Delirium will complicate a hospital stay for more than 2.2 million Americans this year, with estimated costs of as much as $8 billion annually. As many as 10 to 20% of these individuals aged 70 or older are admitted to the hospital with delirium, while another 10 to 20% will develop delirium during their stay.

Defined as a short-term confusion or a sudden mood shift in elders, delirium comes on quickly and presents as erratic behavior, disorganized thinking or impaired memory. Known to surface especially during times of physical or emotional change, developing delirium during a nursing home stay can significantly increase the risk of rehospitalization.

“Having delirium doubles to triples the length of a hospital stay, increases the risk of post-hospitalization transfer to a nursing home, doubles the risk of death, may lead to permanent brain damage and costs the American public billions of dollars every year,” said Malaz Boustani, MD, Chief Operating Officer of the Indiana University Center for Innovation and Implementation Science and Past-President of the American Delirium Society.

Effective October 2012, the Affordable Care Act instituted the Hospital Readmission Program, requiring the Centers for Medicare and Medicaid to reduce payments to hospitals with excessive 30-day readmissions (see Out of the Penalty Box, Relias Learning, 2013). For this reason, hospitals are now partnering with organizations across the healthcare continuum.

Recognizing the role of delirium in preventing rehospitalization

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in both formal and informal ways that implement best practices in reducing readmission rates, including the prevention, early diagnosis and treatment of delirium.

Signs and Symptoms

Delirium is not a normal part of aging, but instead the external, behavioral manifestation of an internal, physical medical emergency. Often times the delirium, or change in the elder’s mental status and behavior, is the first or only indication that the individual requires medical attention.

“If there isn’t that immediate management of the delirium, the person is at risk for functional decline or other complications, including rehospitalization and even death.”

- Marie Boltz, Assistant Professor and Associate Director for Research at NICHE at the NYU College of Nursing

In fact, according to Boustani, delirium goes unrecognized in as many as 60% of patients who have it. He cautions healthcare providers not to overlook confusion in elder hospitalized patients, but instead to treat it as a medical emergency.

“Too often delirium isn’t recognized as the real medical emergency it is; the person needs assessment and treatment right away,” said Marie Boltz, Assistant Professor and Associate Director for Research at NICHE at the NYU College of Nursing. “If there isn’t that immediate management of the delirium, the person is at risk for functional decline or other complications, including rehospitalization and even death.”

The Minimum Data Set lists some signs and symptoms to look for when diagnosing an elder with delirium. They are:

- **Easily distracted**. The elder has difficulty paying attention and can’t repeat directions.
- **Periods of altered perception or awareness of surroundings**. The elder may talk to someone who isn’t there, or may think he is somewhere else. These symptoms may come and go, even throughout the night.
- **Episodes of disorganized speech**. Words are put together at random and talk goes from one subject to another.
- **Periods of restlessness**. The elder may fidget and pick at his skin or clothes, move from side to side or turn in bed restlessly.
- **Periods of lethargy**. The elder is slow in movement, maybe even staring into space when talked to.
- **Mental function varies over the course of the day**. The elder may think and talk clearly at different points during the day and other times may not.
- **Acute onset**. The change in mental status comes on suddenly, over a period of just 7 days or less.
Recognizing the signs and symptoms of delirium is the first step in looking beyond the change in behavior to find the real underlying medical cause of the delirium.

### Causes

Delirium comes on quickly and is usually caused by an acute illness, change in the elder’s environment or a reaction to medication. Some common causes include: an infection, such as a UTI; a heart attack; dehydration; Hypoxia, or too little oxygen; alcohol or drugs; lack of sleep; low or high blood sugar; hyperthermia; hospitalization; poor vision; fecal impaction and malnutrition.

“A patient could be in a nursing home for several years, but they get the flu or a UTI and this can precipitate delirium,” said Ann Kolanowski, PhD, RN, FAAN, Director, Hartford Center of Geriatric Nursing, Penn State. “The delirium and the medical condition that precipitate it may be a reason for admission to the hospital if the nursing home can’t address whatever the issue is that led to the delirium.”

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### HELP—HOSPITAL ELDER LIFE PROGRAM

Developed as a model of care to prevent delirium in older hospitalized patients, the Hospital Elder Life Program (HELP) uses practical interventions directed at six known risk factors to intervene and prevent delirium in an acute hospital setting.

Several studies have documented the cost-effectiveness of the HELP model for both acute and long-term care costs, saving about $1,000 per patient in hospital costs and $10,000 per patient in long-term care costs. According to a 2011 study at the UPMC Shadyside Hospital in Pittsburgh, HELP reduced the delirium rate by 23%, saved over $7.3 million per year in total hospital costs, resulting in a high rate of nursing and family satisfaction.

