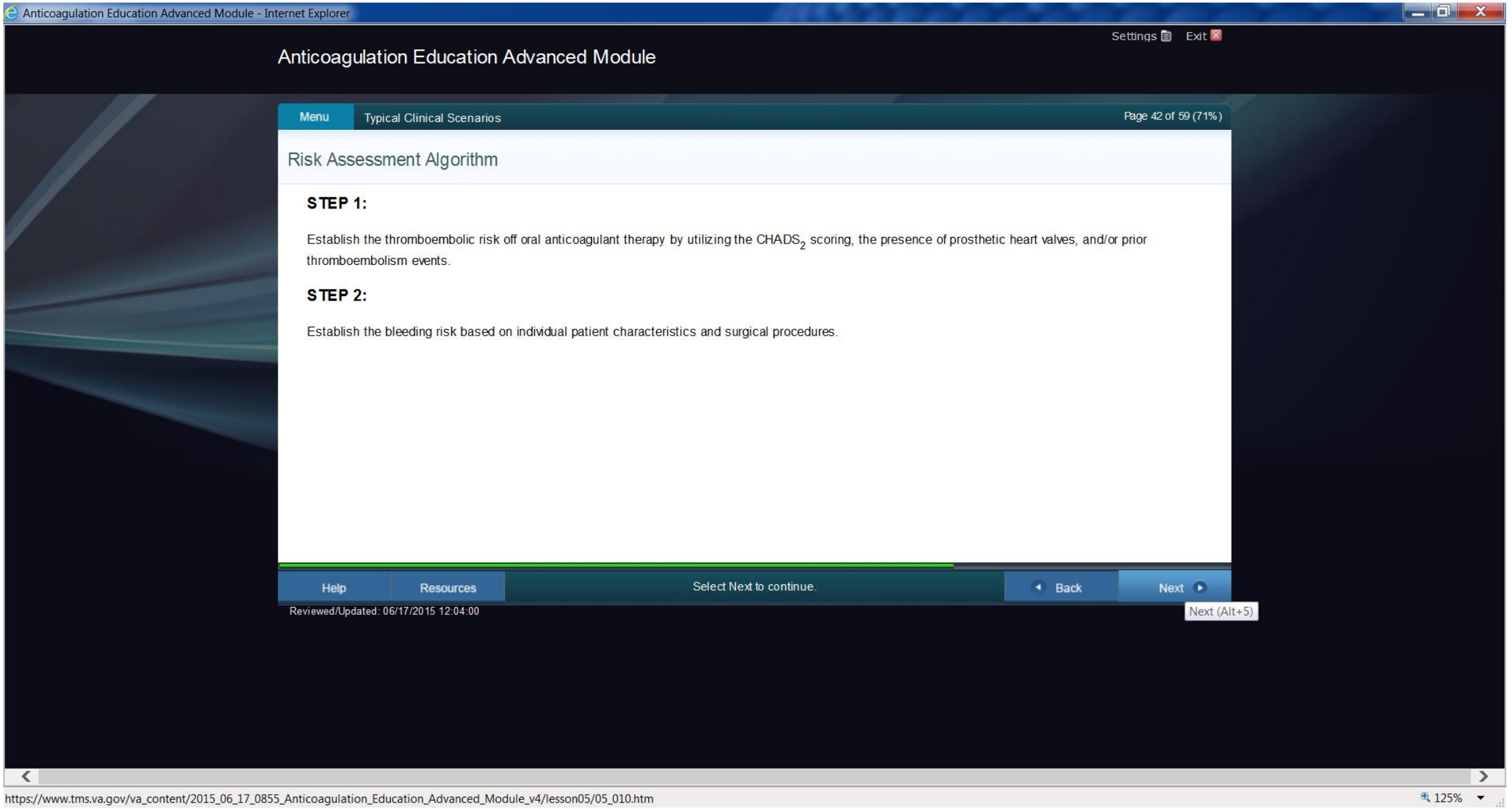
Advanced Anticoagulation Training

TMS Slide Set

2017

Part 3 of 3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Risk Assessment Algorithm
STEP 1:
Establish the thromboembolic risk off oral anticoagulant therapy by utilizing the CHADS2 scoring, the presence of prosthetic heart valves, and/or prior thromboembolism events.
STEP 2:
Establish the bleeding risk based on individual patient characteristics and surgical procedures.
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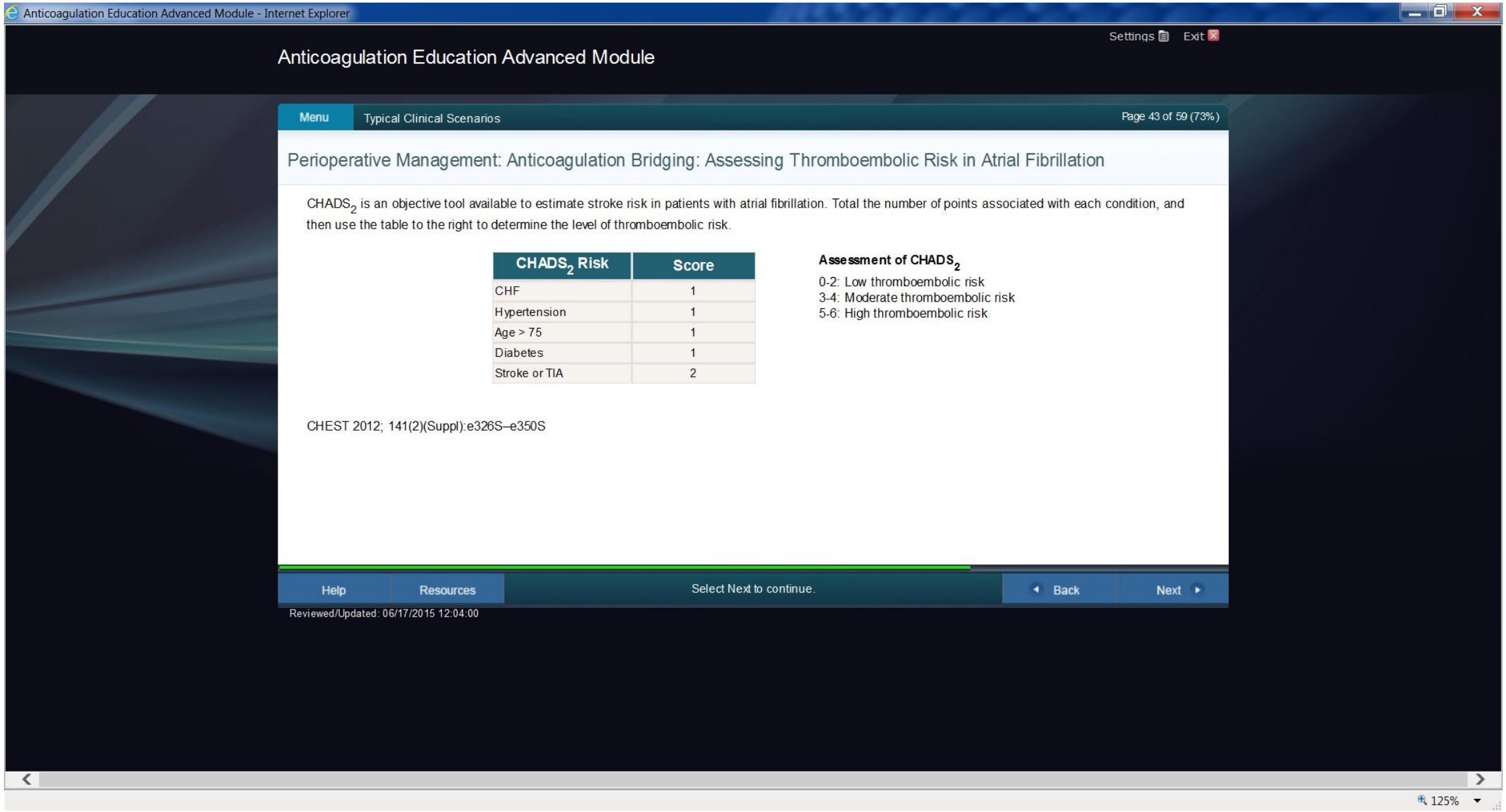
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Perioperative Management: Anticoagulation Bridging: Assessing Thromboembolic Risk in Atrial Fibrillation
CHADS2 is an objective tool available to estimate stroke risk in patients with atrial fibrillation. Total the number of points associated with each condition, and then use the table to the right to determine the level of thromboembolic risk.
CHADS2 Risk
Score
CHF
1
Hypertension
1
Age > 75
1
Diabetes
1
Stroke or TIA
2
Assessment of CHADS2
0-2: Low thromboembolic risk
3-4: Moderate thromboembolic risk
5-6: High thromboembolic risk
CHEST 2012; 141(2)(Suppl):e326S–e350S
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Perioperative Management: Anticoagulation Bridging Risk Stratification for Thromboembolism

