**Q.** What web-based resources are available to help my patients with insomnia?

**A.** There are several web-based treatment programs for insomnia. Descriptions and links to these programs are provided below. Please note that the descriptions for each program are based on the information made available from each program's website and may not be complete or up-to-date.

**Product:** Sleepio

**Link:** https://www.sleepio.com/

**Status:** Currently available to research participants

**Description:** Sleepio is a web-based, cognitive-behavioral treatment program for a variety of sleep problems based on the CBT-I treatment model. Users begin by setting treatment goals and completing an in-depth questionnaire battery. From there, a treatment program is developed, which includes weekly 20-minute sessions with a virtual sleep expert targeting the following sleep-related areas: 1) thoughts and worries about sleep, 2) nighttime sleep schedules, 3) lifestyles, and 4) the bedroom. Users also have access to a moderated social network/community of users.

**Evidence:** One randomized clinical trial has been published on the Sleepio program. Sleepio was compared to Imagery Relief Therapy, and treatment as usual. Sleepio resulted in significantly better improvements in sleep efficiency and sleep-wake functioning from baseline to post-treatment.

**References:**

Espie CA, Kyle SD, Williams C, et al. A randomized, placebo-controlled trial of online cognitive behavioral therapy for chronic insomnia disorder delivered via an automated media-rich web application. Sleep. 2012;35(6):769-81.

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**Product:** SHUTi

**Link:** https://app.shuti.me

**Status:** Currently available to research participants

**Description:** SHUTi is a web-based, cognitive-behavioral treatment program for insomnia based on the Cognitive Behavioral Therapy for Insomnia treatment model. SHUTi begins with an overview of educational information on sleep problems and an evaluation of patients' sleep problems and treatment goals. Users then participate in five, weekly, 45- to 60-minute modules focused on specific methods for improving quantity and quality of sleep. After each module, users spend a week practicing what they have learned in their daily routines. These include exercises designed to help develop new sleep habits and skills. Users also complete a daily Sleep Diary which allow SHUTi to make personalized treatment recommendations.

**Evidence:** One randomized controlled trial comparing SHUTi to a waitlist control found that SHUTi resulted in significantly improved scores on the Insomnia Severity Index and sleep

efficiency, and that treatment gains were maintained at 6-month follow-up (Ritterband, Thorndike et al., 2009). Follow-up analyses found significant improvements in psychological symptoms, mental health quality of life, and fatigue (Thorndike, Ritterband et al., 2013)). Another trial with cancer survivors with insomnia comparing SHUTi to a waitlist control found significant improvement in insomnia severity, sleep efficiency, sleep onset latency, soundness of sleep, restored feeling upon wakening, and general fatigue (Ritterband, bailey et al., 2012). Another randomized controlled trial with patients with insomnia and depression symptoms found that SHUTi, compared to an interactive, attention-matched, internet-based placebo control program resulted in significantly improved depression symptoms at post-treatment and 6-month post-treatment (Christensen et al., 2016).

**References:**

Ritterband LM, Thorndike FP, Gonder-frederick LA, et al. Efficacy of an Internet-based behavioral intervention for adults with insomnia. Arch Gen Psychiatry. 2009;66(7):692-8.

Ritterband LM, Bailey ET, Thorndike FP, Lord HR, Farrell-carnahan L, Baum LD. Initial evaluation of an Internet intervention to improve the sleep of cancer survivors with insomnia. Psychooncology. 2012;21(7):695-705.

Thorndike FP, Ritterband LM, Gonder-frederick LA, Lord HR, Ingersoll KS, Morin CM. A randomized controlled trial of an internet intervention for adults with insomnia: effects on comorbid psychological and fatigue symptoms. J Clin Psychol. 2013;69(10):1078-93.

Christensen H, Batterham PJ, Gosling JA, et al. Effectiveness of an online insomnia program (SHUTi) for prevention of depressive episodes (the GoodNight Study): a randomised controlled trial. Lancet Psychiatry. 2016;3(4):333-41.