HELP’s intervention process provides model of delirium intervention for all healthcare providers, beginning with a screening of all hospital patients 70 years and older with at least one risk factor for cognitive or function decline. Next, patients are assigned to an individualized menu of interventions based on their identified risk factors and an Elder Life Specialist tracks daily review of intervention adherence. Here is the list of six known risk factors and their corresponding interventions.

<table>
<thead>
<tr>
<th>RISK FACTOR:</th>
<th>INTERVENTION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Impairment</td>
<td>Reality orientation</td>
</tr>
<tr>
<td></td>
<td>Therapeutic activities program</td>
</tr>
<tr>
<td>Vision and Hearing Impairment</td>
<td>Vision/hearing aids</td>
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<tr>
<td></td>
<td>Adaptive equipment</td>
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<tr>
<td>Immobilization</td>
<td>Early Mobilization</td>
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<tr>
<td></td>
<td>Minimizing immobilizing equipment</td>
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<tr>
<td>Psychoactive Medication Use</td>
<td>Non-pharmacologic approaches to sleep/anxiety</td>
</tr>
<tr>
<td></td>
<td>Restricted use of sleeping medications</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Early recognition</td>
</tr>
<tr>
<td></td>
<td>Volume repletion</td>
</tr>
<tr>
<td>Sleep Deprivation</td>
<td>Noise reduction strategies</td>
</tr>
<tr>
<td></td>
<td>Sleep enhancement program</td>
</tr>
</tbody>
</table>
Additionally, risk factors for delirium beyond just advanced age (see HELP—HOSPITAL ELDER LIFE PROGRAM chart, page 3) include: functional impairment, chronic medical conditions and their treatments as well as the most likely risk factor, pre-existing dementia. According to Kolanowski, up to 80% of elders with dementia are at risk for delirium.

“When you have dementia, you already have brain vulnerability, so a very minor insult can precipitate an episode of delirium,” said Kolanowski. “Sometimes the cause is hard to identify, it could be multiple factors, or a combination of things; sometimes it’s very hard to tell just exactly what caused it.”

**Prevention**

While delirium may affect as many as 25 to 60% of older hospitalized patients, 40% of these cases may be preventable, according to Sharon K. Inouye, MD, M.P.H., Director of the Aging Brain Center at Hebrew Senior Life and Professor of Medicine at Harvard Medical School.

*Early detection* is the key to recognizing delirium and resolving its root cause before an acute hospitalization is required. This process begins by getting to know the resident, understanding their base level of functioning and their propensity for infection and illness.

“For this reason, consistent assignments can be critical when diagnosing delirium,” said Tamar Abell, MA, LNHA, Executive Vice President of Strategic Development, Relias Learning. “Learning the habits, nature and normal behavior of each resident before delirium develops will allow staff members to pick up on even subtle clues. This type of early detection will ensure that the resident not only receives the best medical care possible needed to resolve the underlying issue, but will also likely prevent an unnecessary rehospitalization.”

Close attention to the elder’s medications can also help prevent, or quickly identify, delirium, as certain medications, like antidepressants, a combination of multiple medications or a recent change in medications and/or dosages, can easily lead to delirium.

Keeping elders physically and mentally active can also help prevent delirium as well.
“The first step in training nurses and CNAs is teaching them to identify the differences between depression, dementia and delirium and to identify and report any potential first signs.”

- Tamar Abell, MA, LNHA, Executive Vice President of Strategic Development, Relias Learning

“Getting people out of bed, keeping them active, getting them into an exercise group, having them do simple activities with the activities director and keeping their glasses and hearing aids on, will maximize their ability to pay attention to things. This is the best prevention and good, basic nursing care,” said Kolanowski, who created an activity intervention aimed at reducing delirium (see Activity Intervention For Individuals With Delirium chart, below).

Training on the signs and symptoms, causes and prevention of delirium are crucial to diagnosing and reducing its incidence in the hospital, at home and in nursing homes.

“The first step in training nurses and CNAs is teaching them to identify the differences between depression, dementia and delirium and to identify and report any potential first signs,” said Abell. “The next step in training is for the home to proactively and collectively say, ‘What are we going to do to prevent residents from getting delirium?’”

### Activity Intervention For Individuals With Delirium

Currently working on a five-year National Institutes of Health grant testing how effective cognitive activities are in reducing the severity of delirium, Ann Kolanowski, PhD, RN, FAAN, Director, Hartford Center of Geriatric Nursing, Penn State, has made it her goal to keep individuals at home or in their long-term care facilities for longer, through an activities intervention aimed at preventing and minimizing delirium.

“Unfortunately, people are admitted for rehabilitation to a post-acute facility, but for one reason or another, are so weak or delirious that they go back to the hospital within a few days,” said Kolanowski. “We developed these activities to minimize the delirium and help resolve it so patients can return to their physical or occupational therapy and resolve the medical issue that got them there in the first place. Hopefully, this will help them recover quicker so they can eventually go back home or to a skilled nursing facility and don’t land in the hospital again.”

