

Q. What is light therapy?

A. Light therapy, also known as bright light therapy or phototherapy, has been proposed as a treatment for major depressive disorder (MDD) with a seasonal pattern (formerly seasonal affective disorder [SAD]), and also non-seasonal MDD. Light therapy involves exposure to artificial bright light using a fluorescent light box. Light boxes are much brighter than regular lamps, emitting up to 10,000 lux (this is brighter than normal indoor light, but less bright than direct sunlight). Procedures vary between different light boxes, but common protocols involve exposure to bright white light at 2,500 lux for two hours per day or 10,000 lux for 30 minutes per day (Tam, Lam, & Levitt, 1995).

Q. What are the potential mechanisms of action underlying light therapy?

A. Light therapy was first proposed as a treatment for SAD, now known as MDD with a seasonal pattern, in the early 1980s (Rosenthal et al., 1984). It has been hypothesized that SAD patients become depressed in the winter due to the later dawn, which causes a delay in their circadian rhythms with respect to the sleep/wake cycle (Lewy, Sack, Miller, & Hoban, 1987). Duration of melatonin secretion, a natural hormone that regulates the sleep/wake cycle, is longest in the winter when the photoperiod (day length) is the shortest (Lewy, 1983). Light therapy was proposed to extend the photoperiod during the winter months, thus suppressing melatonin production and improving circadian rhythms of patients with SAD. Although it is known that light is responsible for phase-shifting of circadian rhythms and changes in melatonin secretion and metabolism, the exact mechanism of action by which light therapy affects depression is not yet completely understood (Oldham & Ciraulo, 2014; Pail et al., 2011; Tuunainen, Kripke, & Endo, 2004).

Q. Is light therapy recommended as a front-line treatment for MDD in the Military Health System (MHS)?

A. No. However, the 2016 VA/DoD *Clinical Practice Guideline for the Management of Major Depressive Disorder* does give a “Weak For” strength of recommendation for light therapy for adult patients with mild to moderate MDD with a seasonal pattern.

The MHS relies on the VA/DoD clinical practice guidelines (CPGs) to inform best clinical practices. The CPGs are developed under the purview of clinical experts and are derived through a transparent and systematic approach that includes, but is not limited to, systematic reviews of the literature on a given topic and development of recommendations using a graded system that takes into account the overall quality of the evidence and the magnitude of the net benefit of the recommendation. A further description of this process and CPGs on specific topics can be found on the VA clinical practice guidelines website.

Q. Do other authoritative reviews recommend light therapy as a front-line treatment for MDD?

A. No. Other authoritative reviews do not recommend the use of light therapy as a front-line treatment for MDD.

Several other recognized organizations conduct systematic reviews and evidence syntheses on psychological health topics using similar grading systems as the VA/DoD CPGs. These include Cochrane and the Agency for Healthcare Research Quality (AHRQ).

- Cochrane: A 2004 review of light therapy for non-seasonal depression concluded that the benefit of light therapy is “modest though promising” for non-seasonal depression (Tuunainen, Kripke, & Endo, 2004). Overall, treatment response was better in the bright light group than in the control treatment group, but this difference was not statistically significant.
- AHRQ: No reviews of treatments for depression include light therapy.

Q. Is there any recent research on light therapy as a treatment for MDD?

A. A February 2018 literature search identified three meta-analyses of light therapy as a treatment for non-seasonal depression that have been published after the earlier literature search was conducted for the 2016 VA/DoD *Clinical Practice Guideline for the Management of Major Depressive Disorder*. A 2016 systematic review and meta-analysis of light therapy for non-seasonal depression included 20 randomized controlled trials (RCTs), with a total of 881 participants, and found a beneficial effect of light therapy in non-seasonal depression (Perera et al., 2016). Another 2016 meta-analysis of light therapy for non-seasonal depression included nine RCTs, with a total of 219 participants, and found that there was a significant reduction of depressive symptoms after bright light therapy compared to controls (Al-Karawi & Jubair, 2016). A 2016 systematic review and meta-analysis found evidence for the efficacy of light therapy as augmentation of pharmacotherapy for treatment of non-seasonal depression (Penders et al., 2016). Each of these reviews notes that heterogeneity of the included trials and high risk of bias (in particular, the blinding of study participants was not adequate) limits interpretation of the results.

Q. What conclusions can be drawn about light therapy as a treatment for MDD in the MHS?

A. Based on the current evidence base, light therapy is not recommended as a front-line treatment for MDD in the MHS. However, evidence has emerged supporting the use of light therapy as a treatment for non-seasonal depression with some notable methodological issues. While the emerging evidence is promising, future studies examining the efficacy of light therapy for MDD should be more standardized in their design, including agreement on the use of an adequate placebo control and optimal duration, timing, and intensity of treatment.

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