

Determining the Sensitivity and Specificity of the Beryllium Immuno-Lymphocyte Proliferation Test as Compared to the Standard ^3H - Thymidine Be Lymphocyte Proliferation Test

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Lymphocyte Proliferation Test (LPT)

- Some individuals in the general population have T cell receptors that can recognize Beryllium
- When exposed to Be, these individuals mount an immune response mediated by T cells
- Once exposed (stimulated) Be-responsive mature T cells proliferate in response to Be
- LPT measures the proliferation in lymphocytes derived from peripheral blood

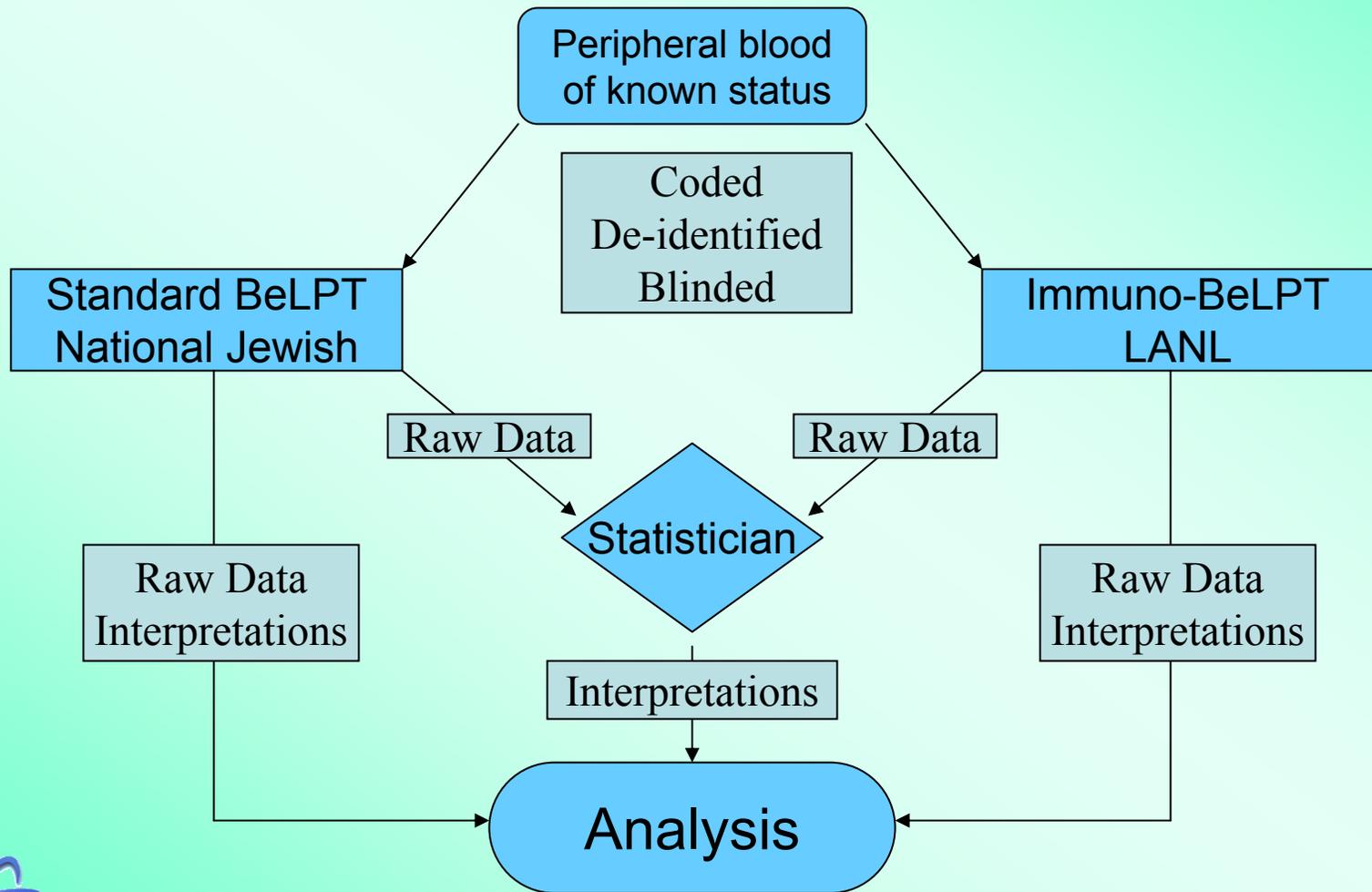
Immuno-LPT

- Peripheral blood is separated into lymphocytes
- Lymphocytes are cultured for several days in presence (or absence) of Be
- Cells are stained with CD4+ and CD8+ specific markers as well as a marker for DNA replication (proliferation)
- Samples are analyzed on a flow cytometer. Each cell (particle) is analyzed based on CD4/CD8 and incorporation of BrDU
- Proliferating CD4+ cells are responsive to Be

