Shaw and colleagues* have reported on Aβ1-42 for the detection of mild Alzheimer's disease (AD). Data describing the results of this test in a sample of 56 autopsy-confirmed people with AD and 52 cognitively normal (NC) people are reported in the Figure on the next page.

1. Use one of the three methods we reviewed during Monday’s class and calculate stratum specific likelihood ratios for Aβ1-42 readings of <130, ≥130 to <185, and ≥185. Note: the strata are defined by the solid vertical lines, NOT the dashed vertical line. See bottom of figure for information about observations that appear to touch the lines or that overlap each other. Assume that the 52nd normal observation lies in the lower right corner of the figure (Aβ1-42 >200 and Tau <90).

2. Suppose your pre-test probability is 3% and your ratio of the difference in outcomes among people without disease to the difference in outcomes among people with disease is .75 to 1. If the test result for this patient is between 130 and 185, what is your post-test probability of disease? Is the resulting post-test probability larger or smaller than the treatment threshold? Do you recommend treatment or no treatment?

3. Which results should be classified as positive and which as negative tests?

4. If the test result for a patient with a 11% pre-test probability is between 130 and 185, what is your post-test probability of disease? On which side of the treatment threshold does your post-test probability fall, treatment or no treatment?

5. Which results should be classified as positive and which as negative tests?

Please show your work; report SSLR and probabilities to 3 decimal places.

Plot of cerebrospinal fluid (CSF) tau concentration versus CSF amyloid-B 1 to 42 peptide (AB$_{1-42}$) concentration for 56 autopsy-confirmed (AD) cases (solid circles) and 52 elderly cognitively normal (NC) subjects (open circles). Vertical lines added at AB$_{1-42}=130$ and AB$_{1-42}=185$. NOTE: In addition to the 5 visible partially overlapping open circles with AB$_{1-42}>200$, consider one additional open circle in this region to represent 2 cases.