Like tools that assess the risk for bleeding and stroke, risk stratifications for perioperative thromboembolism and bleeding are available to assist clinicians' decision-making on whether to bridge a patient taking an anticoagulant.

Suggested Risk Stratification for Perioperative Thromboembolism

Risk Stratum	Mechanical Heart Valve	Atrial Fibrillation	VTE
High*	• Any mitral valve prosthesis • Any cage-ball or tilting disc aortic valve prosthesis • Recent stroke/TIA (within 6 months)	• $CHADS_2$ score of 5 or 6 • Recent stroke/TIA (within 3 months) • Rheumatic Valvular Heart Disease	• Recent VTE (within 3 months) • Severe thrombophilia (Protein C/S deficiency, antithrombin. Antiphospholipid AB or multiple abnormalities
Moderate	• Bileaflet aortic valve prosthesis and one or more risk factors: a.fib, prior stroke/TIA, HTN, DM, CHF, age >75	• $CHADS_2$ score of 3 or 4	• VTE within 3 – 12 months • Nonsevere thrombophilia (heterozygous factor V Leiden or prothrombin gene mutation • Recurrent VTE • Active cancer (treated within 6 months or palliative)
Low	• Bileaflet aortic valve prosthesis without atrial fibrillation and no other risk factors for stroke	• $CHADS_2$ score of 0–2 (no prior stroke/TIA)	• VTE >12 months previous and no other risk factors

* High risk patients may also include those with a prior stroke/TIA occurring >3 months before planned surgery and a $CHADS_2$ score <3, those with prior VTE during temporary interruptions of vitamin k antagonists or those undergoing certain types of surgery associated with an increased risk for stroke/VTE (e.g., cardiac valve replacement, carotid endarterectomy, or major vascular surgery).

