divided by the sum of the probabilities of true negatives and false positives [TN/(TN+FN)].

To return to Dr. Starke’s concern, a negative result of a test on a particular member of a low-prevalence population inspires greater confidence than a negative result on the very same test in a member of a high-prevalence population. That is, as the prevalence of disease increases, a negative test is increasingly likely to be falsely negative than truly negative. This is an intractable function of the mathematics (Bayes theorem) and is true, alas, even if the test’s specificity is 100 percent. So that’s why it’s simply incorrect to talk about “...a very high specificity ... in high- and low-prevalence populations...”

I hope I haven’t confused you too much.

Robert Carlen, M.D.,
Sayville, New York

REFERENCES

To the Editor:

Thank you for your letter in response to my editorial in the August, 1993, issue of Chest (Chest 1993; 104:329-30). Your comments, of course, are correct and you caught me being a bit sloppy in the use of statistics terminology. I am somewhat embarrassed as I frequently lecture about the use of Mantoux tests in high- and low-prevalence populations, and I use the Bayes theorem for mathematics to illustrate the pitfalls of this test.

I believe that the concept I was trying to discuss, the importance of a high specificity for a diagnostic test for tuberculosis in children, remains valid as do my remarks about the paper I reviewed. As you point out, the characteristics and utility of a test vary both by test-related factors (sensitivity and specificity) and population-related factors (predictive values). The authors attempt to deal with the test-related factors, and I—clumsily—tried to address some population factors.

I appreciate your attention to detail and your willingness to point out my transgression. It’s nice to know people are reading about the subject so keenly.

Jeffrey R. Starke, M.D.,
Baylor College of Medicine,
Houston, Texas

August 1992. Her husband’s new insurance carrier will maintain her coverage and she agrees to travel across the state for transplant evaluation. Though the cause of her condition is unknown, we send all of her test results including the negative data—normal sweat chlorides, normal α-1-antitrypsin, and normal ciliary brush biopsy; along with computed tomography scans and bronchograms. Caroline prepares her multiple oxygen tanks for the 6-hour drive and heads west with her husband.

September 1992. Caroline is accepted for double lung transplantation and begins her waiting period with a beeper in her house and an air ambulance crew on standby.

December 1992. A resistant Xanthomonas infection brings Caroline into the hospital. Because of drug allergy, we desensitized her to the only IV agent with reasonable in vitro sensitivities for this organism and continue therapy for 2 weeks. Her oxygen requirements are now at 4 L, and she has begun to retain CO₂ as a consequence of respiratory failure.

April 1993. Still waiting. Recurrent pneumonia requires additional inpatient therapy. At home after discharge from the hospital, she no longer has the strength to climb stairs and her husband now carries her up in the evening. Oral thrush has become difficult to suppress, but does not progress.

June 1993. I read the frustration on her face, which is unspoken when Governor Casey receives a heart and liver within several days of being listed. I try to explain how the waiting procedure for patients with lung disease differs and that we will have to be patient for her organs to become available.

August 1993. Caroline is rehospitalized with recurrent Gram-negative pneumonia and new left lower lobe atelectasis. She now requires 6 L of oxygen per minute and we attempt bronchoscopy to re-expand the left-lower lobe. Despite vigorous therapeutic suctioning, the left lower lobe fails to expand, but fortunately she tolerates the procedure well. With her two young daughters and husband in her room, I explain my hope that we will get a call soon. She can read the anxiety in my face, sensing that there is not much time. Later that week, she has improved and we discharge her home.

October 1993. Her first year anniversary of being placed on the waiting list has passed uneventfully. On the morning of the phone call, my thoughts are otherwise occupied with patients, teaching, and paperwork. Sitting at my desk, my pager signals an outside call. Expecting my wife, I pick up the phone and a voice says, "Caroline is in the OR. We started at 8:00 this morning. She was flown in overnight."

I sit back with my raised fist clenched. The waiting is over.

Gregory C. Kane, M.D.,
Jefferson Medical College,
Philadelphia

Reprint requests: Dr. Kane, 1025 Walnut Street, 805 College, Philadelphia, PA 19107

Waiting for a Phone Call

To the Editor:

The message came to me at 9:00 AM. I stood silently and re-collected the journey of a patient named Caroline.

May 1992. Caroline’s condition has become progressively worse. At 38 and outwardly healthy, her lung function is rapidly declining. Her daily productive cough and intermittent hemoptysis now require daily suppressive antibiotic therapy. We suggest that she consider lung transplantation, but she is hesitant because of her husband’s recent job change and worries over lost insurance coverage. While we wait for word to proceed, we begin oxygen therapy because of exercise hypoxemia.

Errata

The equation found on page 1840 for the ACCP Consensus Conference published in December 1993 (Chest 1993; 104:1833-59) should read: "D_{O_2}=Q(T(1.39 \text{ Hgb} \times \text{Sao}_2)+0.003\times\text{PaO}_2)."

Dr. Steven H. Linder’s functional electric stimulation (FES) belt to enhance cough in quadriplegia, as mentioned in Dr. John R. Bach’s “Update and Perspective on Noninvasive Respiratory Muscle Aids: Part 2, The Expiratory Aids” (Chest 1994; 105:1538-44), is still in investigational stages and is not commercially available at this time.