Direct Sunlight and Ventilator Weaning Outcomes

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Key Concepts/Context

Research shows that room design and the healthcare environment offer physical and psychological benefits for patients and others. For example, windows, by providing views of nature and exposure to sun, offer beneficial effects. Attention restoration theory posits that viewing a natural scene promotes a feeling of being away from it all and allows for a mental recuperative break. This change in cognitive functioning promoted by nature offers recuperative powers. An alternative psychological-based explanation is that people have evolved an immediate noncognitive stress-reduction reaction to nature. These psychological theories do not go so far as to specify the physical mechanism by which sunlight operates, but it does appear that nature provides positive feelings in anticipation of recuperation.

With that in mind, the authors of this article studied patients on mechanical ventilation. These patients present the medical community with housing needs, high-costs, and risks of prolonged institutionalization. Therefore, getting these patients off ventilator support more quickly could reduce costs and risks. They hypothesized that patients in rooms with windows offering more direct sunlight would demonstrate faster ventilator-weaning outcomes than those assigned to rooms with windows that provided less direct sunlight.

Methods

The article reports on the results of a 2-year study, with no interventions, on the outcomes of 72 mechanical ventilator-dependent patients on one floor of an 80-bed, long-term, acute care facility in an urban area in the Southeast. Patients were randomly assigned to their rooms.

The study included all adult patients being weaned from mechanical ventilation from January 2, 2008, to January 1, 2010. (Weaning patients off the ventilator is the
SYNOPSIS

It is not simply the direction the window faces but the time of year that must be considered to maximize direct sunlight for patients. This measurement scheme for sunlight also seems to make confounds less likely to be a problem for the results since there was no specific room, direction, or side of the building that was predicted to be best for patient recovery.

Probably the biggest qualification of these results is the fact that they are correlational. There appears to be a meaningful relationship, but without a true experiment, it’s not possible to say that the direct sunlight was what actually caused any effect.

According to the results of this study, direct sunlight significantly predicted the number of days to wean from the ventilator ($\beta = -0.135$, $P < .05$). The more direct sunlight the patient experienced, the fewer days of weaning were needed. Researchers analyzed models including demographic variables and interaction terms, but they found none to be significant.

The authors note that the results do not shed any light on the mechanism behind the sunlight effect.
Limitations

The authors note that their results are only directly applicable to the population included in the analyses. This study did not include the sickest patients because they were sent to the ICU, therefore, the results cannot be applied to patients in a similar condition.

Reviewer note: As the authors state, the exact mechanism in the view/sunlight exposure was not identified in this study. It would be hard to apply these findings to other settings since the exact cause is still unknown.