Nursing Home Care: Part II. Clinical Aspects

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Understanding the distinctions between the management of clinical problems in nursing homes compared with the community setting helps improve the overall care of nursing home residents. Liberalizing diets helps avoid unintentional weight loss in nursing home residents, although the use of feeding tubes usually does not improve nutrition or decrease aspiration risk. Medical assessment, treatment of comorbidities, and appropriate use of rehabilitation therapies minimize the frequency of falls. Toileting programs may be used to treat incontinence and retention in cooperative patients. Adverse effects and drug interactions should be considered when initiating pharmacologic treatment of overactive bladder. Urinary tract infection and pneumonia are the most common bacterial infections in nursing home residents. Signs and symptoms of infection include fever or hypothermia, and functional decline. Virus identification is recommended for influenza-like illnesses. Nonpharmacologic behavioral management strategies are the preferred treatment for dementia-related problem behaviors. The Beers criteria, which outline potentially inappropriate medication use in older persons, provide guidance for medication use in the nursing home. (Am Fam Physician. 2010;81(10):1229-1237. Copyright © 2010 American Academy of Family Physicians.)

Nutrition

Malnutrition and unintentional weight loss are significant problems in nursing home residents and can lead to multiple complications, such as pressure ulcers and infections.\(^5\)\(^6\)\(^7\)\(^8\) Treating malnutrition in the nursing home resident may involve a full medical evaluation and appropriate laboratory testing.\(^4\)\(^5\) However, environmental, social, and staffing factors are also associated with unintentional weight loss. An appealing eating environment and one-on-one staffing to assist residents who are unable to feed themselves may help residents regain or maintain weight.\(^6\)\(^7\)

Liberalizing diets may also promote weight gain in residents with unintentional weight loss. The American Dietetic Association recommends liberalizing diets to improve nutritional status and quality of life in older adults.\(^8\) A small study demonstrated equivalent glycemic control in nursing home residents who ate a regular diet versus those who ate a restricted American Diabetes Association diet.\(^9\)

If unintentional weight loss continues, discussions regarding artificial nutrition and hydration via feeding tube may develop between the family and nursing home staff. However, studies have shown that percutaneous endoscopic gastrostomy does not improve nutritional status or quality of life for residents with dementia,\(^10\)\(^11\) and residents with dysphagia after a stroke who receive tube feedings do not have a decreased risk of aspiration pneumonia.\(^12\) Feeding tubes can cause discomfort and agitation and increase the use of restraints.\(^13\) Educational interventions may improve physician, staff, resident, and family knowledge of the risks and limitations of tube feeding.\(^14\)
Frailty

Key characteristics of frailty are weight loss, fatigue/exhaustion, weakness, slowness, and inactivity.15 Table 1 presents clinical criteria for frailty that predict increased falls, worsening impairment in activities of daily living, hospitalization, and death.15,16 Persons with at least three of these criteria are deemed frail and have six times the mortality over three years than those who are not frail. Per - sons with two of these findings are considered “pre-frail” and are at twice the risk of progression to the full syndrome.15

BMI = body mass index.

*—Self-reported exhaustion is an indicator of maximum volume of oxygen utilization and a predictor of cardiovascular disease.

†—Measured using a grip dynamometer.

Information from references 15 and 16.
frail. Persons with two of these findings are considered “pre-frail” and are at twice the risk of progression to the full syndrome.\textsuperscript{15} Other models for characterizing frailty include cognitive impairment, mood disturbance, and disability.\textsuperscript{16} No biochemical markers are useful to diagnose frailty.\textsuperscript{13} Cornerstone interventions for frailty focus on reconditioning exercises, nutrition, comorbidities, disability, and symptoms.\textsuperscript{15-17}

**Pain Management**

An estimated 45 to 80 percent of nursing home residents experience chronic pain.\textsuperscript{18} These patients have atypical signs and symptoms of pain, as well as communication barriers, cognitive loss, polypharmacy, and multiple comorbidities that make diagnosis and treatment difficult. Pain can also complicate other conditions by causing depression, anxiety, deconditioning, disability, impaired sleep, and social withdrawal.\textsuperscript{18} Pain may be a major cause of disordered behavior in nursing home residents.