CHEST 2012; 141(2)[Suppl]:e330s

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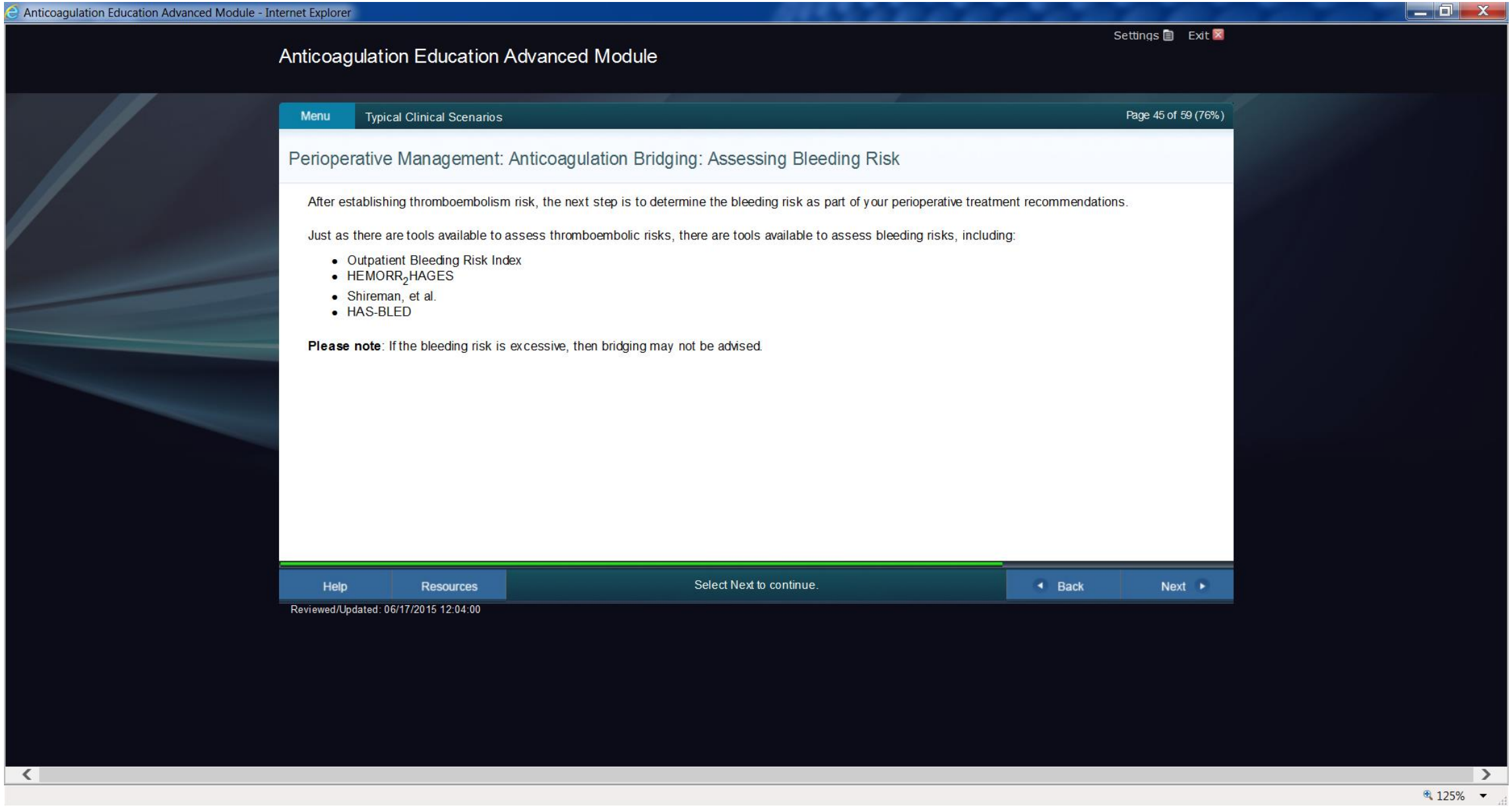
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Perioperative Management: Anticoagulation Bridging: Assessing Bleeding Risk
After establishing thromboembolism risk, the next step is to determine the bleeding risk as part of your perioperative treatment recommendations.
Just as there are tools available to assess thromboembolic risks, there are tools available to assess bleeding risks, including:
Outpatient Bleeding Risk Index
HEMORR2HAGES
Shireman, et al.
HAS-BLED
Please note: If the bleeding risk is excessive, then bridging may not be advised.
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Perioperative Management: Anticoagulation Bridging Risk Stratification for Bleeding Based on Surgical Procedures

In addition to using bleeding risk scores, evaluating the risk of bleeding from the surgical procedure is important. Surgical procedures are divided into low- and high-risk procedures.

