

# Nursing Home Residents with Venous Thrombosis: A Vulnerable, Fragile and Disenfranchised Population

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Thromb Haemost 2018;118:1507–1508.

Most health care providers believe that the problem of preventing venous thromboembolism (VTE) has been solved, given the remarkable changes in therapies over the years.<sup>1</sup> After all, most patients hospitalized with medical illnesses who are going to have some degree of limited mobility receive VTE prophylaxis either with low molecular weight heparin or with unfractionated heparin. This approach is widely embraced, lacks controversy and is regarded as a marker of high-quality care.<sup>2</sup> Consequently, the rate of preventable in-hospital VTE in medically ill patients has plummeted.

However, the story does not end with preventing in-hospital VTE. There is a critical uptick in VTE during the first month after hospital discharge. This vulnerable period presents a critical unmet need for VTE prevention. With short in-hospital lengths of stay, risk factors for VTE persist after discharge. In the care setting after discharge, many patients are at even greater risk than they were during hospitalization. In-hospital VTE anticoagulant prophylaxis is stopped at discharge. Out-patient nurses and physical therapists are less available or not available to coax and train patients to ambulate. In elderly patients who ordinarily use canes or walkers because of underlying imbalance or gait instability, fall risk is high. Consequently, family members and untrained health care providers shun ambulation because of fear of falling. This philosophy limits opportunities for safe, supervised walking.

These problems are magnified in the nursing home setting. Nursing home residents lack the same level of family and friend companionship and oversight that they would have in the home setting. Therefore, despite best intentions, these residents may not have the advocacy they need to ensure that mandated levels of physical therapy and patient care assistance are provided. The residents themselves, especially during the first weeks in a new nursing home, may be disoriented and depressed. They find it difficult to articulate their concerns (► **Table 1**).

Running a nursing home is no easy task. In 2014, there were 15,600 nursing homes in the United States, with 1.7 million licensed beds. Seventy per cent were for profit

(www.cdc.gov/nchs/).<sup>3</sup> Nursing homes face special challenges. There is a myriad of regulations that demand compliance. It is challenging to find and retain dedicated and compassionate staff members, particularly at the patient care assistant level. Staff turnover compounds the problem of maintaining consistent adherence to policies promulgated to ensure a high quality of care.

Although rarely publicized, it is no secret that VTE occurs commonly in nursing home residents. In a study of 181 nursing homes in 19 states, the rate of new VTE cases was 3.7 per 100 person-years. For every new pulmonary embolism (PE), there were 5 new deep vein thrombosis (DVT) events.<sup>4</sup> In a Dutch study of 325 nursing home residents with a high clinical suspicion of VTE, diagnostic studies were withheld in 39% (► **Table 2**). Three-fourths of these patients did receive empirical anticoagulation.<sup>5</sup> We know from a Rochester, Minnesota, case-control study of nursing home residents that the three major risk factors for developing VTE are: (1) respiratory infection, (2) immobility and (3) general surgery.<sup>6</sup>

**Table 1** Challenges confronting nursing home residents

Confusion and disorientation with moving into a nursing home
Anxiety and depression
Friends and family are not always present
Cognitive impairment, especially short-term memory
Immobility or unsteady gait
Sedentary lifestyle
Reluctance of nursing home staff to mobilize residents due to staff fear of residents' falling
Lack of advocacy
Ageism
Issues in transition care planning and effective communication between acute and long-term care

received  
June 26, 2018  
accepted  
June 26, 2018

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Stuttgart · New York

DOI <https://doi.org/10.1055/s-0038-1668525>.  
ISSN 0340-6245.

**Table 2** Challenges diagnosing VTE in nursing homes

VTE is a difficult diagnosis to suspect and to confirm under many circumstances, within and outside of nursing homes
Low awareness among nursing home healthcare providers that VTE is a common problem, especially during the first weeks after transfer into a nursing home
Inability of many residents to express that they have symptoms of deep vein thrombosis (such as an aching calf) or pulmonary embolism (such as shortness of breath) due to some degree of cognitive impairment
Reluctance of nursing home health care providers to refer a patient for venous ultrasound of the legs or a chest CT scan
Lack of patient advocacy to embed policies that ensure full discussion with the patient and family about the suspicion of PE, diagnostic options and therapeutic alternatives
Prevention of VTE is a low priority for nursing homes administrators and regulatory agencies

Abbreviations: CT, computed tomography; PE, pulmonary embolism; VTE, venous thromboembolism.

The 118.7 issue of *Thrombosis and Haemostasis* featured the most comprehensive epidemiologic and biostatistical study ever published on VTE incidence and VTE-associated survival in nursing home residents.<sup>7</sup> The study was undertaken by faculty of the Mayo Clinic and documented the details of VTE events in nursing homes in Olmsted County, Minnesota, United States. Critically important findings were uncovered that will influence the approach to VTE after hospital discharge and in nursing homes for years to come.

