

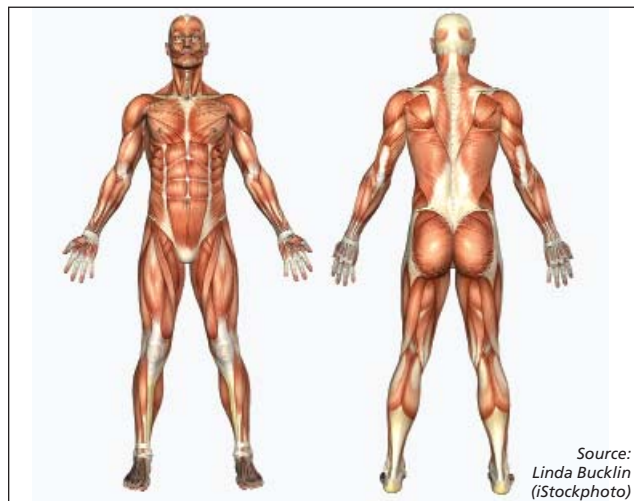
Understanding the Human Body: Sharpening Your Medical Terminology Skills—Part 2

Jonathan Hill

As discussed in this column in the May/June issue of *BI&T*, the need to learn and understand medical terminology can help biomedical and clinical engineering technicians work better with other medical professionals. Just knowing the words, however, is not enough. There needs to be an understanding of the physiology that the words describe and define. It is just as important as knowing the medical equipment our profession is expected to maintain. Without this understanding it can make your job more difficult as well as delay some repairs. This article will discuss a few of the systems within the human body and how you can learn more about them.

When a technician or manager is addressing a problem with a particular piece of medical equipment, it is essential to know how that equipment will interface with the human body. Take, for example, the equipment that will be used with the respiratory system. There are ventilators, pulmonary function devices, and oxygen monitors—just to name a few. The respiratory system consists of the lungs, larynx, nose, bronchi, trachea, and the alveoli. They work with the lung capillaries to allow oxygen to enter the bloodstream and remove carbon dioxide. Knowing how breathing occurs with the diaphragm and intercostal muscles or even knowing the pulmonary volumes—such as the tidal volume, residual volume, or the minute volume—helps us understand specific parameters that are expected to be achieved and help give us clues as to potential problems with the equipment.

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Ventilators have several functions and when problems occur while connected to a patient, it is essential to speak with the respiratory technician to determine what malfunction actually occurred. Knowing a modicum of information can be a great help in the troubleshooting of these devices. Some of the most common problems involve the tubing and their connections, leaks that develop, and the need for keeping the hoses clear of obstructions and fluids. By listening to the operators of the device, you can gain clues as to what the exact problem is. The more information you have about how things work will increase your speed to problem resolution and enable you to be a better resource.

Some other body systems and the machines that either interface with them directly or indirectly include:

- Circulatory — Heart-lung machines, blood cell analyzers, sphygmomanometers
- Nervous — Electroencephalographs, nerve stimulators
- Gastrointestinal — Fluoroscopy rooms, gastroscopes
- Musculoskeletal— X-ray machines, electromyographs

Although these are not all the systems within the human body, it does give a picture of our work environment in which we perform. The circulatory system consists of the heart, arteries, veins, and capillaries in order to circulate blood carrying vital nutrients and oxygen to the various cells and organs of the body. In exchange for this, the cells and organs release carbon dioxide and waste back into the blood for removal. This is a simplistic overview of the circulatory system, yet there are various machines that are used to understand any breakdown in the system.

The blood cell analyzer can be used to get a count of the red (erythrocytes) and white (leukocytes) blood cells otherwise known as RBC and WBC, respectively. Although these counts are not all the device can do, the device is essential in any diagnostic laboratory. This device needs to be precise in its workings and requires controls to be run daily and calibrations to be performed when needed. The data obtained from analyzers can provide help to medical professionals for treatment decisions. For example if the leukocyte count is up, it provides an indication that a possible infection may be present.

Studying the physiology of the human body is not for everyone. When someone cannot relate a subject to something they are interested in, it can be difficult to gain that interest. One method for learning this subject for engineers is to ask the medical professionals they work with. This can be difficult when trying to demonstrate competence but it is better to know your subject than to walk around blindly. The information that they can give will allow you to better understand

their problem and reach solutions quicker. Understanding the terminology will help you grasp the information they are trying to convey.

Another method is again the Internet. Simply typing key words such as “anatomy,” “physiology,” or even “human body” into search engines will give you numerous websites. The information age has allowed us access to more information than we could hope for. The Internet is a valuable tool to use whether you are working toward certification, brushing up on a subject, or investigating a problem.

In conclusion, working in a medical profession requires us to know about the human body. Understanding medical terminology as well as the function of the medical devices to be used is essential for job-related competence and better communication with those we work with. No matter which medical device is used—whether for diagnostic use or treatment—they all have an impact on the treatment decisions made by medical professionals. ■


Test Your Medical Terminology Knowledge

- 1) Each of the following are part of the respiratory system except:
 - a. lungs
 - b. bronchi
 - c. alveoli
 - d. thorax

- 2) Leuko means:
 - a. red
 - b. white
 - c. blue
 - d. green

- 3) What types of machines does the circulatory system often interface with?
 - a. Heart-lung machines
 - b. Blood cell analyzers
 - c. Sphygmomanometers
 - d. All of the above

Answer Key: p (ε q (z p (t



**ICC/USCC 2005
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APPLICATION DEADLINES:	EXAM DATES:
Sept. 24, 2005	Nov. 5, 2005

If you have any questions regarding any aspect of the ICC/USCC Certification, contact Iman Hannon, certification coordinator for the ICC, at ihannon@aami.org.