Low Bleeding Risk Procedures

- Minor plastic surgery (carpal tunnel repair)
- Minor orthopedic surgery/arthroscopy
- Minor gynecologic surgery
- Minor dental procedures (extraction)
- Minor skin procedure
- Minor eye procedure (cataract)

High Bleeding Risk Procedures

- Major cardiac surgery (heart valve replacement/CABG)
- Major neurosurgical procedure
- Major cancer surgery (head and neck/abdominal/thoracic)
- Major orthopedic surgery (joint replacement/laminectomy)
- Major urologic surgery (prostate/bladder resection)
- Major vascular surgery
- Kidney biopsy
- Cholecystectomy
- Polypectomy, variceal treatment, biliary sphincterectomy, pneumatic dilatation
- Endoscopically-guided fine-needle aspiration
- Any major operation (procedure duration > 45 minutes)
- Abdominal hernia repair
- Abdominal hysterectomy
- Coronary angiography (PCI/EP)
- Pacemaker/cardiac defibrillation insertion*

* delay the initiation of bridging to minimize risk for pocket hematoma

For dental procedures and for patients in the low bleeding risk category, consider continuing warfarin without interruption and using prohemostatic agents.

CHEST 2012; 141(2)(Suppl):e326S–e350S

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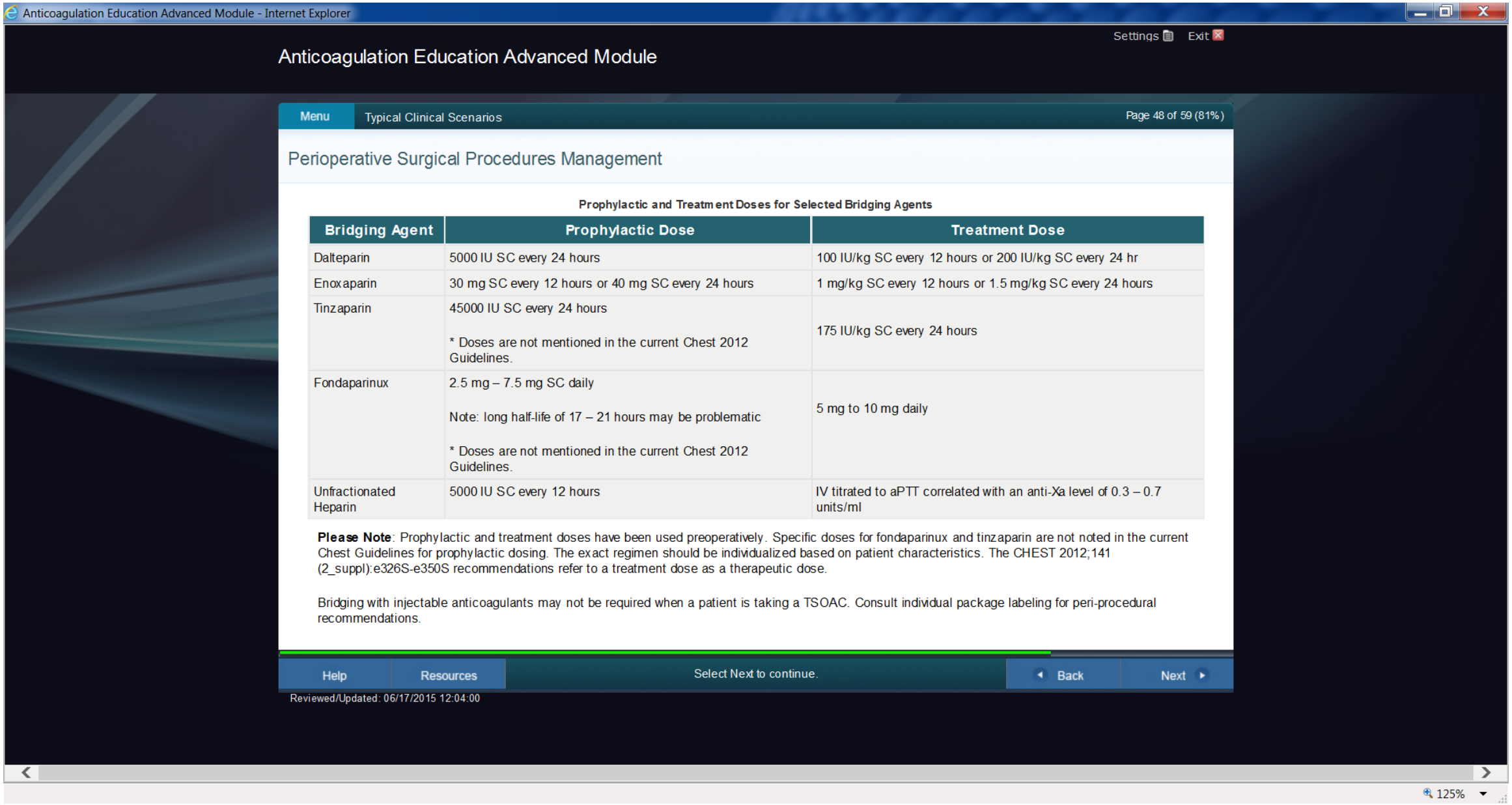
