Handbook for Venous Thromboembolism

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*The authors dedicate this book to their
mentors, colleagues, and families for their
inspiration, guidance, and support.*

Preface

Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), is the third most common cardiovascular disorder after myocardial infarction (MI) and stroke. Unlike MI and stroke, which occur most commonly in older patients with numerous medical comorbid conditions, VTE afflicts both the young and old and the seemingly healthy and chronically infirmed. Diagnosis and management of VTE cross the boundaries of many disciplines of medicine. PE and DVT are common complications of major surgery, trauma, cancer, and hospitalization for medical illness. VTE is also an important women's health concern, especially during and after pregnancy and with use of hormonal contraceptive or replacement therapy. Accordingly, an understanding of the risk factors, pathophysiology, diagnosis, treatment, and prevention of VTE is critical for most clinicians, not only cardiovascular medicine specialists.

Over the past three decades, the Brigham and Women's Hospital (BWH) Thrombosis Research Group has focused on advancing patient care and clinical investigation in the field of VTE. From epidemiological studies that have promoted our greater understanding of risk factors to pivotal trials of fibrinolytic therapy for treatment of acute PE and computerized decision support to prevent VTE in high-risk patients, the BWH Thrombosis Research Group has sought to bring the breakthroughs in clinical research to the bedside. More than a decade ago, we were approached by our Healthcare System leadership and asked to draft a set of evidence-based clinical practice guidelines that would help our clinicians navigate the rapid advances in VTE diagnosis, management, and prevention. In response, we drafted the first edition of the *Venous Thromboembolism Guidebook*.

Because the field of VTE has evolved, we have published online and in print five subsequent editions of the *Venous Thromboembolism Guidebook*. The emergence of the non-vitamin K oral anticoagulants and new catheter-based techniques for treatment of DVT and PE have presented an ongoing challenge to clinicians at our medical center, throughout the USA, and worldwide. We are delighted to bring our decades of experience and expertise in evaluation and treatment of patients with VTE to a wider audience in the form of this *Handbook of Venous Thromboembolism*.

In the Handbook, we provide a state-of-the-art but practical guide to understanding the risk factors and pathophysiology, diagnosis and risk stratification, and treatment and prevention of VTE. We use clinical vignettes and self-assessment questions to emphasize key concepts from each chapter. We hope that this *Handbook of Venous Thromboembolism* will enable readers to incorporate changes in our rapidly advancing field into the daily care of patients who have suffered or are at risk for developing VTE.

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Abbreviations

aPTT	Activated partial thromboplastin time
CT	Computed tomogram
DVT	Deep vein thrombosis
INR	International normalized ratio
IV	Intravenous
IVC	Inferior vena cava
LMWH	Low molecular weight heparin
LV	Left ventricle
MR	Magnetic resonance
NOAC	Non-vitamin K oral anticoagulant
PCC	Prothrombin-complex concentrate
PE	Pulmonary embolism
PTS	Post-thrombotic syndrome
RV	Right ventricle
SC	Subcutaneous
VTE	Venous thromboembolism