

REVIEW

Restraint free care in older adults with dementia

Valerie T. Cotter

University of Pennsylvania School of Nursing, Philadelphia, PA USA

(Received for publication on January 12, 2005)

(Accepted for publication on February 17, 2005)

Abstract. During the past two decades, significant research and several government and health care quality groups have advised against the use of physical restraints in hospitals and nursing homes, yet older adults are continuing to die, become injured or experience the iatrogenic complications associated with this practice. Deaths are usually caused by asphyxiation, but also occur from strangulation, or cardiac arrest. Older adults with dementia are at high risk for restraint use because of impaired memory, language, judgment and visual perception. In moderate to severe dementia, the risk of falls is greater because of gait apraxia and unsteadiness. Agitation, disorientation, and pacing behaviors from delirium or dementia can precipitate staff to use restraints to prevent harm to the older adult or to others. Physical restraints should be eliminated as an intervention in older adults with dementia because they are also very likely to cause acute functional decline, incontinence, pressure ulcers and regressive behaviors in a short period of time. The purpose of this paper is to disseminate the dangers of this clinical practice and to summarize the latest research in restraint free care and restraint alternatives in the United States. (Keio J Med 54 (2): 80–84, June 2005)

Key words: physical restraint, dementia, aged, falls

Introduction

Physical restraints are well documented by research and several U.S. government and health care quality groups to cause death, significant injury and iatrogenic complications, yet this practice continues in hospitals and nursing homes. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has tracked death and injury from restraints as sentinel events since 1995 as shown in Fig. 1.^{1,2} Deaths are usually caused by asphyxiation, but also occur from strangulation, or cardiac arrest. Bed rail-related entrapment deaths by asphyxiation are caused by being caught between the bed mattress or air pressure mattress and the bed rail or the headboard and the bed rail, getting the head stuck in the bed rail or being strangled by a vest restraint between the rails.^{2–4} Physical restraints are also very likely to cause acute functional decline, incontinence, pressure ulcers, and regressive behaviors in a short period of time (Fig. 2).^{5,6}

A physical restraint is “any manual method or physical or mechanical device, material, or equipment

-
- From 1995-2004: 112 patient death or injury in restraints
 - From 1995-2001: 237 deaths, 73 injuries from bed rail entrapment
 - 53% occurred in nursing homes
 - 20% occurred in hospitals
 - 35 deaths involved air pressure mattresses



JCAHO Sentinel Event Statistics, 2002; 2004

Fig. 1 Patient safety is paramount.

attached or adjacent to the individual's body that the individual cannot remove easily which restricts freedom of movement or normal access to one's body".⁷ Physical restraints include vest jackets, lap belts or sheets, mitts and wrist ties, bed rails, or restraining chairs if it has the effect of restricting freedom of movement. How do we identify the patient with dementia at high risk for

Presented at the 1364th Meeting of the Keio Medical Society in Tokyo, July 30, 2004

Reprint requests to: Ms. Valerie T. Cotter, University of Pennsylvania School of Nursing 420 Guardian Drive, Philadelphia, PA 19104 USA, cottervt@nursing.upenn.edu

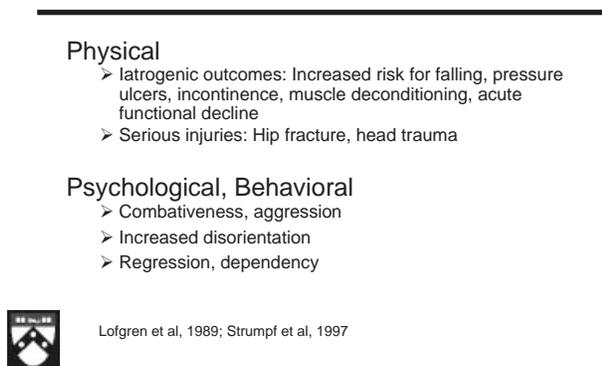


Fig. 2 Negative consequences associated with restraints.