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Perioperative Surgical Procedures Management
Prophylactic and Treatment Doses for Selected Bridging Agents
Bridging Agent
Prophylactic Dose
Treatment Dose
Dalteparin
5000 IU SC every 24 hours
100 IU/kg SC every 12 hours or 200 IU/kg SC every 24 hr
Enoxaparin
30 mg SC every 12 hours or 40 mg SC every 24 hours
1 mg/kg SC every 12 hours or 1.5 mg/kg SC every 24 hours
Tinzaparin
45000 IU SC every 24 hours
* Doses are not mentioned in the current Chest 2012 Guidelines.
175 IU/kg SC every 24 hours
Fondaparinux
2.5 mg – 7.5 mg SC daily
Note: long half-life of 17 – 21 hours may be problematic
* Doses are not mentioned in the current Chest 2012 Guidelines.
5 mg to 10 mg daily
Unfractionated Heparin
5000 IU SC every 12 hours
IV titrated to aPTT correlated with an anti-Xa level of 0.3 – 0.7 units/ml
Please Note: Prophylactic and treatment doses have been used preoperatively. Specific doses for fondaparinux and tinzaparin are not noted in the current Chest Guidelines for prophylactic dosing. The exact regimen should be individualized based on patient characteristics. The CHEST 2012;141 (2_suppl):e326S-e350S recommendations refer to a treatment dose as a therapeutic dose.
