Anticoagulation Jeopardy

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JEOPARDY!

Pick Your Poison	Xa marks the Spot	Too much of a Good Thing	London Bridges	I've got DTs	Fragrant Twigs
100	100	100	100	100	100
200	200	200	200	200	200
300	300	300	300	300	300
400	400	400	400	400	400
500	500	500	500	500	500

Daily Double!!!

Daily Double Graphic and Sound Effect!

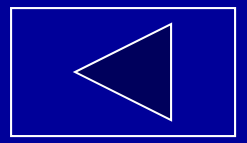
- *DO NOT DELETE THIS SLIDE!* **Deleting it may cause the game links to work improperly. This slide is hidden during the game, and WILL not appear.**
- **In slide view mode, copy the above (red) graphic (click once to select; right click the *border* and choose "copy").**
- **Locate the answer slide which you want to be the daily double**
- **Right-click and choose "paste". If necessary, reposition the graphic so that it does not cover the answer text.**

These are the coagulation factors and regulatory proteins that are vitamin K dependent and are that affected by warfarin administration.

What are factors II, VII, IX, and X

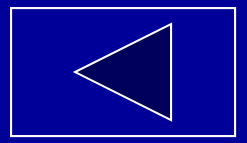
and

protein C and S?



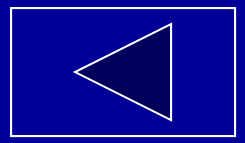
You diagnose a 75 year old man who is on hemodialysis for ESRD with an acute proximal DVT after laparoscopic cholecystectomy.
You start IV unfractionated heparin and warfarin. This is the recommendation according to CHEST 2012 for when the heparin can be discontinued.

What is after 5 days of concomitant therapy and after INR has been in therapeutic range for 2 days (drawn 24 hours apart).



Your 60 year old patient with hypertension and diabetes mellitus is diagnosed with paroxysmal atrial fibrillation. His CHADS-vasc score is 2, indicating anticoagulation is appropriate. He has no insurance, and you decide that warfarin is the most appropriate anticoagulant to prescribe. This is the CHEST 2012 recommended outpatient starting dose for this patient.

What is 10 mg po q day x 2 days, then dose based on INR.



These are three reasons for which the INR goal is 2.5-3.5 (rather than the usual 2-3).

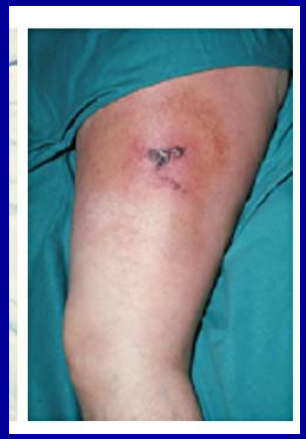
What are:

1) Mechanical valve in the mitral position

2) Mechanical valve + additional risk factor

3) Systemic embolization despite adequate INR (2-3)

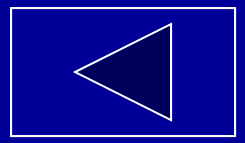
You started your patient on warfarin 5 days ago for atrial fibrillation. Today, she calls your office with complaints of painful skin lesions. This is what you suspect for the diagnosis.



What is warfarin skin necrosis due to protein c deficiency?

This is the first FDA approved anti-Xa inhibitor drug, and was found to be superior to LMWH for the prevention of VTE in patients undergoing surgery for hip fracture repair.

What is Fondaparinux (Arixtra)?



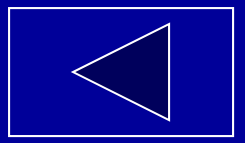
These are the three classes of drugs that should be avoided in patients who take rivaroxaban for anticoagulation purposes.

What are:

1.Azole antimycotics (ketoconazole, fluconazole, itraconazole, voriconazole, and posaconazole)
(increase potency)

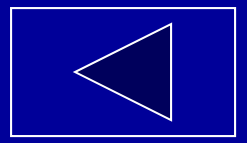
2.HIV protease inhibitors (ritonavir)
(increase potency)

3. Anti-epileptic drugs (phenytoin, carbamezapine, phenobarbital)
(decrease potency)



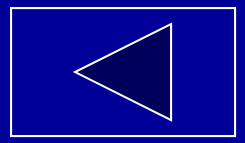
This is the appropriate rivaroxaban dose to use for VTE prevention in patients undergoing surgery for hip replacement, knee replacement, and hip fracture repair, and ***this*** is the creatinine clearance for which rivaroxaban is contraindicated.