Nursing home residents with cognitive impairment are able to reliably self-report pain using established pain scales. Noncommunicative residents can be observed for pain behaviors, such as noisy breathing, negative vocalizations, sad or frightened facial expressions (e.g., frowning), fidgeting, and tense body language. Systematic, structured pain assessment has been demonstrated to be more effective than episodic assessment in identifying and treating pain in nursing home residents.\textsuperscript{19}

Treatment of pain in this population requires a systematic, prioritized, multidisciplinary approach that may include resident, family, and staff education and communication; pastoral counseling; music therapy; exercise; hot or cold compresses; baths or showers; and pharmacotherapy.\textsuperscript{18} Regular administration of pain medications should be considered if an agent is requested often, the pain is chronic, or the resident is unable to communicate his or her needs. Principles of opioid management in the nursing home setting are similar to those in other health care settings. The risks of opioid therapy in frail older persons are constipation, ileus, anorexia, hypotension, and falls. Before initiating opioid therapy, the patient’s medications should be reviewed, and discontinuation or modification should be considered for those that may adversely interact with the opioid.\textsuperscript{18}

**Urinary Incontinence and Retention**

Incontinence affects 55 percent of nursing home residents and is associated with increased risk of falls, depression, anxiety, embarrassment, and social isolation.\textsuperscript{20} Evaluation and treatment goals should be individualized based on feasibility, appropriateness, and resident and family preference.\textsuperscript{20} Evaluation of urinary incontinence and retention in nursing home residents is similar to that in the community setting, but includes particular attention to the resident’s overall care plan and medications associated with incontinence. Tables 2 and 3 include the causes of urinary incontinence and retention.\textsuperscript{20}

Toileting programs, which may be used in cooperative programs, include scheduled toileting habit training (i.e., assistance according to the resident’s established behavioral pattern) and prompted voiding (i.e., teaching the resident to recognize bladder and bowel filling). “Check-and-change” programs involve regular evaluation of the resident’s continence status, and changing of undergarments or pads at regular intervals. Check-and-change programs are generally a last resort, and reserved for residents with severe dementia or disability who are unable to participate in other continence programs.\textsuperscript{20}

Certain residents may be candidates for pharmacologic therapy for stress incontinence or overactive bladder. However, risk-versus-benefit assessment should include consideration of possible medication adverse effects, such as confusion, urinary retention, and antagonism of cholinesterase inhibitors.
The Omnibus Budget Reconciliation Act requires physicians to have clinically valid reasons before initiating catheterization. Catheterization may be considered as a palliative care measure in some debilitated residents, with thorough documentation by the physician.

Falls

Nursing home residents account for 20 percent of persons who die as a result of falls. The complications of falling (e.g., fear of subsequent falls) compound existing resident conditions. The cause of falls in nursing home residents is usually multifactorial. Muscle weakness and gait problems account for approximately one fourth of falls in nursing homes, and environmental hazards (e.g., wet floors, incorrect bed height, poorly fitted wheelchairs) account for another 16 to 27 percent. Multidisciplinary interventions based on fall assessment can reduce the frequency and complications of falls.

The physician’s role involves treating health conditions or injuries, eliminating medications that increase fall risk, and ordering prevention measures and rehabilitation therapies for appropriate patients. The care plan should be reevaluated after falls, and the patient should be observed and receive continued supervision.

Restraints

Policies about resident restraint require an approach that attempts to maintain or improve residents’ function, using the least amount of restriction. Barring a clear and well-documented reason, restraints should not be used in nursing home residents. In nonemergency situations, physical restraints should be used in nursing home residents only after careful and comprehensive review, assessment, and documentation provide substantial evidence that no safer alternative can be used. Environmental and behavioral alternatives to restraints for problem behavior are listed in Table 4.

Infectious Diseases

Diagnosis and management of infectious diseases in nursing home residents are complicated by patient comorbidities, as well as clinical and diagnostic limitations within the nursing home environment. A clear diagnosis of infection and appropriate treatment with culture-specific antibiotics help prevent antimicrobial resistance. Clinical practice guidelines are available to assist physicians.

