Part IV: Getting Help

John finally agreed to go in for simple testing. The report from his ABI testing is found below:

**ABI WORKSHEET**

**Right Arm:**
- Systolic Pressure: 142 mmHg

**Left Arm:**
- Systolic Pressure: 138 mmHg

**Right Ankle:**
- Systolic Pressure: 058 mmHg
  - Posterior (PT): 058 mmHg
  - Dorsalis Pedis (DP): 060 mmHg

**Left Ankle:**
- Systolic Pressure: 120 mmHg
  - Posterior (PT): 129 mmHg
  - Dorsalis Pedis (DP): 120 mmHg

**Ankle-Brachial Index Interpretation**
- Above 0.90 = Normal
- 0.71 - 0.90 = Mild Obstruction
- 0.41 - 0.70 = Moderate Obstruction
- 0.00 - 0.40 = Severe Obstruction

**Right ABI equals Ratio of:**
- Higher of the Right Ankle Pressures (PT or DP)
- Higher Arm Pressure (Right or Left)
  
  \[
  \frac{142 \text{ mmHg}}{60 \text{ mmHg}} = \frac{142}{60} = 2.333
  \]

**Left ABI equals Ratio of:**
- Higher of the Left Ankle Pressures (PT or DP)
- Higher Arm Pressure (Right or Left)
  
  \[
  \frac{120 \text{ mmHg}}{142 \text{ mmHg}} = \frac{120}{142} = 0.847
  \]

*The lower of these numbers is the patient's overall ABI.*

Overall ABI (lower ABI) = 0.42

1. Compute John Jones’ ABI.
2. Copy the chart of normal and abnormal ABI values into your laboratory journal.
3. Work with your partner to analyze your findings, discuss treatment and answer the following:
   - What do the values for ABI imply about John’s legs?
   - What is most likely occurring inside John’s leg to cause this increase in peripheral pressures? How does this relate to smoking?

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HBS – Activity 4.3.5: Smoking Can Cost You an Arm and a Leg! – Page 1
What is arteriosclerosis? What is the difference between arteriosclerosis and atherosclerosis?

How can atherosclerosis be linked to PAD?

What other tests can be performed to confirm this diagnosis?

If tests confirm that John has a clot in his leg, what treatment options may help relieve his pain and save his leg?

Visit the Howard Hughes Medical Institution BioInteractive site at [http://www.hhmi.org/biointeractive/cardiovascular/lectures.html](http://www.hhmi.org/biointeractive/cardiovascular/lectures.html) and view the video webcast for Lecture One. Once the video begins playing, move the cursor to fast forward the video to 34:20. You will watch the clip from this point until 40:00. The video clip shows damage to blood vessels in the heart. How can what you saw be applied to the blood vessels of the leg?

Work with your team of four to design a way to show PAD on your Maniken®. Also, use your model to demonstrate a medical intervention that may help treat this condition.

Share your Maniken® medical intervention with the class.

Conclusion

1. What is your ABI? What does this value tell you about your risk of peripheral artery disease?

2. Explain how PAD might impact other body systems.

   muscular system will not function properly

3. How do the chemicals in smoke relate to the development of atherosclerosis?

   lead to hardening of the arteries

4. Why do you think diabetics are also at increased risk for PAD?

   they also have harder arteries

   BP: blood is thick

   plaque buildup

5. Explain why untreated PAD can lead to the loss of a leg. Make sure to mention the specific arteries of the leg.

   tissues in the leg lose O2 for too long which kills them

6. Explain how the endocrine system and the kidneys help play a role in regulating blood pressure.

   kidneys cause arteries & veins to constrict and increase circulating blood volume