What is 10 mg po once daily, and creatinine clearance < 15.



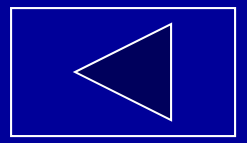
According to the package insert, these are the reasons to use Apixaban (Eliquis) at the lesser dose of 2.5 mg po BID as opposed to the usual 5 mg po BID dose.

What is 2 of 3:
Age $\geq$ 80 years,
Body weight $\leq$ 60 kg,
or Creatinine $\geq$ 1.5 mg/dL.



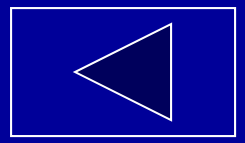
This is the recommended length of time for which to hold Apixaban before a procedure that has a moderate to high-risk of bleeding; and *this* is the length of time to hold Apixaban before a procedure with a low risk of bleeding.

What is 48 hours prior to a moderate to high risk procedure and what is 24 hours before a low risk procedure?



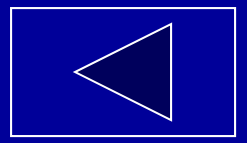
This is the drug you use to reverse the effects of unfractionated heparin in a patient with life-threatening bleeding.

What is protamine sulfate?
(1mg neutralizes 100U of heparin)
Monitor aPTT for normalization



These are two key interventions recommended in 2012 to manage a patient on warfarin who presents with a life-threatening bleed and any degree of INR elevation.

What are simultaneous:
3 or 4- factor prothrombin complex concentrate (PCC) and
IV vitamin K 10 mg slow infusion?

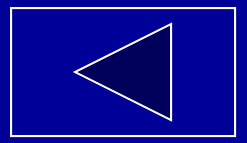


These are the 2012 recommendations for management of a patient on warfarin who presents with an INR of >10 who is ***not*** bleeding.

What is to
give a 2.5-5 mg dose of ORAL vitamin K?

This is what you give to a patient who is having life-threatening bleeding or who needs emergency surgery who is on dabagatran.

What is idarucizumab (praxbind)?



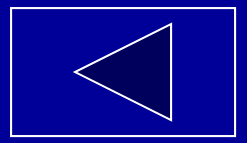
A person with any one of these three medical issues may be at increased risk of developing anaphylaxis to protamine sulfate therapy.

What are:

1)Diabetes mellitus on NPH

2)An allergy to fish

3)A prior vasectomy?

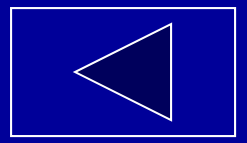


Daily Double!!!

These are four of the 8 procedures that can be performed on full dose anticoagulation according to the 2012 update in periprocedural anticoagulation from the ACC/AHA.

What are:

1) Dental extraction 2) Bone marrow biopsy 3) Endoscopy +/- mucosal biopsy 4) Cataract surgery 5) Dermatologic procedure 6) Venography 7) Pacemaker placement, and 8) Joint aspiration



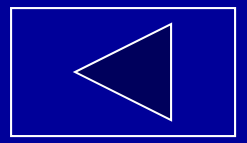
These patients are considered LOW risk for thrombosis and do not require bridging parenteral anticoagulation around the perioperative period.

Who are patients with:

1) Atrial fibrillation, CHADS ≤ 2, and no previous thromboembolism or intracardiac thrombus

2) Bileaflet mechanical aortic valve in sinus rhythm with no previous thromboembolism

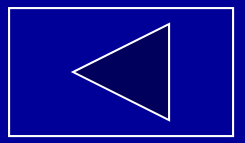
3) VTE greater than 3 months ago without active cancer



Your patient needs an elective surgery and is on warfarin anticoagulation for combined atrial fibrillation and a mechanical aortic valve. He has normal renal function. This is the appropriate perioperative bridging strategy.

What is:

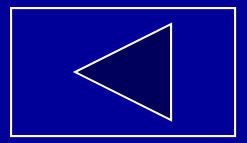
1) Stop warfarin 5 days prior to surgery (PTS)
2) Start LMWH 1 mg/kg q 12 hours 4 days PTS
3) Give 50% last dose LMWH 24 hours prior to surgery



Your patient needs an elective surgery and is on warfarin anticoagulation for atrial fibrillation and a previous thromboembolic stroke. He has normal renal function. This is the appropriate perioperative bridging strategy.

