

CIVIL MONEY PENALTY (CMP) FUNDED PROJECT FINAL REPORT



DEPARTMENT OF HEALTH SERVICES / DIVISION OF QUALITY ASSURANCE QUALITY ASSURANCE AND IMPROVEMENT COMMITTEE

This project report has been prepared by the author under a research grant from the Department of Health Services (DHS) Quality Assurance and Improvement Committee. The views expressed in the report/training are personal to the author and do not necessarily reflect the view of the Department of Health Services or any of its staff and do not bind the Department in any manner.

Grantee

Midwest Lighting Institute

Project Title

Nursing Home Lighting to Improve Resident Health and Lower Fall Rates

Amount Spent

\$ 17,620.13

Grant Period

12/01/2017

To

11/30/2020

(MM/dd/yyyy)

(MM/dd/yyyy)

Additional Information and Resources



01-26-2022

Dept of Health Services
1 West Wilson
Madison, WI 53701

**Re: Nursing Home Lighting to Improve Resident Health and Lower Fall Rates
Research Overview**

The study was initiated by Midwest Lighting Institute Inc., (MLI) a 501c3 nonprofit dedicated to facilitating research on light's effect on human health and productivity. MLI applied for a CMS study grant from the Wisconsin Department of Health Services in April of 2017. In November of 2017 we were notified of the award of a \$200,000 to study the effect of light spectra on residents in long term care facilities.

Upon award of the grant, MLI then contracted with researchers from Brigham and Women's Hospital, a teaching affiliate of Harvard Medical School to conduct a high quality, independent study. The researchers included Leilah K. Grant, Ph.D., Melissa A. St. Hilaire, Ph.D., Steven W. Lockley, Ph.D., Shadab A. Rahman, Ph.D., M.P.H.

The study was designed to measure the effect of light spectra, intensity and timing of color on the residents and was based on results we achieved at Tweeten Care center in Spring Grove MN. The study was to last 24 months, 12 months before the lighting was installed and 12 months after installation. All the data would be collected from medical charts, there would be no surveys of residents or staff.

For this study our goal was to locate 4 nursing homes in Wisconsin, 2 subject and 2 control, and the control and subject nursing homes are owned and managed by the same company to minimize variables. The 4 homes we chose were:

- Maple Ridge Care Center (subject) Montello Care Center (control)
- Oak Ridge Care Center (subject) Hope Health & Rehabilitation Center (control)

Upon site selection, we submitted a request to Western Institutional Review Board in March of 2018 for an IRB approved research study. The request was approved and the study was scheduled to start in October of 2018. In July of 2018, Rahman traveled to nursing homes to document lighting measurements and any other conditions that may affect the study.

The dynamic lighting installation was completed at Oak Ridge Care Center in Union Grove on 10/25/2018 and Maple Ridge in Spooner on 11/07/2018. Grant, Rahman, and Lockley measured the dynamic lighting protocol on at all care centers on December 11, 12, and 13. The definition of dynamic lighting is light that illuminates a space and has the ability to change colors. We programmed this lighting to mimic the color of the sky throughout the day; rich blue first thing in the morning, a brighter rich blue during the middle of the day, then dimming and after 5:00



PM change the color from blue to warm or yellowish color, with minimal to no light entering the resident's room at night.

The staff at the respective care centers agreed to help us compile data in a .csv file format and help with the study. As we began to ask for data, staff at the care centers could not give it to us as we needed. The patient records were all in an Adobe format. Each record had to be searched manually and entered into an Excel spread sheet. A program was written to automate the search process, but it still increased time and expense of obtaining accurate data.

Covid19 became a problem in retrieving medical data and essentially locked the study down for a year. Another problem turned up in that one of the care homes records were in paper format. Between Covid and the conversion of paper records, it slowed the process of data collection considerably.

As of 01/26/22, an initial study has been authored by the research team and has been reviewed by independent reviewers. Upon completion of the review, the authors requested and obtained more data to answer questions from the reviewers. It is currently under review again and we anticipate the study to be published in a leading journal. Upon publication, the peer reviewed paper will be forwarded to DHS for posting.