



*Improve shift work
and promote patient
recovery*

Biocentric lighting in healthcare

In many healthcare facilities access to daylight is limited and patients and staff spend a lot of time indoors. Individual needs put high requirements on indoor lighting in these environments. The lighting must benefit both patients and staff.

Current standards and guidelines for lighting systems within patient rooms typically specifies horizontal illuminance thresholds as low as 100 lux¹, a level insufficient to generate the same benefits as natural daylight (2000–100 000 lux) under which we have evolved. Not surprisingly, hospitalized patients often suffer from sleep and circadian rhythm disruption².

Biocentric lighting delivers a higher circadian stimulus than industry norms, ensuring a healthy and stable sleep cycle for all patients.



How can Biocentric lighting be used in healthcare?

- ✓ Promote patient recovery and shorten length of stay
- ✓ Use light as a tool to improve shift work
- ✓ Ensure circadian stimuli and support better sleep

Biocentric lighting is a lighting system that simulates the most important aspects of daylight indoors. The light is designed to support a stable circadian rhythm with many benefits for our health and well-being, including sleep and recovery.



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Shorten length of stay and promote recovery

Daytime exposure to high illuminances, from either daylight or a few hours of bright-light therapy, is known to have beneficial effects on clinical parameters such as recovery, length of stay (LOS), depression, anxiety and use of pain medication. In one study inpatients had over 3 days shorter stay when admitted to rooms facing east compared to those in rooms facing west.³

Activity-based lighting

One of the biggest challenges with light in healthcare is the adaptability of the light solution to a workplace where multiple activities require different solutions for different rooms. In many situations there is a demand for reduced lighting. Biocentric lighting offers light recipes that are easily adapted to different users and activities, such as recovery or examination light.



1. Bernhofer EI, Higgins PA, Daly BJ, Burant CJ, Hornick TR. Hospital lighting and its association with sleep, mood and pain in medical inpatients. *J Adv Nurs*. 2014;70(5):1164-1173. doi:10.1111/jan.12282
2. Billings ME. Circadian Dysrhythmias in the Intensive Care Unit. 2019;31(2015):393-402.
3. Taguchi T, Yano M, Kido Y. Influence of bright light therapy on postoperative patients: A pilot study. *Intensive Crit Care Nurs*. 2007;23(5):289-297. doi:10.1016/j.iccn.2007.04.004
4. Rodríguez RG, Ph D, Pattini AE, Ph D. Neonatal intensive care unit lighting: update and recommendations. *Arch Argent Pediatr*. 2016;114(04):361-367. doi:10.5546/aap.2016.eng.361



Shift work

Shift work is a vital part of healthcare but is associated with sleepiness and human errors. In this case, exposure to bright light during the night is important to increase alertness but it has to be balanced with the effect that light has on suppression of melatonin. Through appropriately timed light exposure and the use of recipes to momentarily raise alertness when needed, Biocentric lighting helps staff maintain a balanced circadian rhythm and high alertness at work.

Neonatal

Prematurely born children are also in need of circadian stimuli. Although fetus development takes place in the dark, fetal circadian rhythms are entrained through the maternal rhythm. Therefore, babies who are born pre-term need to receive the same circadian stimuli as they would have received during pregnancy.⁴ At Helsingborg Hospital, the light environment is adapted to meet the biological needs of both babies, parents and the staff.