Kolanowski’s intervention involves simple games and activities that were designed for anyone to do with the resident and can be tailored to the mental and physical level of each patient. Some examples include:

- **“Name That Tune”**—Play an old song from the 1930s and ‘40s, like “You are My Sunshine” by Jimmie Davis.
- **“Finish The Phrase”**—Say the beginning of a phrase and let the elder finish your sentence. One example is: “Every Tom, Dick and ____.”
- **Identifying Sounds**—Have a tape recording of tearing paper, water running, a train, etc. Ask the elder to identify the sounds.
- **Sorting Cards According to Topics**—Ask the elder to sort flashcards of kitchen utensils, garage tools, travel signs and more into the appropriate categories.

“The goal is to get them to process cognitively which will get them to focus their attention,” said Kolanowski. “We’re hoping if we can resolve the delirium, the rehabilitation program they’re prescribed will be much more effective.”
Training staff will allow caregivers to use a variety of assessment tools to determine if a patient is indeed experiencing delirium. The MiniMental State Examination (MMSE) is an 11-question tool that tests five areas of cognitive function, including orientation, registration, attention and calculation, recall and language. The Mental Status Questionnaire (MSQ) is a 10-question tool that assesses orientation, remote memory, attention and general knowledge and the Confusion Assessment Method (CAM), a two-part assessment that screens for overall cognitive impairment and captures information about the cardinal elements of delirium.

“If we work with families to keep people cognitively stimulated and physically active in the hospital, when they go home or to the LTC or SNF, it’ll either prevent or minimize delirium.”

- Marie Boltz, Assistant Professor and Associate Director for Research at NICHE at the NYU College of Nursing

Beyond training nursing staff, it’s also important to train family members on recognizing delirium in their loved one, as they are likely to be the first to notice a sudden change in behavior. “If we work with families to keep people cognitively stimulated and physically active in the hospital, when they go home or to the LTC or SNF, it’ll either prevent or minimize delirium,” said Boltz.

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**Top 6 Ways To Prevent Rehospitalization In LTC and SNF Residents With Delirium**

The top 6 ways to prevent rehospitalization in LTC and SNF residents with delirium, according to Marie Boltz, RN, Assistant Professor and Associate Director of NICHE at the NYU College of Nursing, Boltz is currently working on a study to help promote delirium abatement and functional recovery after hospitalization.

1. **Take a preventative, organizational approach:** Make sure people have their hearing aids and glasses, they’re engaging in physical and meaningful social activity and they have cognitive stimulation. Create policies to monitor medications and avoid those that are contraindicated.

2. **Know the person:** Know the resident’s baseline mental status before delirium surfaces so that a sudden change is noticeable. Get family input in the assessment.

3. **Be alert for any changes in cognitive abilities or the level of consciousness:** Is the person lethargic or hyperactive, disoriented or experiencing a sudden loss of memory? If so, arrange for immediate treatment in the nursing home to prevent rehospitalization and complications.

4. **Alert the medical provider and family members:** Secure a good comprehensive physical examination and description of the patient’s history. Continually assess their cognition. Educate the family about delirium.

5. **Treat the underlying cause:** In the case of delirium diagnosis, have a plan to closely watch the resident in the acute phase. Make sure they are in a physically safe situation.

6. **Prevent complications:** Pay attention to hydration and nutrition. Help the person move and get around and avoid physical and chemical restraints. Encourage family to be present and help allay anxiety.
Conclusion
The National Institute for Health and Clinical Excellence estimates that longer hospital stays and the need for long-term care for residents with delirium costs Medicare $6.9 billion annually alone\(^2\).

But, it doesn’t have to. With proper training on the signs and symptoms, causes and prevention of delirium, understanding the confusion and its underlying medical emergency, the costs associated with delirium can be minimized, improving the quality of life for millions of older individuals today.

“The earlier the delirium is detected, the quicker the elder can receive the treatment he/she needs, which will result in improved function for the resident and may prevent rehospitalization,” said Abell. “It all goes back to training. Make sure your staff knows what delirium looks like and how to determine and treat its root cause. From learning the residents’ baseline mental status and keeping them active, to using assessment tools and crosschecking meds, each piece fits together to create a puzzle of prevention.”

This mnemonic can be used to remember the risk factors that can precipitate delirium:

- **D**rug use, especially when the drug is first introduced or the dosage is changed
- **E**lectrolyte and physiological abnormalities, such as hyponatremia or hypoxemia
- **L**ack of drugs resulting in withdrawal symptoms
- **I**nfection, especially UTI or respiratory
- **R**educed sensory input such as blindness, deafness or a change in surroundings
- **I**ntracranial problems, such as bleeding
- **U**rinary retention and/or fecal impaction
- **M**yocardial infarction or heart failure


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