Urinary tract infection (UTI) is the most common infection in nursing home residents. To reduce antibiotic use, criteria have been developed for diagnosis and management of UTIs (Figure 1). Pneumonia is the most common cause of infection requiring transfer of nursing home residents to the hospital, and it is a leading cause of mortality. Nursing home residents develop pneumonia at a greater rate than community-dwelling older adults. Nursing home residents who are hospitalized should receive empiric coverage for methicillin-resistant *Staphylococcus aureus*, and broad-spectrum coverage for gram-negative and gram-positive organisms. Figure 2 is an algorithm for the management of pneumonia in a nursing home resident.

Skin and soft tissue, gastrointestinal, and respiratory conditions are also common in nursing home residents. The treatment of these conditions is often affected by multiple factors, including comorbidities, medications, and the environment. Effective management requires a comprehensive approach that considers all possible etiologies and interventions. This approach may involve collaboration between physicians, nurses, therapists, and other healthcare providers to ensure optimal outcomes for residents.
infections are also common in nursing home residents. The procedures for evaluating viral respiratory infections are distinct in nursing homes. These procedures include identification of influenza A and other common viruses\textsuperscript{25} to assist in decisions about patient isolation, and the use of antiviral agents for influenza treatment and prophylaxis.

Table 5 presents guidelines from the Infectious Diseases Society of America for the evaluation and treatment of fever and infection in long-term care facilities.\textsuperscript{25}

### Table 4. Environmental and Behavioral Approaches to Problem Behavior in Nursing Homes

<table>
<thead>
<tr>
<th>Activities: rehabilitation, exercise, recreation, nighttime activities, structured routine, allowed wandering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarms/sensors: bed, chair, door, resident’s wrist</td>
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<tr>
<td>Altered nursing practices: increased supervision/observation, staffing, staff education; removal of bothersome treatments (e.g., intravenous lines, catheters)</td>
</tr>
<tr>
<td>Environmental changes: increased lighting, clear pathways, easy access to safe activities, locked exit doors, cloth barriers across doorways attached with Velcro, floor design to enhance visibility of residents</td>
</tr>
<tr>
<td>Physiological alternatives: treatment, medication review, measures to prevent delirium</td>
</tr>
<tr>
<td>Psychosocial alternatives: companionship, interaction with staff, reality orientation, behavioral modification, sensory aids, sensory stimulation, reduced environmental noise</td>
</tr>
<tr>
<td>Safety in bed: concave bed, reduced bed height, reduced movement at edge of bed (e.g., cushions, water mattress), soft floor mat, beds without wheels, bed trapeze, call button within resident’s reach</td>
</tr>
<tr>
<td>Seating and position support: supportive chairs, chairs with deep seats, customized seating, wheelchair arm cushions</td>
</tr>
<tr>
<td>Toileting and continence: frequent assistance, scheduled voiding rounds, cleaning promptly after soiling, bedside commode, bathroom identified with picture</td>
</tr>
<tr>
<td>Individualized interventions: Address sensory deprivation (e.g., glasses, hearing aids, amplifiers)</td>
</tr>
<tr>
<td>Control door access</td>
</tr>
<tr>
<td>Facilitate appropriate physical activity/recreation</td>
</tr>
<tr>
<td>Identify causes of disruptive behavior</td>
</tr>
<tr>
<td>Increase socialization, reduce isolation</td>
</tr>
<tr>
<td>Offer patient, staff, and caregiver education about dementia and agitation</td>
</tr>
<tr>
<td>Provide orienting stimuli (e.g., clocks, calendars, signs, night-lights)</td>
</tr>
<tr>
<td>Provide routine and structured environment</td>
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<tr>
<td>Reassure and verbally calm the resident</td>
</tr>
<tr>
<td>Segregate disruptive residents from quieter residents</td>
</tr>
<tr>
<td>Talk to the resident (distract away from the behavior)</td>
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</tbody>
</table>

Information from reference 23.

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### Evaluation and Management of UTI

**Figure 1. Algorithm for the evaluation and management of UTI in nursing homes. (UTI = urinary tract infection; WBC = white blood cell.)**

Information from reference 27.

### Evaluation and Management of Pneumonia

**Figure 2. Algorithm for the evaluation and management of pneumonia in nursing homes.**

Information from reference 29.

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Asymptomatic UTI?