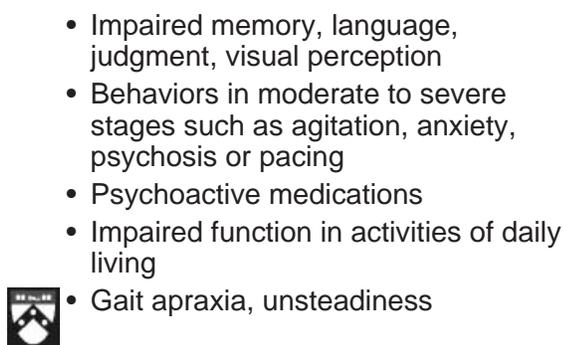


Fig. 3 Restraints and dementia.

restraint use? The three common reasons staff restrain patients are to: 1) manage behaviors common in dementia, 2) prevent falls, and 3) prevent treatment interference (removal of intravenous infusions, catheters or tubes).

Restraints and Dementia

Individuals with dementia are at high risk for restraint use due to impaired memory for both recent and remote events and cognitive declines in language, judgment and visual perception (Fig. 3). They are more likely to experience delirium and behavioral symptoms such as agitation, anxiety, psychosis or pacing, and receive psychoactive medications that contribute to postural hypotension, sedation, or extrapyramidal reactions. Acute change in behavior or level of alertness is frequently a symptom of an unrecognized physiologic need, such as hypoxia, dehydration, pain or medication toxicity. In moderate to severe dementia, gait apraxia, unsteadiness and limited mobility increase risk of falling.

Restraints and Falling

Falls are a significant problem for frail older adults and especially for those with dementia. Most falls,

however, do not involve serious injuries. When staff judge that the patient is at risk for falls, restraints are falsely believed to provide safety despite evidence that they increase the risk of falls and serious injuries.⁸ This often occurs as the patient struggles to get out of the restraint, becomes agitated and trapped between the bed rail and the mattress, climbs over the bed rail and falls from a higher bed height or is fatigued and unsteady once out of the bed or chair. Visual impairment related to cataracts, glaucoma, macular degeneration or not wearing eyeglasses affects one's ability to navigate the environment safely. Medications with anticholinergic or extrapyramidal adverse effects or interactions can affect mental status and gait. A history of falls increases a person's risk for future falls and many patients become anxious about falling, thus limiting their ambulation to avoid falls. Falls are frequently the presenting symptom of acute medical problems, such as infection, heart failure, dehydration, and pneumonia in older adults.

Restraints and Treatment Interference

Treatment interventions such as intravenous lines, urinary catheters, nasal oxygen, nasogastric or gastrostomy feeding tubes or wound dressings require cooperation from the patient to maintain. A patient with dementia may perceive the intervention as uncomfortable, or misunderstand and forget the necessity of its use and remove it forcefully.

Reducing Restraints: Relevant Law and Regulations

Since 1987, several U.S. government and health quality groups have established laws and guidelines around the use of restraints. The Nursing Home Reform Act of 1987 mandated that nursing home residents have a right to be free from restraints. In 1992, the Food and Drug Administration (FDA) put forth their first safety alert and label warning on vest and limb restraints identifying potential serious injuries associated with their use. A similar FDA warning for bed rails was also issued in 1995. The JCHAO, a survey organization for hospitals and some nursing homes in the U.S., emphasizes restraint alternatives, such as wheelchair adaptations, wedge seats, assisted ambulation and individualized, regular voiding schedules, among others. The legal standard has moved from liability associated with the failure to restrain to one that presumes appropriate care relies on interventions other than restraints.⁹

Research Findings

While the dangers of restraints are apparent, evidence exists that when frail older adults with cognitive

- “I felt like a dog and cried all night. It hurt me to have to be tied up...The hospital is worse than a jail.”
- “If there was a fire, I’d be caught. When someone is tied and chained in a fire, how will you save the person? How would I get out?”



Strumpf & Evans, 1988

Fig. 4 Voices of restrained patients.

