

Low-Vision Education for the Health Care Workforce: A Strategy to Create a Vision-friendly Hospital

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ABSTRACT:

Background: Aging of the baby boomers presents a unique set of challenges for health care workers. Low vision among patients may be a barrier to providing appropriate patient care, may impede communication, and may decrease patients' satisfaction with health care. It is important to train the medical workforce to understand the unique challenges of the aging population.

Objective: To test an interactive educational learning model targeting health care workers to improve knowledge and awareness of low vision.

Methods: Participants completed a survey prior to and after an educational intervention that consisted of 4 components: (1) normal aging, (2) eye-disease of the elderly, (3) experiential learning, and (4) written material with references and further resources.

Results: Three hundred eight-six members of the hospital workforce completed the training. There was statistically significant improvement in 7 of the 8 test questions. One question demonstrated a positive trend but was not statistically significant.

Conclusion: An interactive educational model on low vision can improve the knowledge of the health care team. This may lead to improvement in patients' satisfaction and quality of care and help create a vision-friendly hospital.

BACKGROUND

In the year 2030, the last of the baby boomers will celebrate their 65th birthday, and nearly 1 in 5 US residents will be 65 years or older. The elderly population is projected to increase to 88.5 million in 2050, more than double the number in 2008 (38.7 million).¹ Although they comprise only 12% of the population, they're responsible for 35% of hospital stays.² The Institute of Medicine (IOM) reports a shortage of a competent workforce to care for the older population.³ The IOM further notes that there is a paucity of required geriatrics exposure during training for nurses, pharmacists, social workers, and medical students.

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Providing medical care to the elderly in hospital settings is a challenge due to multiple medical problems and the prevalence of geriatrics syndromes. It is important for the hospital workforce to be equipped with training in issues specific to the elderly population. In addition, there is a need for ongoing education of the hospital care workforce to ensure they are in touch with the latest in geriatrics care.

Low vision is a common problem in the hospitalized elderly, affecting almost half of the patients.⁴ Low vision is associated with memory loss,⁵ falls,⁶ impaired quality of life,⁷ driving difficulties,⁸ longer length of stay,⁹ and higher mortality.¹⁰ Screening and bedside evaluation as part of a multi-component intervention in hospitalized elderly has shown to

reduce delirium.¹¹

Interdisciplinary education about low vision is important in creating a health care workforce sensitive to the needs of the elderly.¹² It may empower health care professionals to take simple steps to ensure a comfortable hospital experience¹³ and create a "vision-friendly hospital." A "vision-friendly hospital" is sensitive to the needs of seniors with low vision. This includes screening for low visual function and providing interventions to improve the experience of these people during their hospital stay. This is a quality improvement project to test an interactive educational model for health care workers whose purpose is to improve knowledge and awareness of low vision among the elderly.

METHOD

This intervention took place in a community teaching hospital in Milwaukee, Wisconsin, that has a geriatrics consultation service, geriatrics fellows, and an "acute care for elders" unit.