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**Product:** The Conquering Insomnia program

**Link:** https://www.cbtforinsomnia.com/

**Status:** Currently available to consumers

**Description:** The Conquering Insomnia program is a web-based program based on the CBT-I treatment model. Users participate in five sessions provided sequentially over five weeks and are delivered in a PDF format. These sessions include: 1) basic facts about sleep and an insomnia assessment; 2) sleep scheduling and stimulus control techniques; 3) cognitive restructuring and sleep medication tapering techniques; 4) daytime relaxation techniques and developing stress-reducing, sleep enhancing attitudes and beliefs; and 5) bedtime relaxation techniques and lifestyle habits that improve sleep. Users also complete a weekly sleep diary that can be emailed to the program developer, Dr. Gregg Jacobs, who provides individualized guidelines and feedback on CBT-I techniques based on the sleep diary results. Lastly, the program offers weekly summaries of goals and tips for meeting goals and articles and blogs on insomnia.

**Evidence:** This web-based program was developed based on a randomized controlled trial of CBT-I compared to sleep medication, a combination of CBT-I and sleep medication, and a pill placebo. CBT-I resulted in the largest changes in sleep-onset latency and sleep efficiency and

fewer insomnia diagnoses at post-treatment, and treatment gains were maintained at long-term follow-up. Thus far, no trials have been conducted on the web-based delivery of this program.

**References:**

Jacobs GD, Pace-Schott E, Stickgold R, Otto M. Cognitive-behavioral therapy and pharmacotherapy for insomnia: a randomized controlled trial and direct comparison. *Arch Intern Med.*2004;164:1888-96.

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**Product:** Path to Better Sleep course

**Link:** https://www.veterantraining.va.gov/insomnia/index.asp

**Status:** Currently available to consumers

**Description:** The Path to Better Sleep course was developed by the Department of Veteran Affairs but is available to all users. The program begins with a “sleep check up,” or an insomnia questionnaire. The course is designed to be completed over six weeks and is delivered using an interactive user interface with video guides on the following topics: 1) an overview of CBT-I; 2) sleep scheduling; 3) stimulus control; 4) controlling worries; 5) challenging thoughts; and 6) relapse prevention. The course also includes videos of real veterans who recovered from insomnia, a learning log, and weekly sleep diary entries.

**Evidence:** According to the VA website, this course is based on the self-help guide, “Improve your Sleep: A Self-Guided Approach for Veterans with Insomnia.” No additional research particular to this program has been found at this point in time.

**References:**

Ulmer CS, Farrell-Carnahan L, Hughes JM, Manber R, Leggett MK, Tatum J, and the Mid-Atlantic (VISN 6) Mental Illness Research, Education and Clinical Center (MIRECC). (2018). Improve your Sleep: A Self-Guided Approach for Veterans with Insomnia (Self-Help Workbook).

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**Product:** Cobalt Therapeutics RESTORE CBT for Insomnia and Sleep / The Online Program for Insomnia

**Link:** http://www.cobalttx.com/Products/restore.html / https://www.return2sleep.com/

**Status:** Does not appear to be available to consumers

**Description:** RESTORE is a web-based program based on the CBT-I treatment model. The program includes the following seven sessions delivered over five weeks: 1) introduction and psychoeducation; 2) applied relaxation; 3) stimulus control; 4) impactful thoughts; 5) sleep hygiene; 6) mindfulness; and 7) a closing session.

**Evidence:** The initial randomized controlled trial compared the program to a waitlist control and found that the program resulted in improved sleep quality, insomnia severity, daytime fatigue,

pre-sleep cognitive arousal, and dysfunctional beliefs about sleep. Since this trial, there have been numerous publications about the program (see below).

**References:**


Vincent, N., & Lewycky, S. (2009). Logging in for Better Sleep: A randomized controlled trial of the effectiveness of online treatment for chronic insomnia. *Sleep, 32, 807-815*.

Beaulac, J., Vincent, N., & Walsh, K. (2014). Dissemination of an Internet-Based Treatment for Chronic Insomnia Into Primary Care. Behavioral Sleep Medicine,12, 1–16

Holmqvist, M., Vincent, N., & Walsh, K. (2013). Web-based vs telehealth-based delivery of CBT-I: A randomized controlled trial. Sleep Medicine, 15, 187-195.

Vincent, N., Walsh, K., & Lewycky, S. (2013). Determinants of success for computerized CBT: Examination of an insomnia program. *Behavioral Sleep Medicine, 11, 1-13*.