- Restraint education and unit-based nursing consultation showed reduction in restraint prevalence without increases in staff, psychoactive drugs or serious fall-related injuries
 - 3 months post-intervention, decline 20% (7% restraint education only; 7% control)
 - 6 months post-intervention decline 18% (4% restraint education only; 6% control)



Evans et al, 1997

Fig. 5 Reducing restraints in nursing homes: education and gerontologic nurse specialist intervention.

changes, such as dementia are restrained in the hospital, they experience negative emotional responses such as anger, fear, resistance, humiliation and demoralization and frequently recall the restraint event once discharged (Fig. 4).¹⁰ An early cross-cultural study comparing nursing homes in Scotland with those in the U.S. demonstrated that frail older adults, similar to patients in U.S. nursing homes with multiple co-morbidities and dementia, could be well cared for without use of restraints.¹¹ Significant differences in prevalence of restraint use were attributed to the unavailability of restraints and nursing staff’s low acceptance of their use, and greater tolerance for behavioral disturbances.

In a randomized clinical trial to reduce restraints in nursing homes, intensive restraint education and 12 hours per week of unit-based consultation by a masters-prepared gerontologic clinical nurse specialist (CNS) increased staff knowledge about restraint hazards and led to significant restraint reduction (Fig. 5).¹² In this study, 3 nursing homes were randomly assigned to restraint education, restraint education with CNS consultation, or control (usual care). The 6-month restraint education program included ten 30 to 45-minute sessions focused on the effects of physical restraint, mini-

mizing fall risk, preventing treatment interference, and understanding and responding to resident behaviors. At 3 months (post-intervention), restraint prevalence was reduced to 20% and at 6 months to 18%. Overall, these significant reductions occurred without increases in staff, psychoactive drugs or serious fall-related injuries. These findings suggest that while education is helpful in reducing restraints, it is the influence and expertise of the master’s prepared gerontologic CNS that changes practice and maintains change in the clinical setting.¹³

A study comparing fall and injury rates in nursing home residents whose restraints were removed (n = 38) to those who continued to be restrained (n = 88) found that restraint removal significantly decreased the chance of minor injuries due to falls.¹⁴ The nursing home with the least restraint reduction had a 50% higher rate of falls (p < 0.01) and more than twice the rate of fall-related minor injuries (p < 0.001). In the subsequent secondary analysis of 319 nursing home residents with consistent bilateral bed rail use during the nighttime, those with dementia and behavioral symptoms were more likely to be restrained despite the finding that the bed rails did not significantly reduce the likelihood of falls, recurrent falls or serious injuries.¹⁵

A gerontologic CNS intervention coupled with staff education was successful in reducing restraint use in hospitalized nursing home patients.¹⁶ This randomized controlled trial engaged the gerontologic CNS in an admission assessment to assess fall risk within 12 to 36 hours, develop an individualized care plan to meet the patient’s needs (especially to prevent restraint use), and to reassess and monitor high risk patients regularly. Using a multiple logistic regression model, treatment interference was found to be the strongest independent predictor of restraint use as compared to fall risk or disruptive behavior: 41.2 odds ratio (95% CI of the difference = 12, 141) versus fall risk odds ratio 3.1 (95% CI of the difference = 1.1, 8.6) versus disruptive behavior odds ratio 3.8 (95% CI of the difference = 0.9, 16.1). The intervention significantly reduced the rate of daily restraints during hospitalization: odds ratio 11.3 (95% CI of the difference = 2.3, 81.0). Findings suggest this level of clinical nursing leadership enhanced communication among all staff and led to less restraint use.