New VTE events occurred in 2.3% of nursing home residents. The incidence was highest during the first 7 days after admission to the nursing homes. VTE incidence among nursing home residents was approximately 30 times higher than that of the general population of Olmsted County. Those stricken by VTE had an adjusted death rate that was double the rate of nursing home residents without VTE.

These landmark findings from the Mayo Clinic's Department of Health Sciences Research provide a rationale for developing quality improvement strategies to increase awareness of VTE after hospital discharge. Nursing home leaders should devise management programs that resonate with the health care staff, patients and their families. These plans should be discussed among stakeholders and then individualized and personalized to gain traction and consensus.

Nursing home policies should do everything possible to encourage ambulation and decrease sedentary states, especially in residents newly admitted to nursing homes. Staff of nursing homes should be trained to overcome the fear that residents will fall while receiving properly supervised ambulation. The health care providers should also be taught fundamental symptoms and signs of DVT and PE.

For some nursing residents, pharmacological VTE prophylaxis may be appropriate. In 2017, the Food and Drug Administration approved betrixaban, a novel oral anticoagulant that inhibits factor Xa, for patients hospitalized with an acute medical illness at high risk for VTE. This oral anticoagulant is initiated during hospitalization and is administered for 35 to 42 days. Compared with a 10-day course of enoxaparin 40 mg

daily, betrixaban reduces all VTE by 24% and symptomatic VTE by 46%.<sup>8</sup> It also reduces stroke by 56% compared with enoxaparin.<sup>9</sup> Finally, betrixaban reduced the rate of VTE-related rehospitalization compared with enoxaparin by 56%.<sup>10</sup>

We applaud the Mayo Clinic for shining a bright spotlight on the problem of VTE in nursing homes. Until now, this problem had received scant attention. The number of cases was under-estimated, and the importance of the problem was not appreciated. Moreover, until recently, we did not have an anticoagulant that had been specifically approved to reduce DVT after hospital discharge. As our population ages, the problems described will be magnified in scope. I hope attention to VTE in the nursing home setting will remain sustained and will intensify to permit development of a systematic approach to this complex issue.

#### Conflict of Interest

Samuel Z. Goldhaber is a consultant for Portola Pharmaceuticals, Inc.

#### Acknowledgement

The author appreciate the critique of this Editorial by Ebrahim Barkoudah, MD, MPH.

#### References

- Schulman S, Ageno W, Konstantinides SV. Venous thromboembolism: past, present and future. *Thromb Haemost* 2017;117(07):1219–1229
- ISTH Steering Committee for World Thrombosis Day. Venous thromboembolism: a Call for risk assessment in all hospitalised patients. *Thromb Haemost* 2016;116(05):777–779
- CDC/National Center for Health Statistics. Nursing Home Care. Available at: <https://www.cdc.gov/nchs/fastats/nursing-home-care.htm>. Accessed June 17, 2018
- Reardon G, Pandya N, Nutescu EA, et al. Incidence of venous thromboembolism in nursing home residents. *J Am Med Dir Assoc* 2013;14(08):578–584
- Schouten HJ, Koek HL, Kruisman-Ebbers M, et al. Decisions to withhold diagnostic investigations in nursing home patients with a clinical suspicion of venous thromboembolism. *PLoS One* 2014;9(03):e90395
- Leibson CL, Petterson TM, Smith CY, et al. Rethinking guidelines for VTE risk among nursing home residents: a population-based study merging medical record detail with standardized nursing home assessments. *Chest* 2014;146(02):412–421
- Petterson T, Smith C, Emerson J, et al. Venous thromboembolism (VTE) incidence and VTE – associated survival among Olmsted county residents of local nursing homes. *Thromb Haemost* 2018;118(7):1316–1328
- Cohen AT, Harrington RA, Goldhaber SZ, et al; APEX Investigators. Extended thromboprophylaxis with betrixaban in acutely ill medical patients. *N Engl J Med* 2016;375(06):534–544
- Gibson CM, Chi G, Halaby R, et al; APEX Investigators. Extended-duration betrixaban reduces the risk of stroke versus standard-dose enoxaparin among hospitalized medically ill patients: an APEX trial substudy (acute medically ill venous thromboembolism prevention with extended duration betrixaban). *Circulation* 2017;135(07):648–655
- Chi G, Yee MK, Amin AN, et al. Extended-duration betrixaban reduces the risk of rehospitalization associated with venous thromboembolism among acutely ill hospitalized medical patients: findings from the APEX trial (acute medically ill venous thromboembolism prevention with extended duration betrixaban trial). *Circulation* 2018;137(01):91–94