

Assisted Living Challenge: Heightening Awareness of Venous Thromboembolism

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Silent killers are stealthy, insidious, and can creep up on their victims without symptoms or warnings. If caught early enough, most can be treated or controlled.

Over the years, campaigns have attempted to raise awareness of various silent killers—such as diabetes, hypertension, and heart disease—and to encourage people to take preventive measures and employ early interventions. Now a new quiet but dangerous condition is receiving attention, and assisted living facilities need to pay attention and learn some lessons that could save many lives.

Roll Cameras: Telling the VTE Story

Public awareness campaigns begin by noting VTE's widespread impact. In the United States, 1 million people are affected by some form of the condition annually, and 200,000 people will die from it.¹ This is roughly the same number of people who will succumb to diabetes complications.² VTE's incidence increases with age, so its prevalence is increasing as the elderly population grows. Annually, more than 250,000 hospitalizations occur for DVT and PE, even though VTE is predictable and preventable. PE alone has a

Venous thromboembolism (VTE)—clotting within blood vessels that may stop life-sustaining blood flow to tissues—is the latest silent killer to hit the media. Deep vein thrombosis (DVT) and its potentially fatal complication, pulmonary embolism (PE), fall under the VTE umbrella.¹



three-month mortality of 17%.¹

Textbook symptoms of DVT include painful swollen legs and

hot inflamed skin from perivascular inflammation. Signs of PE include

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pain, cough, and shortness of breath. So one might ask why this condition is considered a silent killer when it speaks clearly through symptoms. The answer is that many (if not most) VTE patients remain asymptomatic until their conditions become critical. Without better information dissemination, at-risk patients will not receive appropriate screening, diagnosis, and prophylactic therapy.

Awareness in Assisted Living

The assisted living community is an appropriate and important target for public awareness campaigns regarding blood clots for several reasons. These include:

- Many community-dwelling or acutely ill hospitalized elderly move to assisted living facilities (ALFs) after developing VTE.
- Many residents are at high risk due to age and medical history.
- Poorly planned VTE prophylaxis and treatment can put residents at risk for complications.

Efforts to educate staff about the basics of VTE and enlighten residents and their families about the association between “acute immobilization” and “potential blood clot” can enable early recognition and treatment.

Staff education should address VTE risk factors in order of frequency. One recent study suggests the most prevalent are previous blood clot, acute infectious disease, cancer, age over 75 years, and chronic respiratory disease.³ This study and others identifying VTE risk factors involved hospital patients. However, data suggests that these same factors apply to elders in other settings as well.

For example, it is known that nursing home confinement increases risk of VTE 10.6 times,¹ and

acute immobilization increases risk regardless of age. There are numerous reported cases of blood clots in young adults who had been immobile for prolonged periods of time during airplane or car travel.^{4,5} Other risk factors germane to the ALF population are falls resulting in injury, smoking, obesity, and a diagnosis of heart failure.⁶ With more than two-thirds of ALF residents over age 75 and up to 40% carrying a chronic heart disease diagnosis or having experienced a recent fracture, VTE awareness is important in this setting.⁷



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Awareness Increases Prevention

Many VTE risk factors—such as age or history of cancer—are unalterable. However, others can be identified and addressed before they become problematic. For example, avoiding long periods of time in seated or supine positions improves blood flow in the legs, so residents should be encouraged to stay physically active whenever possible.

Hydration seems to play a role in VTE, so adequate intake of fluids is important. Staff, family members and other visitors, and residents themselves should be reminded about the importance of drinking water or other liquids regularly. Additionally, clothing that constricts veins can exacerbate problems, so residents should be encouraged to

wear loose fitting clothes. All of this information is easily incorporated in bold, colorful posters similar to those used in airports to warn about “Travelers Thrombosis” or “Economy Class Syndrome.” These can be posted in dining halls, recreation areas, lobbies, and other locations where residents, visitors, and staff are likely to see them.