Individualized Interventions

Individualized physiologic, psychosocial, activity and environmental interventions to prevent restraint use in individuals with dementia are based on the assessment of the patient’s needs (e.g., those at risk for falls, treatment interference, or behavioral disturbances). See Fig. 6 for examples of individualized interventions to avoid restraints.¹⁷

One should perform a thorough medication review

	<u>Fall Risk</u>	<u>Treatment Interference</u>	<u>Behavior</u>
Physiologic	Medication review	Pain relief	Correct underlying problem, e.g., dehydration
Psychosocial	Anticipation of need	Maintenance of communication	Attention to underlying meaning of behavior
Activities	Physical therapy	Distraction	Outlets for anxious behavior
Environmental	Low beds, contoured chairs	Camouflaged or padded treatment site	Music, lighting, alarms



Fig. 6 Individualized interventions. Strumpf *et al.*, 1998. Adapted with permission from N.E. Strumpf, J.P. Robinson, J.S. Wagner, L.K. Evans, *Restraint-Free Care: Individualized Approaches for Frail Elders*, Springer Publishing Company, Inc., New York 10012.

assessing for adverse effects and interactions and determine whether doses could be reduced or medication discontinued. Evaluate motor and sensory functions, such as gait, balance, range of motion and whether the person relies on assistive devices, such as a cane, walker, wheelchair or commode. Based on this assessment, integrate a regular walking program or utilize a physical therapy consultation as activity interventions to prevent falling, functional decline and restraint use.

Assess functional abilities by observing the person perform basic activities of daily living (ADLs), as well as eliciting a history from a family member or someone who knows the patient about ADLs and instrumental activities of daily living (IADLs). A baseline functional assessment on admission to the hospital or nursing home is helpful to determine functional declines and development of acute illness or difficult to diagnose exacerbations of chronic illness, especially in older adults with dementia. Functional urinary incontinence occurs when patients are restrained and unable to express their need to urinate or access the bathroom. With regular prompting, patients in late moderate to severe stage dementia can remain continent. These routines for voiding and bathroom use need to continue into the nighttime as voiding increases during the night with advanced age and most falls occur in patient rooms and bathrooms.

Identifying acute or chronic pain in an individual with dementia requires assessment of nonverbal and

verbal expression of pain. Refusing to get out of bed or participate in usual ADLs in a patient with a physiologic basis for pain, such as osteoarthritis is often a sign of undiagnosed or under-treated pain. Discomfort associated with treatment interventions like nasogastric or oxygen tubing or indwelling urinary catheters should be addressed through analgesics or other pain relieving measures. Brief activities and communication appropriate to the person's abilities and interests serve as distractions to prevent treatment interference. Often, these interventions can be reduced or eliminated sooner than they frequently are. Alternative interventions such as wrapping or covering the tube or dressing with clothing or gauze can help distract the patient.

Psychosocial and behavioral needs are better understood if a history is obtained about baseline behavior, social activity and interactions, and relationships with others. Agitated, anxious or aggressive behavior occurs when new environments or routines overwhelm a person with dementia. Providing care activities at a reasonable pace with reassuring communication is helpful. Maximizing function in ADLs at whatever level the patient is capable of doing independently or with assistance is important to reduce fall risk and overall functional decline. Although frail older adults with dementia may require more time with bathing, dressing, toileting and walking activities, a rehabilitation approach that encourages self care or assistance when

needed is more appropriate than utilizing wheelchairs for short distances, eating in bed or other procedures more convenient for staff. Sound and lighting can be over stimulating for individuals with dementia, yet music can be a useful environmental intervention to attend to behavioral symptoms like trying to elope from bed during the night.

Low beds, contoured chairs that are comfortable for the older adult, bedside commodes and bed alarms are just a few environmental adaptations recommended to reduce risk of injury and avoid use of restraints.¹⁸

Organizational Interventions

No restraint free program can be successful without the commitment from clinical and administrative staff with a vision and mission to individualizing care for older adults with dementia. Educational programs and consultation with a gerontologic CNS have shown positive outcomes in restraint reduction for patients in hospital and nursing home settings. Standardized clinical protocols for falling and dementia care can help to identify and manage patients at high risk for restraint use.

Conclusion

Based on recent research evidence from both cross-cultural and U.S. studies, physical restraints should be eliminated as an intervention in older adults with dementia. Physical restraints lead to psychological distress, acute functional decline, and increase risk of falls, serious injuries and death. Careful, comprehensive assessment that addresses individual patient needs is necessary to develop restraint alternative interventions. Educational programs and consultation with a gerontologic CNS are critical elements to reducing restraints and a successful restraint free philosophy in hospital and nursing home settings.

