



Home-use light box therapy for seasonal affective disorder

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Policy contains: light box; light therapy; seasonal affective disorder; winter depression.

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Coverage policy

Home-use light box therapy is clinically proven and, therefore, medically necessary for seasonal affective disorder (major depressive disorder with seasonal patterns) when the following criteria are met:

- The member is diagnosed with recurring depression (at least two years) during a period when light decreases, which also alleviates when light increases.
- An evaluation and recommendation for light box therapy is made by a physician, for treatment of no longer than one hour, most often early in the morning (Kurlansik, 2012; National Health Service, 2018).

Limitations

No limitations were identified during the writing of this policy.

Alternative covered services

- Antidepressants, especially selective serotonin reuptake inhibitors.
- Psychotherapy.
- Cognitive behavioral therapy.

Background

Seasonal affective disorder is a condition similar to depression that occurs mostly in winter. Experts believe that the low levels of serotonin and elevated levels of melatonin in the brain contribute to this condition, with symptoms including low energy, hypersomnia, overeating, weight gain, craving for carbohydrates, and social withdrawal (feel like “hibernating”).

While the precise causes of the disorder are not known, risk factors are well documented. These include being female (80% are women), family history of other types of depression, having depression or bipolar disorder, and being younger (versus older) adults. Geographic prevalence varies greatly; for example an estimated 1.4% of Florida residents have the disease, compared to 9.9% in Alaska (Rohan, 2013).

While reports of the disorder have been made for many years, not until 1980 was improvement in the condition after exposure to bright light made known (Lewy, 1980). The term “seasonal affective disorder” was first reported in the literature in 1984 (Rosenthal, 1984).

A variety of light boxes are used for seasonal affective disorder. Each filters out the ultraviolet rays and requires 20 – 60 minutes of exposure to 10,000 lux of cool-white fluorescent light, an amount that is about 20 times greater than ordinary indoor lighting (National Institute of Mental Health, 2016). Caution is advised not to sit directly facing the box, at a reasonable proximity, namely 16 to 24 inches away (Mayo Clinic, 2016).

Bright light works by stimulating cells in the retina that connect to the hypothalamus, a part of the brain that helps control circadian rhythms. Activating the hypothalamus at a certain time every day can restore a normal circadian rhythm that normal light in winter cannot for some individuals (Miller, 2012).

Findings

The American Academy of Family Physicians recommends light box therapy for seasonal affective disorder, noting that improvement is usually observed one to four weeks after treatment starts. The Academy also recommends cognitive behavioral therapy and antidepressants (Kurlansik, 2012).

The British National Health Service states that cognitive behavioral therapy, antidepressants, and light therapy are all acceptable treatments for seasonal affective disorder. Light therapy works best in the morning, but is not for persons sensitive to bright light, or for those taking antibiotics and antipsychotics that increase light sensitivity (National Health Service, 2018).

A Canadian panel, while acknowledging light therapy to be one of the major options for persons with seasonal affective disorder, could not recommend either light or drug therapy over the other due to a lack of evidence (British Columbia Drug and Poison Information Centre, 2017).

The American Psychiatric Association guideline states that use of light box therapy “might be used” to treat seasonal affective disorder (American Psychiatric Association, 2017).

Systematic reviews/meta-analyses

A systematic review/meta-analysis (n = 397) found improvements in depression scores for patients with seasonal affective disorder given light therapy plus placebo were greater than those given antidepressants plus placebo, but this difference was not significant at $P < .17$. The combination of light therapy plus antidepressants for seasonal affective disorder yielded a significantly greater improvement at $P < .001$ than those given

antidepressants plus placebo; and also was significantly more effective for nonseasonal depression ($P < .005$). Authors note that light therapy has been found effective, but is underused in clinical settings (Geoffroy, 2019).

A systematic review of 40 studies observed bright light therapy demonstrated improvements to phase-advance delayed rhythms, sleep-wake disorders, and mood symptoms, but could not conclude that treatment results in changes in circadian outcomes (Menculini, 2018).

A meta-analysis of two studies on seasonal affective disorder showed that persons using light box therapy reached significant improvement levels at the second and third weeks after initiation, and at the endpoint of the trials (Martensson, 2015).

In a Cochrane review of six studies, two ($n = 146$) compared outcomes for the second-generation antidepressant fluoxetine with those of light therapy for seasonal affective disorder. Trends in depression were similar in both groups, in which about two-thirds of subjects improved (Thaler, 2011).

A review of several meta-analyses revealed that seasonal affective disorder treated with bright light therapy significantly reduced depression severity, as did dawn simulation (Golden, 2005).

Relatively large randomized controlled trials

A trial of 177 persons with seasonal affective disorder were randomized to light therapy ($n = 89$) or cognitive behavioral therapy ($n = 88$) for six weeks. Of the 17 outcomes measures of improvement, four (early insomnia, psychic anxiety, hypersomnia, and social withdrawal) were significantly superior (led to faster symptom remission) after light therapy, while there was no significant difference between groups in the other 13 measures (Meyerhoff, 2018).

A trial of 79 persons with seasonal affective disorder tested for immediate improvements in depression. In the first hour, one group was exposed to red light and the other to bright light; no difference between groups was observed. In the second hour, both were exposed to bright light; the group with two hours of bright light had significantly better improvements ($P = .02$), using two depression scales, indicating that light therapy can have speedy results (Reeves, 2012).

A study of 96 patients suffering from winter depression compared light therapy and fluoxetine for 30 minutes daily over an eight-week period. Both treatments were well-tolerated, and no differences between groups were observed after eight weeks for depression, clinical response rates, or remission rates. Light-treated patients had significantly greater improvement at one week, and had significantly fewer treatment-emergent adverse events (agitation, sleep disturbance, and palpitations [Lam, 2006]).

A study of 96 patients with seasonal affective disorder were divided into those taking dawn light, dawn placebo, and evening bright light. One to three daily treatments were administered for four weeks. The proportion responding in each group was 61%, 32%, and 50%, indicating effectiveness of dawn light (Eastman, 1998).

References

On December 2, 2019, we searched PubMed and the databases of the Cochrane Library, the U.K. National Health Services Centre for Reviews and Dissemination, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services. Search terms were light box, light therapy, seasonal affective disorder, and winter depression We included the best available evidence according to established evidence

hierarchies (typically systematic reviews, meta-analyses, and full economic analyses, where available) and professional guidelines based on such evidence and clinical expertise.

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Policy updates

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