Bridging with injectable anticoagulants may not be required when a patient is taking a TSOAC. Consult individual package labeling for peri-procedural recommendations.
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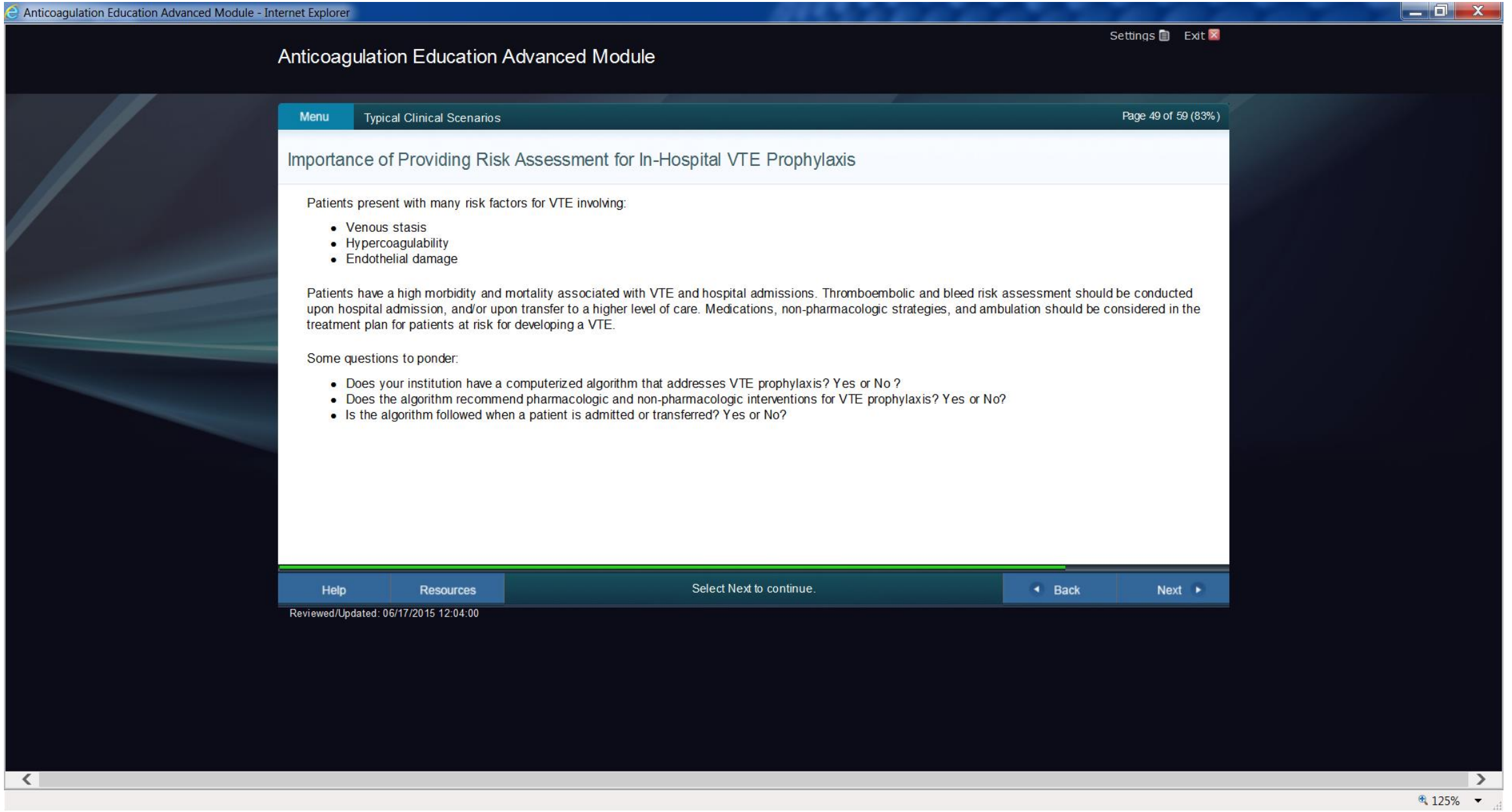
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Importance of Providing Risk Assessment for In-Hospital VTE Prophylaxis
Patients present with many risk factors for VTE involving:
Venous stasis
Hypercoagulability
Endothelial damage
Patients have a high morbidity and mortality associated with VTE and hospital admissions. Thromboembolic and bleed risk assessment should be conducted upon hospital admission, and/or upon transfer to a higher level of care. Medications, non-pharmacologic strategies, and ambulation should be considered in the treatment plan for patients at risk for developing a VTE.
Some questions to ponder:
Does your institution have a computerized algorithm that addresses VTE prophylaxis? Yes or No ?
Does the algorithm recommend pharmacologic and non-pharmacologic interventions for VTE prophylaxis? Yes or No?
Is the algorithm followed when a patient is admitted or transferred? Yes or No?
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VTE Assessment in Hospital: Padua Score