All members of the hospital health care team were invited to

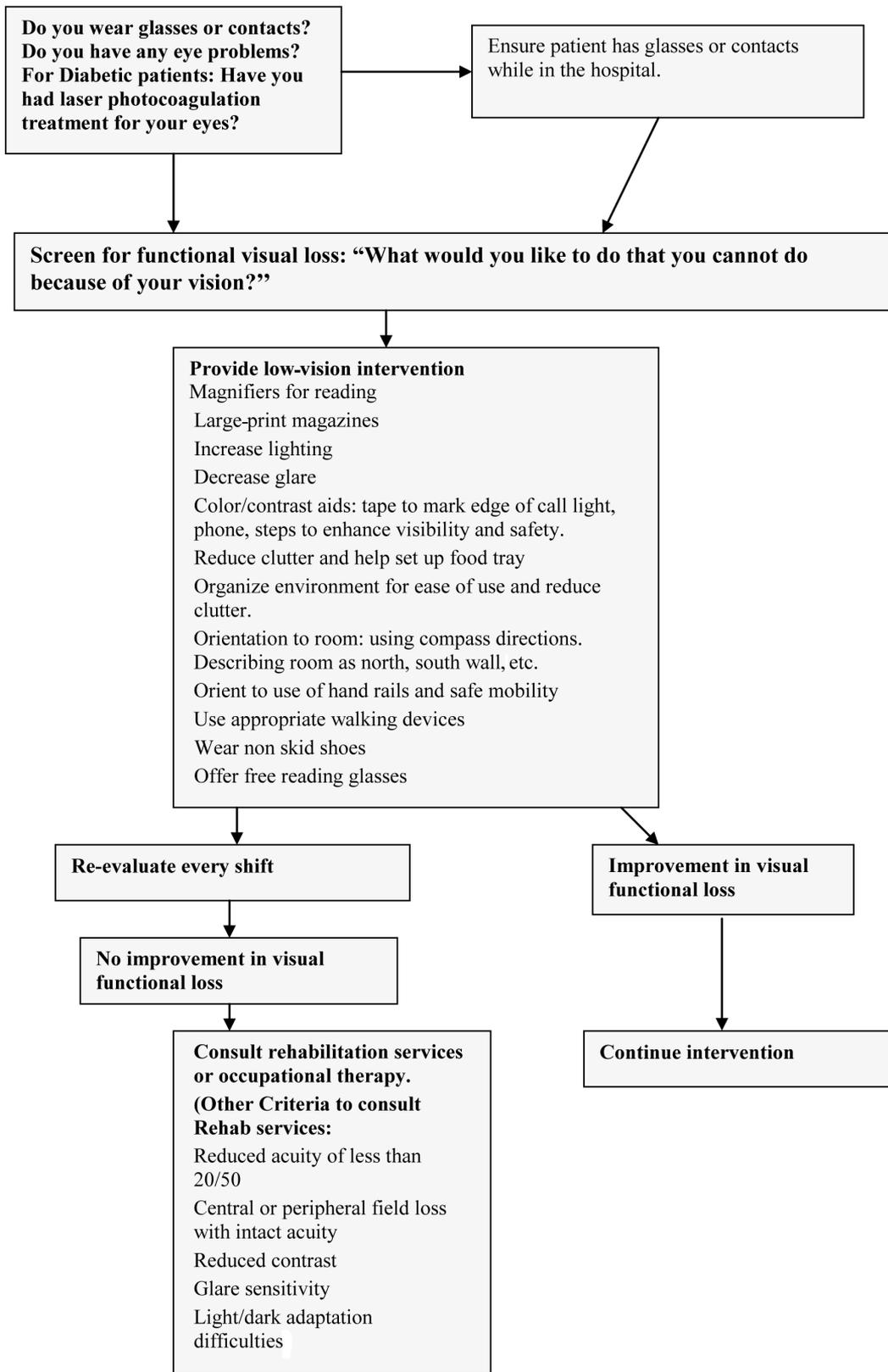


Figure 1: Example of the educational intervention

participate, and the module was approved as “diversity training”—a mandatory training every year. The intervention was carried out in the hospital cafeteria. The study was approved by the Institutional Review Board (IRB) as an exempt study.

The Educational Intervention

A “hands-on” interactive model was developed with the goal of imparting knowledge and changing attitude by allowing experiential learning. Learners are able to “walk in the shoes” of a senior and experience the affect of aging and disease on the eye. The intervention had the following components:

1. Normal aging model: A model of the eye demonstrating the anatomy and effects of normal aging.
2. Diseases affecting the eye: Pathological changes that commonly occur in the eye demonstrated by the anatomical site: cataract, macular degeneration, diabetic retinopathy, and glaucoma.
3. Experiential learning: The learners were able to experience the effect of diseases affecting the eye. Pairs of glasses simulating macular degeneration, glaucoma, and diabetic retinopathy were available. The learners were able to use the simulations to experience the world of our patients. Effect of cataracts on the eyes was demonstrated by Claude Monet’s serial paintings of “Bridge at Giverny.”¹⁴ His cataracts, developed over the years, were evident in the paintings as the bridge became less clear.^{15,16} Learners were provided with visual-aid devices they could try.
4. Written material (Figure 1): The learners were able to take written material that noted normal aging, diseases affecting the eye, further references, and resources.

We measured outcomes using a pre- and post-test questionnaire (Figure 2). The Chi-square test was performed to test the proportional difference. All statistical analyses were performed using SAS 9.2.

RESULTS

Three hundred eighty-six members of the hospital workforce completed the training; 19% were nurses, 32% ancillary services, 3% physicians, 13% environmental services, 5% main-

Low-vision knowledge survey

For each question, please select one answer only.