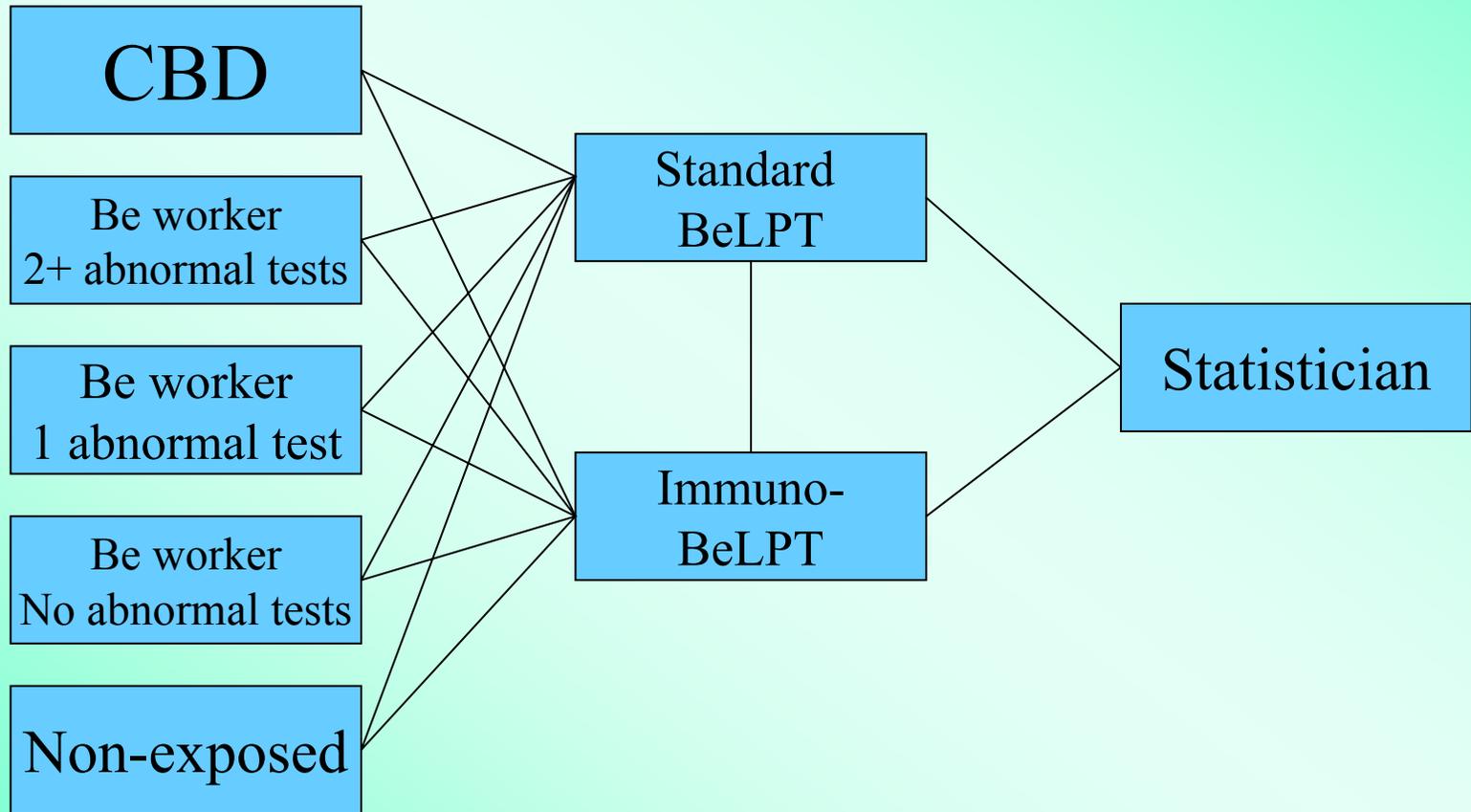
We need a more accurate and reliable test

- PPV of Standard BeLPT is 0.49
- False positive (abnormal) tests produce anxiety and fear
- Many workers refuse to get into or stay in surveillance programs
- No consensus as to extent of Be sensitization
- Cannot screen general population

Experimental Design



Statistical Analysis



What this study does...

- Tests the Immuno-BeLPT in blind test against samples of known status
- Compares the Immuno-BeLPT to Standard BeLPT in terms of success of one test
- Compares statistical analysis to bench-top interpretation
- Is an important step in determining if the Immuno-BeLPT is a viable alternative to the standard BeLPT

Benefit to Be workers

If the Immuno-BeLPT proves to have a better PPV than the standard test...

- Less fear and anxiety about taking the test
- Fewer workers will decline to take the test
- More participation in surveillance program
- Larger cohort to study
- Better understanding of the underlying mechanisms of Be sensitization and CBD