- No
- Symptomatic UTI (e.g., fever, dysuria, gross hematuria, new or worsening urinary incontinence, bacteremia) → Therapy not beneficial

Dipstick urinalysis for leukocyte esterase and nitrite levels; microscopic examination for WBC count

- Urine culture if WBC count of $> 10,000$ cells per mm$^3$ ($10.00 \times 10^9$ per L) or if test positive for leukocyte esterase or nitrite

- Negative result → Observation

- Positive result → Empiric antimicrobial therapy guided by anticipated pathogens and susceptibilities based on patient and institutional history

- Women: seven-day course
- Men: 10- to 14-day course

- Culture results direct further antimicrobial therapy and duration of treatment course

- New-onset fever, temperature $> 100.4˚F$ (38˚C), leukocytosis, purulent sputum, or hypoxia and New or progressive infiltrate on chest radiography

- Antipneumococcal fluoroquinolone alone or High-dose beta lactamase inhibitor or Second- or third-generation cephalosporin in combination with azithromycin (Zithromax)

- Decisions to transfer to acute care facility should consider the following: Advance directives; clinical condition, underlying comorbidities, and prognosis of the resident; and institutional policies and capabilities
<table>
<thead>
<tr>
<th>Signs and symptoms of suspected infection</th>
<th>Pneumonia evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decline in function, altered cognition, confusion, incontinence, falls, behavior change, decreased appetite (B-II)</td>
<td>Pulse oximetry should be performed to document hypoxemia (&lt; 90 percent) and guide decision to transfer to acute care hospital; pulse oximetry should be performed in residents with respiratory rate of &gt; 25 breaths per minute in setting of suspected pneumonia (B-II)</td>
</tr>
<tr>
<td>Fever: single oral temperature of &gt; 100°F (37.8°C), repeated oral temperatures of &gt; 99°F (37.2°C), repeated rectal temperatures of &gt; 99.5°F (37.5°C), or increase in temperature of &gt; 2°F (1.1°C) over baseline (B-III)</td>
<td>Chest radiography should be performed if hypoxemia documented or suspected (B-II)</td>
</tr>
<tr>
<td>Resident evaluation</td>
<td>Respiratory viral infection evaluation</td>
</tr>
<tr>
<td>Three-tiered approach involving a certified nursing assistant; on-site nurse; and advanced practice nurse, physician assistant, or physician (B-III)</td>
<td>Nasopharyngeal wash or swab samples of throat and nasopharynx should be performed if respiratory viral infection suspected; sample placed in a single refrigerated viral transport media; virus isolation and rapid testing for influenza A and other common viruses should be initiated (A-III)</td>
</tr>
<tr>
<td>Certified nursing assistant should report suspected infection to on-site nurse and document vital signs (B-II)</td>
<td></td>
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<tr>
<td>Communication</td>
<td>Evaluation of SSTIs</td>
</tr>
<tr>
<td>Information should be relayed to responsible advanced practice nurse, physician assistant, or physician for decisions about further evaluation (B-III)</td>
<td>Surface cultures not indicated for most bacterial cultures of SSTIs, except conjunctivitis (B-III)</td>
</tr>
<tr>
<td>The clinical evaluation should be documented in the medical record, and reasoning for withholding any diagnostic and therapeutic interventions documented (B-III)</td>
<td>Needle aspiration or deep tissue biopsy for Gram stain and culture indicated when unusual pathogens are suspected, fluctuant areas are present, or initial antimicrobial therapy is unsuccessful (C-III)</td>
</tr>
<tr>
<td>Initial diagnostic testing</td>
<td>Deep tissue and bone specimens should be obtained for poorly healing pressure ulcers to guide antimicrobial therapy; magnetic resonance imaging most effective modality to detect osteomyelitis (A-III)</td>
</tr>
<tr>
<td>Advance directives should be reviewed before interventions (B-III)</td>
<td>Mucocutaneous fungal infections: potassium hydroxide 10% slide preparations; culture for refractory conditions appropriate for identification of drug-resistant species (B-III)</td>
</tr>
<tr>
<td>Complete blood count should be performed within 12 to 24 hours of onset of symptoms, consistent with local standards of practice (B-II)</td>
<td>Herpes simplex or zoster virus: skin scrapings (Tzanck test) and/or culture, immunofluorescent viral antigen studies, or polymerase chain reaction testing (A-III)</td>
</tr>
<tr>
