Learning Objectives
1. Consider medication side effects as a possible cause of increased INR
2. Utilize proper testing protocols when measuring INR in the setting of telavancin use.

Case Description
HP: 61yo female with severe scoliosis s/p T4-sacrum posterior spinal fusion in August 2009
- Recurrent MRSA positive abscesses and spine osteomyelitis
- Resistant to vanco, dapt, PNC, b-lactams after therapy
- Sensitive to telavancin (Astellas Pharma, Deerfield, IL), a new lipoglycopeptide
- Admitted for hardware replacement, started on telavancin
- Pre-op lab work: INR = 2.5. Previously, INR = 1.0

PMH: No history of bleeding or coagulation disorders. No nutritional deficiencies. No coumadin or anticoagulants.

Physical Exam: Unremarkable. No bruising or ecchymoses.

Labs:
- PT/INR: 14.0/4.4
- aPTT: 29.6
- Factor V: 118, Factor VII: 166, Factor X: 153
- Ca: 8.2, Mg: 2.0

Coagulation studies: (all normal)
- aPTT: 29.5
- Thrombogenic 92
- Factor V: 118, Factor VII: 166, Factor X: 153

Hospital Course:
- Day 1: INR = 2.5
- Day 2: INR = 2.0. Vitamin K 1mg given
- Day 3: INR = 1
- Day 4: INR = 2.4

Hospital Day 5: Anticoagulation team consulted and medications reviewed. Telavancin can interfere with certain INR reagents, confirmed by in vitro testing. Alternative reagent used, and INR normalized
- Day 8: INR = 1.0 with new reagent in assay.
- Day 9: Surgery performed successfully without complications.

Figure 1: Hospital day 1 (9/2/11) shows a elevated INR at 2.51. Vitamin K was given on day 2, which was initially believed to be responsible for the normal INR seen on day 3. INR was measured with the Innovin (Dade Behring, Liederback, Germany) reagent until day 8. INR was measured with the alternative reagent, RecombiPlasTin 2G (Instrumentation Laboratory, Bedford, MA), on days 8 and 9, reflecting the true INR.

Hospital Day 5

PT/INR testing

Discussion:
- While the incidence of hospital associated MRSA is decreasing, community acquired MRSA infections are increasing.
- 2004 (most recent year with CDC available data):
  1. 11 million visits for skin infections caused by S. aureus.
  2. Of these, 78% were caused by CA-MRSA.
- Telavancin:
  1. Provides a new treatment option for highly resistant MRSA.
  2. Can cause elevated INR measurements, when using standard reagents.
- True INR can be obtained 2 different ways:
  1. Use of an alternative reagent that is not affected by telavancin. Our institution uses RecombiPlasTin 2G (older reagent). The manufacturer recommends drawing blood samples immediately before the next daily dose of telavancin.

References:
- USI. USI. "USI, Inc., 2009.
- Malathi, C. Gupta, MD; Aseellas, R. A capillary whole blood method for measuring the INR. Clinical Laboratory Standards Institute. 2005 (CLSI).