Vincent, N., Walsh, K., & Lewycky, S. (2010). Sleep locus of control and computerized cognitive behavioural therapy (cCBT)*. Behaviour Research and Therapy, 48*, 779-783.

Vincent, N., Lewycky, S., Hart Swain, K., & Holmqvist, M. (2009). Logging on for Nodding off: Empowering patients through the use of computerized cognitive behavioural therapy (cCBT). *The Behavior Thera*pist. *32*,123-126.

**Q.** What mobile app-based resources are available to help my patients with insomnia and/or could be helpful to me as I provide CBT-I to my patients?

**A.** There are several mobile app-based resources available for insomnia. Descriptions and links to these apps are provided below. Please note that the descriptions for each app are based on the information made available from each app's website or app store page and may not be complete or up-to-date.

**Product:** CBTi Coach

**Mobile OS:** iOS/Android

**Rating(s):** iOS 3.5 Stars; Android 4.0 Stars

**Link(s):** https://mobile.va.gov/app/cbt-i-coach

**Status:** Currently available to consumers

**Description:** CBT-i Coach is meant for users who are receiving CBT-I from a health care provider, but it also can be used as a self-help resource for users who would like to improve their sleep habits. CBT-i Coach provides education about sleep and good sleep habits, assessments, a sleep diary with tracking, and a "sleep prescription" component (i.e., prescribed bedtime, wake time, and target efficiency) that can be managed with a provider. CBT-i Coach also provides reminders to complete the sleep diary, adhere to prescribed bedtime and wake time, and take assessments among other things.

https://www.mirecc.va.gov/docs/visn6/Improve_Your_Sleep_Self-Guided_Approach_for_Veterans_with_Insomnia-March-2017.pdf

**Evidence:** A feasibility randomized controlled trial compared treatment augmented with CBTi Coach to treatment without the use of the app and found that all participants engaged with the app as intended, found it to be highly acceptable to patients, and found that it did not undermine the benefits of CBT-I (Koffel et al., 2018). Another open trial examining the use of CBTi Coach as a self-management intervention found improvements in self-reported insomnia, sleep quality, and sleep-related functioning from pre- to post-intervention (Reilly et al., 2019)

**References:**

Koffel E, Kuhn E, Petsoulis N, et al. A randomized controlled pilot study of CBT-I Coach: Feasibility, acceptability, and potential impact of a mobile phone application for patients in cognitive behavioral therapy for insomnia. Health Informatics J. 2018;24(1):3-13.

Kuhn E, Weiss BJ, Taylor KL, et al. CBT-I Coach: A Description and Clinician Perceptions of a Mobile App for Cognitive Behavioral Therapy for Insomnia. J Clin Sleep Med. 2016;12(4):597-606.

Reilly ED, Robinson SA, Petrakis BA, et al. Mobile App Use for Insomnia Self-Management: Pilot Findings on Sleep Outcomes in Veterans. Interact J Med Res. 2019;8(3):e12408.

Miller KE, Kuhn E, Owen JE, et al. Clinician Perceptions Related to the Use of the CBT-I Coach Mobile App. Behav Sleep Med. 2019;17(4):481-491.

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**Product:** Sleep as Android

**Mobile OS:** Android

**Rating(s):** Android 4.4 Stars

**Link:** https://sleep.urbandroid.org/

**Status:** Currently available to consumers

**Description:** Sleep as Android provides notification alerts as users near bedtime and provides calming sounds to listen to when falling asleep. The app tracks sleep cycles and sleep phases throughout the night using phone accelerometer or smartwatch data and wakes the user with a nature sounds alarm clock and smart-light functionality. The app also detects and interrupts snoring. It uses features to motivate users to get out of bed by requiring them to take a picture of a QR Code or hover their phone near a NFC sensor to shut off the alarm. The app also provides stats on sleep cycles, deficits, and lifestyle patterns related to sleep.

