

# Anticoagulation Therapy Management

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Carla Huber, RN MS



# Unit 2

## Laboratory Monitoring



# Laboratory Monitoring

## Objectives

1. Understand the importance of monitoring anticoagulation therapy to decrease the patients risk for bleeding or clotting.
2. What is the INR and how is it calculated?



# Laboratory Monitoring

- PTT
- PT
- INR
  - Recommended INR ranges for patient conditions (Afib, heart valves, DVT, etc.)
  - Managing prolongation of INR



# Laboratory Monitoring

- What is the test used to monitor warfarin therapy?
  - International Normalized Ratio = INR
  - $INR = \frac{\text{patient PT}}{\text{Mean of Normal PT}} \times ISI$
  - The ISI value depends upon the instrument being used to perform the PT
  - INR more consistent way of measuring how fast the blood clots



# Laboratory Monitoring

- Calculate INR if the patient protime is 17.5 and the mean normal protime is 11.6 and ISI is 2.
- $17.5/11.6 = 1.51 \times 1.51 = 2.28$  or 2.3



# Laboratory Monitoring

- Recommended INR ranges:
  - 2.0-3.0 – for most thromboembolic events
  - 2.5-3.5 – for mechanical heart valves and prevention of recurrent MI
- Factors that can alter a patients INR are:
  - Excessive ingestion of green leafy vegetables
  - Excessive alcohol intake
  - Medications such as: INH, phenothiazides, cephalosporins, cholestyramines, phenylbutazone, metronidazole, hypoglycemics, phenytoin, NSAIDS and ASA



# Recommendations for Managing Anticoagulation Therapy in Patients Requiring Procedures

- Low risk of thromboembolism – no recent (<3mo) venous thromboembolism, atrial fibrillation, and bileaflet mechanical cardiac valve in aortic position
- Intermediate risk of thromboembolism – CV disease with multiple strokes or TIAs without risk factors for cardiac embolism, newer mechanical valve in mitral position, AFib without history of cardiac embolism but with multiple risks for cardiac embolism (EF<40%, diabetes, HTN, transmural MI in past month), venous thromboembolism >3-6 months ago
- High risk of thromboembolism – recent (<3mo) history of venous thromboembolism, or mechanical valve in mitral position, or old model heart valve (ball/cage), known hypercoagulable state, Afib with history of cardioembolism



## Recommendations for Managing Anticoagulation Therapy in Patients Requiring Procedures

- Patients considered high risk for thromboembolism and needing surgery should be considered for bridging with a low molecular weight heparin (LMWH) such as Lovenox or unfractionated heparin such as SQ Heparin prior to the procedure
- The ACCP offers guidelines as a reference for bridging



# Point of Care Testing

- Use of point of care devices such as CoaguChek™ and Pro Time™ devices can be used in an office setting or by patients in their home
  - Both companies are providing reimbursement assistance to patients and their treating physicians.
- Check with private insurance carriers for each individual patient



# Point of Care Testing

- Effective July 1, 2002 Medicare coverage of home PT/INR monitoring is limited to patients with mechanical heart valves that meet three requirements:
  - The patient must have been anticoagulated for at least 3 months prior to use of the home monitor
  - The patient must undergo an education program on anticoagulation management and the use of the device
  - Self-testing with the device is limited to a frequency of once per week.



# Unit 2 Questions

1. What is the INR and how is it calculated?
2. Calculate the INR if the patient's protime is 16, the mean protime is 11 and the ISI is 2?
3. A patient on warfarin is having a hip replacement. The pt. had mitral valve replacement 6 mos. ago with a St. Jude's heart valve. Is the patient at high risk for thromboembolism if his warfarin is stopped? Should the provider consider bridging therapy with Lovenox or UH?



# References

See Anticoagulation Unit 1



# Contact information

- Carla Huber, RN MS  
CAT Clinic 600 7<sup>th</sup> St. SE  
Cedar Rapids, IA 52401  
319-558-4045  
[chuber@pcofiowa.com](mailto:chuber@pcofiowa.com)