Monitoring Makes a Difference

When staff understand the risk factors of VTE and how to prevent it, they can incorporate this knowledge into their regular interactions with residents. For example, they can make it a point to ask residents daily about their fluid intake, to offer residents something to drink during visits, and to notify a family member about the risks of VTE if the resident becomes acutely immobile. It is particularly important to monitor residents with dementia to ensure they are imbibing enough fluids and that they stay active as much as it is safe for them.

Underprescribing of many necessary or protective medications is a problem in ALFs, especially for residents who are cognitively impaired.⁷ Specifically, underprescribing of VTE prophylaxis has been documented in many settings.^{8,9} Clinicians who care for ALF residents often need to be reminded to consider the potential for clot development when previously ambulatory patients are confined to bed for more than a day or two. When residents return from a hospital or skilled nursing facility stay, especially for total knee or hip replacement, staff should ask if the resident is on VTE prophylaxis. Many at-risk patients benefit from prophylaxis with either a mechanical method or a medication intervention.

Interventions Exist But Are Not Always Used

Evidence-based interventions have been acknowledged for VTE. Unfortunately, many evidence-

based interventions are never applied appropriately because the people who need to know about them—the care providers closest to the patient—are unaware of them. Heightening awareness among residents, families, and care providers can help residents age in place in an ALF and avoid hospitalization and transfer to skilled nursing facilities.

Mechanical devices have not been proven to prevent blood clots but are a reasonable option in residents at risk for bleeding.¹⁰ They include graduated compression stockings, intermittent pneumatic compression, and venous foot pumps. Risk factors for bleeding include increased age, a history of gastrointestinal bleeding, previous stroke, diabetes mellitus, hematocrit less than 30%, or creatinine greater than 1.5 mg/dL. With two risk factors, 12% of patients will experience a bleed within a year. Three or more risk factors indicate high risk, with almost half of these patients experiencing a bleed at one year.¹¹

From the Prescription Pad

Several medications have been proven to prevent VTE and are FDA-approved for this purpose. All of these are anticoagulants and have risks and benefits that must be assessed for each patient. As a rule, the prophylactic dose for these drugs is lower than the dose needed to treat an actual VTE.

It is important to note that with all anticoagulants, bleeding is a potential adverse event. Therefore, residents who fall or are at risk for falling or those who sustain fall-related injuries may need increased supervision. Additionally, drug-drug interactions can increase bleeding risk or obstruct the desired anticoagulant effect. These include aspirin or over-the-counter analgesics of the NSAID class (eg, ibuprofen, naproxen) and popular alternative/complimentary products (see Table 1) that interfere with the clotting cascade complications. Platelet

Table 1. Herbal/Anticoagulant Combinations of Concern

Herbal agents causing additive anticoagulant effect

Alfalfa, anise, arnica, astragalus, bilberry, black current seed oil, bladderwrack, bogbean, boldo (with fenugreek), borage oil, buchu, capsaicin, cat's claw, celery, chapparral, chincona bark, clove oil, dandelion, dong quai, evening primrose oil, fenugreek, feverfew, garlic, ginger, ginkgo, guggul, papaya extract, red clover, rhubarb, safflower oil, skullcap, tan-shen, vitamin A

Herbal agents counteracting anticoagulant effect

Coenzyme 10, Saint John's Wort

Risk factors for bleeding include increased age, a history of gastrointestinal bleeding, previous stroke, diabetes mellitus, hematocrit less than 30%, and creatinine greater than 1.5 mg/dL.

inhibitors (eg, ibuprofen, indomethacin, dipyridamole, hydroxychloroquine, NSAIDs, ticlopidine, phenylbutazone, aspirin, dextran) should be used cautiously with all the anticoagulants. Nosebleeds, black/tarry stool, or bloody urine may be the first sign of overdose.^{12,13}

Addressing Resident, Family Concerns

Residents and their families may have preferences about administration route or concerns about the cost of medications.⁷ For example, an injectable drug may frighten or anger a resident with dementia.¹⁴ Prescribers must consider the resident's renal function (a consideration for the newer agents), comorbid conditions, and age-related

changes; and they should adjust doses accordingly. A discussion of some of the medications used to treat VTE are described here.