One risk assessment model for identifying hospitalized medical patients at risk for venous thromboembolism, the **Padua Prediction Score**, can be found below.

How does it work?

Total the number of points a patient has from the list of risk factors.

Example: A wheelchair bound male aged 75 years with a previous history of MI and currently undergoing treatment for lung cancer has a total of 6 points.

A score greater than 4 points is considered high risk for VTE.

The following are some usual recommended management strategies for patients in the low, moderate, or high risk category for developing a VTE.

- For low risk of thrombosis: No drugs or mechanical prophylaxis are required.
- For moderate to high risk of thrombosis: The use of anticoagulant thromboprophylaxis with low molecular-weight heparin [LMWH], low-dose unfractionated heparin (LDUH) twice a day or three times a day, or fondaparinux can be considered.
- For moderate to high risk of bleeding: **Do Not Use Medications**.

Below is a list of risk factors for developing VTE.

Risk Factor	Points
Active cancer[a]	3
Previous VTE (with the exclusion of superficial vein thrombosis)	3
Reduced mobility[b]	3
Already known thrombophilia condition[c]	3
Recent (less than or equal to 1 month) trauma and/or surgery	2
Elderly age (greater than or equal to 70y)	1
Heart and/or respiratory failure	1
Acute myocardial infarction or ischemic stroke	1
Acute infection and/or rheumatologic disorder	1
Obesity (BMI greater than or equal to 30)	1
Ongoing hormonal treatment	1

In the Padua Prediction Score risk assessment model, high risk of VTE is defined by a cumulative score greater than or equal to 4 points. In a prospective observational study of 1,180 medical inpatients, 60.3% of patients were low risk and 39.7% were high risk. Among patients who did not receive prophylaxis, VTE occurred in 11.0% of high-risk patients vs 0.3% of low-risk patients (HR, 32.0; 95% CI, 4.1-251.0). Among high-risk patients, the risk of DVT was 6.7%, nonfatal PE 3.9%, and fatal PE 0.4%. HR - hazard ratio.

[a]Patients with local or distant metastases and/or in whom chemotherapy or radiotherapy had been performed in the previous 6 months.

[b]Anticipated bed rest with bathroom privileges (either because of patient's limitations or on physician's order) for at least 3 days.

[c]Carriage of defects of antithrombin, protein C or S, factor V Leiden, G20210A prothrombin mutation, antiphospholipid syndrome.

CHEST 2012; 141(2)(Suppl):e195S–e226S

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Suggestions for Ensuring Safe Use of Anticoagulants

The following are some suggestions to help ensure the safe use of anticoagulants:

- Assurance of continuity of care
- Contact your VA health provider when there is a possible interruption of anticoagulation
- Provide oral education and written instructions whenever a dosage change is made and understand signs and symptoms of bleeding
- Ensure patients receive only one strength of warfarin for use in the home
- Follow up in a timely manner when patients fail to report for laboratory testing and clinic appointments
- Reevaluate the need to continue therapy on an ongoing basis as well as documenting the anticipated length of therapy
- As a means to ensure patients return for follow–up, consideration may be given to limiting the number of refills on the warfarin prescription
- Ensure there is clear communication during discharge and admission between providers doing the management of the anticoagulant therapy
- The Joint Commission NPSG states to use authoritative resources to manage potential food and drug interactions for patients receiving warfarin
- Evaluate your practices, take action to improve and measure the effectiveness of those actions
- Use a comprehensive education plan for patients and caregivers that provides for both oral and written instructions
- Provide for an independent review by the pharmacist of all heparin weight based dosage calculations and use programmable pumps for continuous heparin IV infusions
- Apply your facility's high alert medication procedures to all anticoagulants and be sure the label indicates that the medication is a blood thinner
- Ensure long-term (current) use of anticoagulants is documented on the problem list of outpatients on anticoagulant therapy

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Anticoagulation: Patient Education

There is overlap between the education points for warfarin and TSOACs. Even though there is not INR monitoring with TSOACs, there are specialized educational points that need to be discussed with patients.

Initial and periodic follow up patient and caregiver education should be provided. At a minimum, education should include:

- Capsule or tablet identification
- Proper storage of medication
- Indication for therapy
- Daily dose and administration
- Drug interactions
- Monitoring requirements
- Importance of medication adherence
- The management of missed doses
- Signs and symptoms of bleeding and thromboembolic events
- Non-bleeding adverse events
- Risks associated with falling
- Need to notify anticoagulation provider if scheduled for a procedure
- Communicate the INR target if appropriate and planned duration of therapy

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