Acknowledgements: The author would like to thank Yukiko Lau of Keio University Faculty of Nursing and Medical Care, Dr. Nobuyoshi Hirose of Keio University School of Medicine, and Dr. Yoshinori Ebihara of Keio University Hospital for graciously arranging my lecture at Keio University Hospital upon which this article is based; and Dr. Neville Strumpf, Dr. Lois Evans and Dr. Christine Bradway at the University of Pennsylvania for their assistance in preparing this lecture. Ms. Cotter is funded by NIA grant P30 AG01024.

References

1. Joint Commission on Accreditation of Healthcare Organizations, Sentinel Event Statistics Update. 2004; http://www.jcaho.org/about+us/news+letters/jcahonline/jo_05_04.htm
2. Joint Commission on Accreditation of Healthcare Organizations, Sentinel Event Statistics Update. 2002; http://www.jcaho.org/about+us/news+letters/sentinel+event+alert/sea_27.htm
3. Parker K, Miles SH: Deaths caused by bedrails. *JAGS* 1997; 45: 797–802
4. Miles SH: Deaths between bedrails and air pressure mattresses. *JAGS* 2002; 50: 1124–1125
5. Lofgren RP, MacPherson DS, Granieri R, Myllenbeck S, Sprafka M: Mechanical restraints on the medical wards: Are protective devices safe? *Am J Public Health* 1989; 79: 735–738
6. Strumpf N, Evans L, Capezuti E, Maislin G: Consequences of hospital restraint use for older nursing home residents. *Gerontologist* 1997; 37: 252
7. Health Care Financing Administration, 42 CFR Section 483.13 (a) and 42 CFR 483.13 (e); 2000; http://www.fda.gov/cdrh/beds/hcfa_hospital_bed_letter.html
8. Tinetti ME, Wen-Liang L, Ginter SF: Mechanical restraint use and fall-related injuries among residents of skilled nursing facilities. *Ann of Intern Med* 1992; 116: 369–374
9. Kapp MB: Physical restraint use in critical care: Legal issues. *AACN Clin Issues* 1996; 7: 579–584
10. Strumpf NE, Evans LK: Physical restraint of the hospitalized elderly: Perceptions of patients and nurses. *Nursing Research* 1998; 37: 132–137
11. Evans LK, Strumpf NE: Patterns of restraint: A cross-cultural view. *Gerontologist* 1987; 27: 272–273A
12. Evans LK, Strumpf NE, Allen-Taylor SL, Capezuti E, Maislin G, Jacobsen B: A clinical trial to reduce restraints in nursing homes. *JAGS* 1997; 45: 675–681
13. Patterson JE, Strumpf NE, Evans LK: Nursing consultation to reduce restraints in a nursing home. *Clin Nurse Specialist* 1995; 9: 231–235
14. Capezuti E, Strumpf NE, Evans LK, Grisso JA, Maislin G: The relationship between physical restraint removal and falls and injuries among nursing home residents. *Journal of Gerontology Series A-Biological Sciences & Medical Sciences* 1998; 53: M47–52
15. Capezuti E, Maislin G, Strumpf NE, Evans LK: Side rail use and bed-related fall outcomes among nursing home residents. *JAGS* 2002; 50: 90–96
16. Sullivan-Marx E, Strumpf N, Evans L, Capezuti E, Maislin G: The effect of an advanced practice nurse intervention with hospitalized nursing home residents. *The Gerontologist* 2003; 43: 310
17. Strumpf NE, Robinson JP, Wagner JS, Evans LK: *Restraint-Free care: Individualized approaches for frail elders*. NY: Springer, 1998
18. Hospital Bed Safety Workgroup. Clinical guidance for the assessment and implementation of bed rails in hospitals, long term care facilities, and home care settings. 2003; <http://www.fda.gov/cdrh/beds/>