in the research** under the applicable law of the jurisdiction in which the research will be conducted **(e.g., individuals under the age of 18 years)**. For research conducted in NYS, review "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)" to be aware of which individuals in the state meet the definition of "children."*

NOTE: Examples of acceptable responses include: verification via electronic medical record, driver's license or state-issued ID, screening questionnaire.

Response:

Not Applicable.

*26.14 **For research conducted outside of New York State**, provide information that describes which persons have not attained the legal age for consent to treatments or procedures involved the research, under the applicable law of the jurisdiction in which research will be conducted. One method of obtaining this information is to have a legal counsel or authority review your protocol along the definition of "children" in "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."*

Response:

Not Applicable.

26.15 Describe whether parental permission will be obtained from:

Response:

☐ One parent even if the other parent is alive, known, competent, reasonably available, and shares legal responsibility for the care and custody of the child.

☐ Both parents unless one parent is deceased, unknown, incompetent, or not reasonably available, or when only one parent has legal responsibility for the care and custody of the child.

☐ Parent permission will not be obtained. A waiver of parent permission is being requested.

NOTE: The requirement for parent permission is a protocol-specific determination made by the IRB based on the risk level of the research. For guidance, review the "CHECKLIST: Children (HRP-416)."

*26.16Describe whether permission will be obtained from individuals **other than parents**, and if so, who will be allowed to provide permission. Describe your procedure for determining an individual's authority to consent to the child's general medical care.*

Response:

Not Applicable.

*26.17 Indicate whether assent will be obtained from all, some, or none of the **children**. If assent will be obtained from some children, indicate which children will be required to assent.*

Response:

Not Applicable.

26.18 When assent of children is obtained, describe how it will be documented.

Response:

Not Applicable.

27.0 Waiver or Alteration of Consent Process

Consent will not be obtained, required information will not be disclosed, or the research involves deception.

☒ **N/A:** A waiver or alteration of consent is not being requested.

27.1 If the research involves a waiver or alteration of the consent process, please review the "CHECKLIST: Waiver or Alteration of Consent Process (HRP-410)" to ensure that you have provided sufficient information for the IRB to make the determination that a waiver or alteration can be granted.

NOTE: For records review studies, the first set of criteria on the "CHECKLIST: Waiver or Alteration of Consent Process (HRP-410)" applies.

Response:

This study involves web-based data collection triggered via email, a 45-minute educational session about sleep and two follow up telephone calls from a nurse in graduate student. We want to offer verbal consent to participate because some of our participants are unable to return to the clinic for consent. The identifiable private information collected electronically in this study is secured via password protection. The participants will be provided information about the study from the PI/study coordinator, an opportunity to ask questions about the study and if they need time to think about their participation or discuss with others before consenting to participate in the study. Each participant contact will include a reminder of the participant's "voluntary participation."

27.2 If the research involves a waiver of the consent process for planned emergency research, please review the "CHECKLIST: Waiver of Consent for Emergency Research (HRP-419)" to ensure you have provided sufficient information for the IRB to make these determinations. Provide any additional information necessary here:

Response:

Not Applicable.

28.0 Process to Document Consent

☐ **N/A:** A Waiver of Consent is being requested.
(Skip to Section 29.0)

28.1 Indicate whether you will be following "SOP: Written Documentation of Consent (HRP-091)." If not or if there are any exceptions, describe whether and how consent of the subject will be obtained including whether or not it will be documented in writing.

NOTE: If your research presents no more than minimal risk of harm to subjects and involves no procedures for which written documentation of consent is normally required outside of the research context, the IRB will generally waive the requirement to obtain written documentation of consent. This is sometimes referred to as 'verbal consent.' Review "CHECKLIST: Waiver of Written Documentation of Consent (HRP-411)" to ensure that you have provided sufficient information.

If you will document consent in writing, attach a consent document with your submission. You may use "TEMPLATE CONSENT DOCUMENT (HRP-502)". If you will obtain consent, but not document consent in writing, attach the script of the information to be provided orally or in writing (i.e. consent script or Information Sheet).