**Evidence:** N/A

**References:** N/A

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**Product:** Sleep Cycle

**Mobile OS:** iOS/Android

**Rating(s):** iOS 4.7 Stars; Android 4.5 Stars

**Link:** https://www.sleepcycle.com/

**Status:** Currently available to consumers

**Description:** The Sleep Cycle alarm clock uses motion detection and sound analysis to identify sleep states such as light or deep sleep by tracking movements in bed. The alarm clock attempts to wake users up around their desired wake time but while they are in light sleep, or stages 1-2 of sleep. It wakes up the user through its smart alarm with a 30-minute-long wake-up phase during which it monitors signals from the body to wake the user in the lightest possible sleep state. Sleep Cycle also records snoring and provides sleep graphs showing regular *vs*. irregular sleep, statistics about sleep (e.g., bedtime, wake time, time in bed, sleep efficiency), and lifestyle statistics based on journaled events and their relation to the users' quality of sleep.

**Evidence:** One study compared measurements from the Sleep Cycle app to polysomnography and found no correlation between total sleep time or sleep latency.

**References:**

Patel P, Kim JY, Brooks LJ. Accuracy of a smartphone application in estimating sleep in children. Sleep Breath. 2017;21(2):505-511.

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**Product:** Sleep Time

**Mobile OS:** iOS/Android

**Rating(s):** iOS 4.8 Stars; Android 4.1 Stars

**Link:** https://www.azumio.com/s/sleeptime/index.html

**Status:** Currently available to consumers

**Description:** The Sleep Time app tracks sleep and identifies sleep states such as light or deep sleep by tracking movements in bed. The alarm clock attempts to wake users up around their desired wake time but while they are in light sleep, or stages 1-2 of sleep. It wakes up the user through its smart alarm with a 30-minute-long wake-up phase during which it monitors signals from the body to wake the user in the lightest possible sleep state. Sleep Cycle also records snoring and provides sleep graphs showing regular *vs*. irregular sleep, statistics about sleep (e.g., bedtime, wake time, time in bed, sleep efficiency), and lifestyle statistics based on journaled events and their relation to the users' quality of sleep.

**Evidence:** One study compared measurements from the Sleep Time app to polysomnography and found the app to have high sensitivity but poor sensitivity in detecting sleep.

**References:**

Bhat S, Ferraris A, Gupta D, et al. Is There a Clinical Role For Smartphone Sleep Apps? Comparison of Sleep Cycle Detection by a Smartphone Application to Polysomnography. J Clin Sleep Med. 2015;11(7):709-15.

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**Product:** Pillow

**Mobile OS:** iOS

**Rating(s):** iOS 4.4 Stars

**Link:** https://apps.apple.com/us/app/pillow-automatic-sleep-tracker/id878691772

**Status:** Currently available to consumers

**Description:** Pillow analyzes sleep cycles using movement data from the user's Apple Watch or iPhone, which is placed on the bed at night. Pillow can integrate sleep data with heart rate analysis for more accurate tracking. It can record snoring, sleep apnea, and sleep talking. Data tracking and summary information about sleep trends are provided. Pillow uses a smart alarm clock to wake users during their lightest possible sleep stage. The app also includes mood tracking and notes about sleep sessions.

**Evidence:** N/A

**References:** N/A

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**Product:** Sleepzy Sleep Cycle Tracker

**Mobile OS:** iOS

**Rating(s):** iOS 4.2 Stars

**Link:** https://apps.apple.com/us/app/good-morning-alarm-clock/id1064910141

**Status:** Currently available to consumers

**Description:** Sleepzy tracks sleep cycles by microphone and includes a smart alarm that wakes users during their lightest sleep phase. Sleepzy tracks sleep quality (efficiency) and alerts users when they gain sleep debt. The app also provides relaxing sounds for falling asleep.

**Evidence:** N/A

**References:** N/A

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**Product:** Good Morning Alarm Clock

**Mobile OS:** iOS

**Rating(s):** iOS 4.5 Stars

**Link:** https://apps.apple.com/us/app/good-morning-alarm-clock/id989254177

**Status:** Currently available to consumers

**Description:** Good Morning Alarm Clock tracks movement during sleep using iPhone sensors to analyze sleep cycles and a smart alarm to wake users during their lightest sleep cycle. The app attempts to do this while taking users' sleep goals into consideration. The app provides data summaries on sleep cycles and sleep quality and tips to improve sleep quality, along with reminders to engage in healthy sleep habits.

**Evidence:** N/A

**References:** N/A