<td>Assessment for bacterial infection (with or without fever) warranted with WBC count of ≥ 14,000 cells per mm³ (14.00 × 10⁹ per L) or a left shift (bands or metamyelocytes &gt; 6 percent or total band neutrophil count of &gt; 1,500 cells per mm³ [1.50 × 10⁹ per L]) (B-II)</td>
<td>Scabies: light microscopy of mites, eggs, or feces on mineral oil preparation (B-III)</td>
</tr>
<tr>
<td>Additional diagnostic tests may not be indicated in absence of fever, leukocytosis and/or left shift, or evidence of focal infection (C-III)</td>
<td></td>
</tr>
<tr>
<td>Urinalysis and urine cultures should not be performed in asymptomatic patients (A-I)</td>
<td>Evaluation of gastrointestinal infection</td>
</tr>
<tr>
<td>In noncatheterized patients, laboratory evaluation should be reserved for those with acute onset UTI symptoms; in catheterized patients, evaluation should be considered if urosepsis is suspected, especially in context of recent catheter change or obstruction (A-II)</td>
<td>In absence of outbreak, residents with gastroenteritis and stable clinical status should be evaluated within seven days for volume assessment; no evaluation indicated unless patient is ill or symptoms persist beyond seven days; Giardia species or other protozoa should be considered from stool specimen (B-III)</td>
</tr>
<tr>
<td>In men, midstream, clean-catch specimens preferred when possible, although freshly applied clean condom external collection system with monitoring of urine output is reasonable (B-II); specimen collection from women may require in-and-out catheterization (B-III)</td>
<td>Colitis (fever, severe cramps, and diarrhea, with or without blood and WBCs in stool): resident should be evaluated for Clostridium difficile with toxin assay; if symptoms persist and initial result negative, one or two additional stool specimens should be obtained (A-II)</td>
</tr>
<tr>
<td>Indwelling catheters should be changed before specimen collection and antibiotic administered in residents with suspected urosepsis (A-II)</td>
<td>If no antibiotic use within 30 days and negative C. difficile assay, sample for invasive enteropathogens should be obtained (A-II)</td>
</tr>
<tr>
<td>Urine culture and antibiotic susceptibility testing should be performed only with microscopic or chemical evidence of UTI (B-III)</td>
<td>Public health officials should be notified if gastroenteritis or colitis exceeds facility baseline threshold, or if reportable pathogen is isolated (B-III)</td>
</tr>
<tr>
<td>If urosepsis is suspected, urine and paired blood culture specimens and Gram staining of uncentrifuged blood urine should be obtained (B-III)</td>
<td>Evaluation and treatment of intra-abdominal infections or abscesses should be performed in acute care setting (B-III)</td>
</tr>
<tr>
<td>Blood cultures have low yield and may not influence clinical therapy (B-II), but may be appropriate with suspected bacteremia, adequate access to laboratory facilities, physician coverage of positive cultures, capacity to administer parenteral antibiotics</td>
<td>Suspected outbreak</td>
</tr>
<tr>
<td>for infection control, testing should be considered in patients with advance directives prohibiting diagnostic testing (B-III)</td>
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**NOTE:** Canadian Task Force on the Periodic Health Examination grading system:

- Strength of recommendation: A = good evidence to support recommendation; B = moderate evidence; C = poor evidence. Quality of evidence: I = at least one properly randomized, controlled trial; II = at least one well-designed trial without randomization, cohort or case-control studies, multiple time series, or dramatic results from uncontrolled experiments; III = opinions of respected authorities, clinical experience, descriptive studies, or reports of expert committees.

- SSTI = skin and soft tissue infection; UTI = urinary tract infection; WBC = white blood cell.

Information from reference 25.
Dementia

As many as 67 to 78 percent of nursing home residents have dementia. Dementia-related behavioral and psychological symptoms often prompt the decision to admit a person to a nursing home. Individualized care plans for residents with dementia are developed based on the stage of dementia and associated impairments. Nonpharmacologic treatment of problem behaviors should be emphasized and includes identifying triggers for the behavior, such as pain, and implementing a multidisciplinary management strategy. Management strategies include changes in patient activity and nursing home care practices, environmental modification, and family education to alter the behavior. Figure 3 is a management approach to dementia-related problem behavior.