What is:

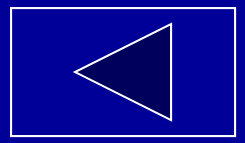
1) Stop warfarin 5 days prior to surgery
2) Start LMWH 4 days prior to surgery (1.5 mg/kg q day)
3) Give 50% last dose LMWH 24 hours prior to surgery



Your patient needs an elective surgery and is on warfarin anticoagulation for atrial fibrillation and a previous thromboembolic stroke. He has CKD 4 with a creatinine clearance of 23 mL/min. This is the appropriate perioperative bridging strategy.

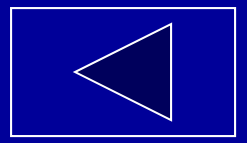
What is:

1) Stop warfarin 5 days prior to surgery
2) Start LMWH at renal dose for CrCl 15-30 q day
3) Follow anti X-a levels
4) Give 50% LMWH dose on day prior to surgery



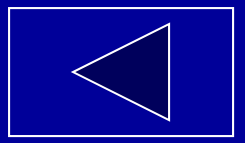
These 3 oral anticoagulants require bridging with parenteral agents and these 2 oral anticoagulants do NOT require bridging with parenteral agents.

What are:
warfarin, dabagatran, and edoxaban
require bridging and
rivaroxaban and apixaban
do NOT require bridging?



This is the first thing you order for a patient who presents with dyspnea and a high pre-test probability for PE by Well's criteria who is hemodynamically stable.

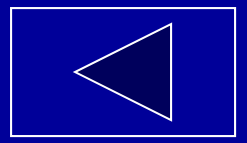
What is an order for therapeutic anticoagulation?



These are three conditions for which a patient with an *unprovoked* DVT should be considered for a hypercoagulable work up.

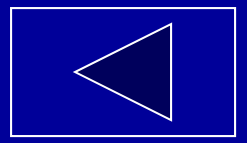
What are:

1) age < 50,
2) positive family history,
3) unusual vascular bed,
4) oral contraception/pregnancy,
5) warfarin skin necrosis?



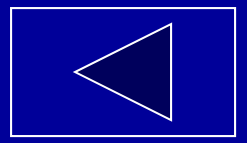
This is the purpose of the PERC (Pulmonary Embolism Rule-Out Criteria) score for evaluation of patients in the ED with suspected pulmonary embolism.

What is to rule out the need for further testing (including d-dimer) in patients who are “negative” for all the clinical variables in the criteria.



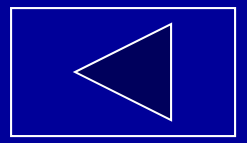
A patient who develops sudden onset of hypertension, tachycardia, and fever within 30 minutes of an IV heparin bolus should have this laboratory value checked stat.

What is a platelet level?
(acute HITT)



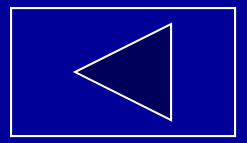
These are 4 of the 8 criteria in the PERC (Pulmonary Embolism Rule-Out Criteria).

What are:
Age ≥ 50, HR ≥ 100, 02 sat < 95%,
Previous history of VTE, Trauma or
Surgery within past 4 weeks,
Hemoptysis, Exogenous estrogen,
Unilateral Leg swelling



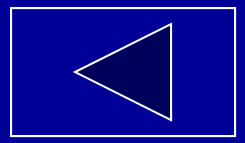
These are three things that can help you favor long-term anticoagulation in a patient with a first episode of unprovoked VTE.

What are:
1) Elevated d-dimer testing one month after stopping anticoagulation;
2) Residual thrombus on doppler ultrasound;
OR
3) Clinical prediction tool:
Men and HERDOO2?



This is still the drug of choice and treatment duration for a patient with a diagnosis of VTE and active cancer, according to the Chest 2016 Update.

What is LMWH for at least 3 months, and anticoagulation recommended as long as cancer is active



These two blood tests ordered at the time of diagnosis of PE are indicative of a severe event and worse prognosis.

What are BNP and troponin?

These are the two unusual tests that you order to evaluate for a hypercoagulable state in a patient with a spontaneous hepatic vein, portal vein, or cerebral vein thrombus.

What are:
1) JAK-2 mutation (PolycythemiaVera)
And
2) Flow cytometry for CD55 and CD59
(Paroxysmal Nocturnal Hemoglobinuria)?