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Commentary

Role of Structured Risk Assessment Models in Identifying High-Risk Hospitalized Patients

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DESCRIPTION

Hromboembolic diseases, including deep vein thrombosis, pulmonary embolism and arterial thrombosis, represent significant global health challenges that require prompt, coordinated and comprehensive hospital-based management strategies. Hospitals play a major role in reducing morbidity and mortality by implementing evidence-based protocols that address prevention, early detection, acute treatment and long-term patient support. Because thromboembolic events often arise from a complex interaction between clinical conditions, comorbidities and environmental factors, hospital systems must adopt a multifaceted approach to mitigate risks and optimize patient outcomes. One of the most essential components of hospital-based management is the implementation of structured risk assessment models for all admitted patients.

Tools such as the Padua prediction score, caprini risk assessment model and wells criteria help clinicians systematically identify high-risk individuals and preventive prophylactic strategies accordingly. These evaluations are particularly critical for patients undergoing major surgery, experiencing prolonged immobilization, or living with chronic medical conditions such as cancer, obesity, cardiovascular disease and inherited thrombophilias. Standardizing risk assessment at admission, during clinical transitions and throughout hospitalization ensures that vulnerable patients receive timely and appropriate preventive interventions.

Pharmacologic prophylaxis remains a cornerstone of hospital-based thromboembolism prevention. Anticoagulants such as low-molecular-weight heparin, unfractionated heparin and direct oral anticoagulants play a vital role in reducing the incidence of venous thromboembolism among high-risk patients. Effective hospital protocols emphasize accurate dosing, careful monitoring of renal function and bleeding risks and timely adjustment of therapy based on clinical changes.

Mechanical prophylaxis, including graduated compression stockings and intermittent pneumatic compression devices, offers a non-pharmacologic alternative for patients with contraindications to anticoagulant medications. These combined strategies not only reduce thromboembolic events but also promote early mobilization another critical intervention that significantly decreases stagnation of blood flow in the lower extremities. Enhanced Recovery After Surgery (ERAS) pathways have further strengthened prevention efforts by encouraging early ambulation and minimizing immobilization periods postoperatively.

For patients who develop thromboembolic disease during hospitalization, prompt diagnosis is essential to prevent complications such as post-thrombotic syndrome, chronic thromboembolic pulmonary hypertension, or sudden cardiopulmonary collapse. Hospitals rely on imaging modalities such as doppler ultrasonography, Computed Tomography (CT) pulmonary angiography and echocardiography to quickly identify the nature and extent of thrombus formation. Once diagnosed, treatment typically includes therapeutic anticoagulation, with the choice of agent preventive to the patient's clinical status, comorbidities and bleeding risk. In severe cases, including massive pulmonary embolism or limb-threatening thrombosis, advanced interventions such as systemic thrombolysis, catheter-directed thrombolytic therapy, or surgical thrombectomy may be required. Hospitals increasingly employ multidisciplinary Pulmonary Embolism Response Teams (PERTs), which bring together experts from cardiology, hematology, critical care, emergency medicine and vascular surgery to rapidly evaluate and manage complex thromboembolic presentations.

Long-term management and prevention of recurrence are equally important aspects of hospital care. Discharge planning must include patient education on medication adherence, lifestyle modifications and recognition of early warning signs. Many hospitals now provide structured anticoagulation clinics or telemedicine follow-ups to monitor therapeutic levels, adjust medications and ensure patient safety. Chronic disease management is also vital, particularly for patients with underlying malignancy, inflammatory disorders, or inherited thrombophilia, who require customized long-term anticoagulation strategies. Additionally, hospitals play an important role in preventing Hospital-Acquired Venous

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Thromboembolism (HA-VTE), a major cause of avoidable morbidity and mortality.

Implementing mandatory risk assessments, electronic alerts, adherence audits and staff education programs has proven highly effective in reducing HA-VTE rates. Many institutions also employ clinical decision-support tools integrated into electronic health records, prompting clinicians to initiate appropriate prophylaxis and ensuring no high-risk patient is overlooked.

The success of thromboembolic disease management in hospitals relies heavily on communication, continuous quality improvement and multidisciplinary collaboration. Regular training for healthcare professionals, audits of prophylaxis compliance and mortality and morbidity reviews help identify gaps in care and refine institutional protocols. Patient-centered care, shared decision-making and culturally sensitive education further enhance engagement and adherence, ultimately improving outcomes.

CONCLUSION

As healthcare systems continue to evolve, hospitals must remain committed to integrating emerging evidence, advanced diagnostic technologies and personalized medicine into their thromboembolism management frameworks. By adopting comprehensive strategies that span prevention, detection, treatment and long-term follow-up, hospitals can significantly reduce the burden of thromboembolic diseases and deliver safer, more effective care to patients at risk.