Survey ID:

1. **Low vision is an important issue in the hospital because people with low vision may have:**
 - a. Longer length of stay
 - b. Higher mortality
 - c. Poor patient satisfaction
 - d. All of the above
2. **Which of the following may co-exist in people with low vision?**
 - a. Geriatric syndromes (like depression, falls, hearing loss)
 - b. Inappropriate behavior
 - c. Heart diseases
 - d. No other disease is associated
3. **The most common cause of poor vision is?**
 - a. Refractive errors (far or near sighted)
 - b. Cataracts
 - c. Glaucoma
 - d. Diabetic retinopathy
4. **Which vision problem is a result of normal aging?**
 - a. Double vision
 - b. Pain in or around eye
 - c. Reduced near vision (Presbyopia)-Difficulty Reading
 - d. Seeing flashes of light
5. **I feel sympathy for people who have trouble seeing.**
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
6. **I can name some ways to improve quality of life for seniors with low vision.**
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
7. **An appropriate approach to evaluate “functional visual loss” in older patients is?**
 - a. Snellen’s test
 - b. FACT test
 - c. Jaeger test
 - d. Ask patient “what would you like to do that you cannot do because of your low vision?”
8. **By age 80, a person needs how many times more light to see than a younger person.**
 - a. 2 times
 - b. 3 times
 - c. 4 times
 - d. 5 times

I am:

1. RN
2. CNA
3. PT
4. OT
5. ST
6. MD
7. PA
8. NP
9. IS
10. Dietary
11. Env Services
12. Maintenance
13. Transporter
14. Chaplains
15. Admin.
16. Other

My Age:

1. <30
2. 30-45
3. 46-60
4. 61-70
5. >70

Gender:

1. M
2. F

Figure 2: Low-vision knowledge questionnaire

tenance, 8% dietary, and 2% transportation department, and 18% other. A large proportion of the participants were 46-60 years (45%) and female (78%).

Six questions measured medical knowledge, all of which showed statistically significant improvement. Question 5 measured the attitude toward people with low vision. There was improvement, but it was not statistically significant. Question 6 measured the learners’ self-confidence; there was statistically significant improvement (Table 1).

DISCUSSION

Lessons Learned

Education in the form of lectures has a modest effect in changing clinician behavior.¹⁷ Passive education—including distribution of guidelines, written material, and continuing medical education—are not very effective in changing clinician behavior, whereas interactive sessions that allow par-

Table 1. Survey Questions - Pre- and Post-test Results

| Survey | | Pre-Test | | Post-Test | | P-value * |
|------------|-------------------|----------|------|-----------|------|-----------|
| | | No | % | No | % | |
| Question 1 | Wrong | 50 | 13.0 | 12 | 3.1 | <0.001 |
| | Correct | 336 | 87.1 | 374 | 96.9 | |
| Question 2 | Wrong | 78 | 20.2 | 25 | 6.5 | <0.001 |
| | Correct | 308 | 79.8 | 361 | 93.5 | |
| Question 3 | Wrong | 163 | 42.2 | 64 | 16.6 | <0.001 |
| | Correct | 223 | 57.8 | 322 | 83.4 | |
| Question 4 | Wrong | 52 | 13.5 | 34 | 8.8 | 0.039 |
| | Correct | 334 | 86.5 | 352 | 91.2 | |
| Question 5 | Strongly Agree | 238 | 61.7 | 260 | 67.4 | 0.323 |
| | Agree | 129 | 33.4 | 114 | 29.5 | |
| | Disagree | 11 | 2.9 | 7 | 1.8 | |
| | Strongly disagree | 8 | 2.1 | 5 | 1.3 | |
| Question 6 | Strongly Agree | 119 | 30.9 | 221 | 57.3 | <0.001 |
| | Agree | 232 | 60.3 | 150 | 38.9 | |
| | Disagree | 27 | 7.0 | 13 | 3.4 | |
| | Strongly disagree | 7 | 1.8 | 2 | 0.5 | |
| Question 7 | Wrong | 202 | 52.3 | 126 | 32.6 | <0.001 |
| | Correct | 184 | 47.7 | 260 | 67.4 | |
| Question 8 | Wrong | 177 | 45.9 | 22 | 5.7 | <0.001 |
| | Correct | 209 | 54.2 | 364 | 94.3 | |

participation are more effective.¹⁸ We developed an interactive model that allowed experiential learning.

Some of the limitations of the model are an inability to demonstrate completion of the module. During the day, there was a research intern available to encourage participation. We are not able to measure the effect of her presence; however, her participation did not include imparting education and was only for facilitation of the process. We were not able to measure the effect of the intervention on patient outcomes. Unfortunately, we do not have a control group because it is difficult to randomize the workforce in a midsize hospital. The educational intervention was able to accommodate multiple learners at different levels of knowledge. It was available for 7 days and 24 hours per day in the cafeteria.