Warfarin (Coumadin™). Warfarin can be taken orally; its oral dosage form and once-daily dosing account for its popularity. Although it has the lowest acquisition cost of all the anticoagulants, its use in the elderly has been associated with many drug interactions and adverse events. ALF staff should be aware that warfarin must be monitored frequently using the international normalized ratio (INR) clotting test. Residents who have hepatic dysfunction or heart failure need closer monitoring. This drug's mechanism of action involves vitamin K-dependent clotting factors, so the product has numerous food interactions (eg, spinach, seaweed, broccoli, turnip greens, mango) that require a consistent and somewhat strict diet. This can be a particular challenge for cognitively impaired individuals or for residents who eat unpredictably. The fact that Micromedex (a widely-used, peer reviewed electronic clinical data system) lists "unsupervised senile, alcoholic or psychotic patients" and "inadequate laboratory facilities" among its contraindications speaks volumes.¹⁵ A dementia patient who is losing weight, has an inconsistent vitamin K intake, and falls often is not a good candidate for warfarin, even with close supervision.¹⁴

Heparin. Heparin is relatively less costly than newer agents, but it usually is administered intravenously or subcutaneously two or three times a day; so it can require a great deal of staff time and/or increase the risk for non-adherence. Women older than 60 are at higher risk of bleeding, and heparin mandates regular monitoring with an Activated Partial Thromboplastin Time (APTT). It requires periodic platelet counts, hematocrit, and tests for occult blood in stool during the entire course of therapy. This product is used only sparingly and cautiously in individuals with diabetes or renal insufficiency. It has numerous drug interactions, including the cephalosporins, penicillins, nitroglycerin, digoxin, tetracyclines, nicotine, and some antihistamines. Local irritation, redness, mild pain, and bruising at the injection site are common,^{12,13} so staff who supervise subcutaneous heparin administration should guide residents to rotate sites.

Low molecular weight heparins [dalteparin, enoxeparin, tinzaparin, danaparoid]. The low molecular weight heparins are newer agents and are considerably more expensive in terms of acquisition costs. Administered by deep subcutaneous injection once or twice daily from a fixed-dose syringe with the patient lying down, each product's package insert describes necessary injection site rotation. Additionally, staff should counsel residents not to rub the injection site. Although the basic acquisition cost of these drugs exceeds that of the older anticoagulants, no routine clotting tests are required; and the risk of drug-induced bleeding is lower. This reduces overall cost. Periodic complete blood counts, urinalysis, and stool occult blood tests are needed during the course of treatment; these also are necessary with the older agents. Other than the drug interactions noted for anticoagulants in general, no additional drug interactions or dietary

Table 2. Fast Facts About Anticoagulation

- When residents return from hospitalization, check to see if they are on or should be on an anticoagulant.
- Residents should not discontinue anticoagulation without the prescriber's knowledge.
- Injectable anticoagulation products are not interchangeable unit for unit or mg for mg.
- Residents who are on warfarin or heparin must adhere to the prescribed laboratory test schedule exactly.
- If a manufacturer's pre-filled syringe is used and it has an air bubble, do not expel bubble before injecting the anticoagulant subcutaneously.
- Subcutaneous anticoagulants require injection site rotation. Each one is different, so residents or people who help them should read the product's specific directions.
- Advise residents to make certain lifestyle changes: brush teeth with soft toothbrush, use electric razor, avoid activities that may lead to bruising.
- Residents should avoid alcohol while using all of the anticoagulants.
- Address the issue of needle and syringe disposal in advance, so people involved in the trash removal process are not harmed.
- Most anticoagulant-related problems can be predicted and prevented.