Response: This research presents no more than minimal harm to subjects and involves no procedures for which written documentation of consent is normally required outside of the research context. Reasons for verbal consent include the current shelter-in-place situation and potential participants' inability to return to the clinic for consent.

We will be following SOP: Written Documentation of Consent (HRP-091).

☐ We will be following "SOP: Written Documentation of Consent" (HRP-091).

29.0 Multi-Site Research (Multisite/Multicenter Only)

☒ **N/A:** This study is not an investigator-initiated multi-site study. This section does not apply.

*29.1 If this is a multi-site study **where you are the lead investigator**, describe the processes to ensure communication among sites, such as:*

- *All sites have the most current version of the IRB documents, including the protocol, consent document, and HIPAA authorization.*
- *All required approvals have been obtained at each site (including approval by the site's IRB of record).*
- *All modifications have been communicated to sites, and approved (including approval by the site's IRB of record) before the modification is implemented.*
- *All engaged participating sites will safeguard data as required by local information security policies.*
- *All local site investigators conduct the study appropriately.*
- *All non-compliance with the study protocol or applicable requirements will be reported in accordance with local policy.*

Response:

Not Applicable.

29.2 Describe the method for communicating to engaged participating sites:

- *Problems*
- *Interim results*
- *Study closure*

Response:

Not Applicable.

29.3 Indicate the total number of subjects that will be enrolled or records that will be reviewed across all sites.

Response:

Not Applicable.

29.4 If this is a multicenter study for which UB will serve as the IRB of record, and subjects will be recruited by methods not under the control of the local site (e.g., call centers, national advertisements) describe those methods.

Response:

Not Applicable.

30.0 Banking Data or Specimens for Future Use

☐ **N/A:** This study is not banking data or specimens for future use or research outside the scope of the present protocol. This section does not apply.

*30.1 If data or specimens will be banked (stored) for **future use, that is, use or research outside of the scope of the present protocol**, describe where the data/specimens will be stored, how long they will be stored, how the data/specimens will be accessed, and who will have access to the data/specimens.*

NOTE: Your response here must be consistent with your response at the "What happens if I say yes, I want to be in this research?" Section of the Template Consent Document (HRP-502).

Response:

Not Applicable.

30.2 List the data to be stored or associated with each specimen.

Response:

Not Applicable.

30.3 Describe the procedures to release banked data or specimens for future uses, including: the process to request a release, approvals required for release, who can obtain data or specimens, and the data to be provided with specimens.

Response:

Not Applicable.

31.0 Drugs or Devices

☒ **N/A:** This study does not involve drugs or devices. This section does not apply.

31.1 If the research involves drugs or devices, list and describe all drugs and devices used in the research, the purpose of their use, and their regulatory approval status.

Response:

Not Applicable.

31.2 Describe your plans to store, handle, and administer those drugs or devices so that they will be used only on subjects and be used only by authorized investigators.

Response:

Not Applicable.

If the drug is investigational (has an IND) or the device has an IDE or a claim of abbreviated IDE (non-significant risk device), include the following information:

31.3 Identify the holder of the IND/IDE/Abbreviated IDE.

Response:

Not Applicable.

31.4 Explain procedures followed to comply with FDA sponsor requirements for the following:

	Applicable to:		
FDA Regulation	***IND Studies***	***IDE studies***	***Abbreviated IDE studies***
21 CFR 11	***X***	***X***	
21 CFR 54	***X***	***X***	
21 CFR 210	***X***		
21 CFR 211	***X***		
21 CFR 312	***X***		
21 CFR 812		***X***	***X***
21 CFR 820		***X***	

Response:

Not Applicable.

32.0 Humanitarian Use Devices

☐ **N/A:** This study does not involve humanitarian use devices. This does not apply.

32.1 For Humanitarian Use Device (HUD) uses provide a description of the device, a summary of how you propose to use the device, including a description of any screening procedures, the HUD procedure, and any patient follow-up visits, tests or procedures.

Response:

Not Applicable.

32.2 For HUD uses provide a description of how the patient will be informed of the potential risks and benefits of the HUD and any procedures associated with its use.

Response:

Not Applicable.