Pharmacologic treatment may be necessary if behavioral issues become dangerous for the resident or for others. Antipsychotic therapy is the main treatment for unmanageable behavioral symptoms, such as aggression, hallucinations, and agitation. However, recent literature suggests a 1.6 to 1.7 times higher risk of death in patients treated with antipsychotics versus placebo. This risk has led the U.S. Food and Drug Administration to add a warning to all antipsychotic drugs about their use for dementia-related psychosis.

Delirium

Delirium occurs in up to 60 percent of nursing home residents, and up to 83 percent of all patients at the end of life. The diagnostic and treatment approach is no different than for patients admitted to the hospital and includes evaluation for dementia, depression, metabolic disorders, infection, polypharmacy complications, and late-phase disease.

Depression

It is estimated that 12 to 16 percent of older adults living in nursing homes have major depression. The diagnosis of depression is facilitated by multidisciplinary assessment and the use of screening tools such as the Geriatric Depression Scale, Cornell Scale for Depression in Dementia, Center for Epidemiologic Studies of Depression Scale, and Patient Health Questionnaire.

Pharmacologic and psychological treatment of depression in a nursing home resident is no different than that

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**Management of Dementia-Related Behavioral Disturbance**

- **Problem behavior**
  - Delirium present? [Yes / No]
    - Delirium present? [Yes] Evaluate cause and treat delirium
    - Delirium present? [No] Apply environmental and behavioral interventions for problem behavior (see Table 4)
  - Effective? [Yes / No]
    - Effective? [Yes] Continue interventions; consider cholinesterase inhibitors, memantine (Namenda), or both (may progress to long-term management)
    - Effective? [No] If disturbing psychosis or severe aggression is present:
      - Check vital signs
      - Evaluate for extrapyramidal symptoms
      - Evaluate for heart and lung disease
      - Perform electrocardiography (QTc interval)
      - Assess risk vs. benefit of antipsychotic use
      - Consider antipsychotic or benzodiazepine
    - If mild psychosis/mania or moderate aggression is present:
      - Check vital signs
      - Evaluate for extrapyramidal symptoms
      - Evaluate for heart and lung disease
      - Perform electrocardiography (QTc interval)
      - Assess risk vs. benefit of antipsychotic use
      - Order complete blood count and baseline laboratory testing
      - Evaluate for depression, need for antidepressants
      - Consider antipsychotic or mood stabilizers
- Continuing reassessment

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**Figure 3.** Algorithm for the management of behavioral disturbances in nursing home residents with dementia.

*Information from reference 31.*
for a non-nursing home resident. No antidepressant class is superior; however, selective serotonin reuptake inhibitors and selective norepinephrine reuptake inhibitors are preferred because of their favorable safety and tolerability profiles.35 Choosing which antidepressant is suitable for the individual patient includes recognition of comorbidities, current medications, and the antidepressant’s adverse effects. Electroconvulsive therapy may be considered in select patients.

Adverse Drug Events
Adverse drug events are common in nursing homes, ranging from 1.9 to 9.8 events per 100 resident-months. Of these events, 40 to 50 percent are considered preventable.36,37 A general management principle is to consider any new symptom an adverse drug event until proved otherwise.

The Centers for Medicaid and Medicare Services have adopted the Beers criteria, which are based on a list of medications that should be generally avoided in older patients, as regulatory guidance to improve the rate of adverse drug events in nursing homes.38 Other methods for avoiding potentially inappropriate medication use in nursing home residents include reviewing medications at admission, at readmission, at transfers, if any medication is added or discontinued, and when goals of care change; adjusting dosages according to renal function; and closely monitoring patients taking psychotropic medications for benefits versus risks.32,36-38

Pressure Ulcers
Pressure ulcers are also common in nursing homes. Principles of pressure ulcer prevention and treatment are the same in the community and nursing home settings. Clinical practice guidelines are available for the prevention and treatment of pressure ulcers.39,40

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