It is important to note that with anticoagulants, bleeding is a potential adverse event.

restrictions have been identified. Injection site discomfort and bruising are common.^{12,13}

Fondaparinux (Arixtra™). An anticoagulant with a different mechanism, fondaparinux also is administered subcutaneously. For ALF staff, a key point is that its use in residents who weigh less than 50 kg (110 pounds), have renal impairment, or are older than 75 years old is a concern that prescribers need to address in advance. For these residents, the dose is usually reduced. As with other medications, periodic complete blood counts, serum creatinine level, and stool occult blood tests are recommended during the course of treatment. Injection site reactions do occur frequently, as does fever.^{12,13}

Plotting an Effective Awareness Strategy

The use of VTE prophylaxis in ALFs is not uncommon, and it increases supervisory complexity. ALFs can enhance resident care by making residents and their families care partners via education and communication. At the same time, ensuring that staff understands all the issues surrounding VTE and have a process in place to address it and monitor treatments is important to maximizing quality care.¹⁶ An additional benefit of thorough staff education and training is that hospital discharge planners are likely to be more receptive to placing a patient in an ALF where staff are knowledgeable about VTE and its treatment.

Using the most powerful methods available to share key points will ensure that the message reaches all appropriate parties. This means including information and tips in staff and resident newsletters, hanging posters in visible places, and including adult children in education efforts. It also means using various media, including videos or DVDs and online programs.

Education must focus on new interventions. However, this information must be presented in a way

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Will ALF Residents Benefit?

Obviously, many ALF residents will qualify for the MTMS; but because these services will vary from plan to plan, it is difficult at this time to predict what ALF residents will benefit and how.

Nonetheless, ALFs don't have to sit back helplessly and hope for the best. They can take a proactive stance. For example, they can begin now to work with their pharmacy providers to identify which plans offer the best package of medication access and medication-related services for their residents. Toward this end, ALFs will need to make sure that their pharmacy providers are networked with many plans and that they are contracted to provide appropriate MTMS. For those residents who need the MTMS but who do not meet the qualifications—such as a resident with Alzheimer's disease with less than \$4,000 per year in medication expenditures, ALFs will need to charge these residents for MTMS and pay the pharmacist or other practitioner to provide these services.

Advocacy Now, Access Later

While CMS believes that MTMS will evolve to become the cornerstone of the Medicare prescription drug benefit, this can only happen if providers push for appropriate services for seniors and access to these services by all residents who need them. They also need to develop strategies for handling instances where residents need the MTMS but do not meet the criteria to receive these services. By taking the role of advocate seriously now, ALFs can help ensure safe, effective, and affordable medication management for their residents once the Medicare prescription drug benefit goes into effect next year. ALC

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that staff can understand and apply in practice. While the Seventh American College of Physicians Conference on Antithrombotic and Thrombolytic Therapy's recommendations¹⁰ are clearly too complex for most staff members, emphasizing key points is simple. Table 2 lists some basic facts that staff should know.

In the case of anticoagulants, one study has documented that clinicians may be reluctant to use newer (and preferred) LMWHs because of their acquisition cost (which is different than the overall cost of treatment) or prescribers' habits or lack of familiarity with these drugs.¹⁷ Similar barriers exist among residents and their families; they may consider the cost at the pharmacy dispensing window or shy away from subcutaneous injections, but not understand the limitations of oral warfarin. Staff also may have their own preferences or misconceptions. Education designed to present facts in a way that is easy to understand and apply will enable choices that can maximize outcomes, minimize risks, and are acceptable for residents, staff, and families alike.

In the end, practitioners and staff who assist residents and their families with decisions about administration route, logistics, and true cost of various anticoagulants will earn their confidence and respect.

ALFs should approach VTE awareness and monitoring in the same manner as other silent killers and use all available techniques to spread the word. ALC

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