Implication

It is known that interdisciplinary teams are able to change the culture in the hospital.^{19,20} By increasing the medical knowledge, we believe they are more likely to be sensitive to the needs of patients with low vision. This intervention can be replicated easily in other hospitals. In the past, we had low participation in online and face-to-face geriatrics lectures. To improve participation, this training was approved as one of the “diversity training” modules for the employees, a yearly requirement by the institution. One-third of the hospital employees participated. We believe this critical mass will be the “change agent” required for organizational change.²¹ The increase in workforce knowledge along with changes in the hospital environment may be critical in creating a senior-friendly hospital and may improve quality of care and patient satisfaction.

CONCLUSION

An interactive model to educate clinicians on visual loss and function can improve patients’ satisfaction, clinicians’ knowledge, and visual function during the hospital stay.

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REFERENCES

1. www.census.gov. Accessed September 6, 2011.
2. Merrill CT, Elixhauser A. Hospitalization in the United States, 2002. HCUP fact book no. 6. AHRQ.
3. Institute of Medicine (IOM). 2008. Retooling for an Aging America: Washington DC. The National Academies Press. www.nap.edu. Accessed September 6, 2011.
4. Jack CI, Smith T, Neoh C, et al. Prevalence of low vision in elderly patients admitted to an acute geriatric unit in Liverpool. *Gerontology*. 1995;41(5):280-285.
5. Uhlmann RF, Larson EB, Koepsell TD, et al. Visual impairment and cognitive dysfunction in Alzheimer’s disease. *J Gen Intern Med*. 1991;6:126-132.
6. Klein BE, Klein R, Lee KE, Cruickshanks KJ. Performance-based and self-assessed measures of visual function as related to history of falls, hip fractures, and measured gait time. The Beaver Dam Eye Study. *Ophthalmology*. 1998;105:160-164.
7. Wang JJ, Mitchell P, Smith W. Vision and low self-rated health: the Blue Mountains Eye Study. *Invest Ophthalmol Vis Sci*. 2000;41:49-54.
8. Kline DW, Kline TJ, Fozard JL, et al. Vision, aging, and driving: the problems of older drivers. *J Gerontol*. 1992;47:P27-P34.
9. Morse AR, Yatzkan E, Berberich B, Arons RR. Acute care hospital utilization by patients with visual impairment. *Arch Ophthalmol*. 1999;117:943-949.
10. Knudtson MD, Klein B, Klein R. Age-related eye disease, visual impairment, and survival: The Beaver Dam Eye Study. *Arch Ophthalmol*. 2006;124:243-249.
11. Inouye SK, Bogardus ST, Charpentier PA, et al. A multi-component intervention to prevent delirium in hospitalized older patients. *N Engl J Med*. 1999;340(9):669-676.
12. Wilcock PM, Janes G, Chambers A. Health care improvement and continuing interprofessional education: continuing interprofessional development to improve patient outcomes. *J Continuing Educ Health Professions*. 2009;29(2):84-90.
13. Ponte PR, Gross AH, Milliman-Richard YJ, Lacey K. Interdisciplinary teamwork and collaboration: an essential element of a positive practice. *Ann Rev Nurs Res*. 2010;28:159-89.
14. Monet C. Bridge at Giverny. <http://www.intermonet.com/oeuvre/pontjapo.htm>. Accessed September 6, 2011.
15. Ravin JG. Monet’s cataracts. *JAMA*. 1985;254(3):394-399.
16. Marmor MF. Ophthalmology and art: simulation of Monet’s cataracts and Degas’ retinal disease. *Arch Ophthalmol*. 2006;124(12):PAGES.
17. Waddell DL. The effects of continuing medical education on nursing practice: a meta-analysis. *J Contin Educ Nurs*. 1991;22(3):113-118.
18. Davis D, O’Brien MA, Freemantle N, et al. Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA*. 1999;282:867-874.
19. Treece PD, Engelberg RA, Shannon SE, et al. Integrating palliative and critical care: description of an intervention. *CCM*. 2006;34(11 Suppl): S380-S387.
20. Milisen K, Foreman MD, Abraham IL, et al. A nurse-led interdisciplinary intervention program for delirium in elderly hip-fracture patients. *JAGS*. 2001;49(5):523-532.
21. Gordon J. *Managing change in organizations*. In: *Organizational Behavior: A Diagnostic Approach*. Prentice Hall; 2002:467.

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