



**2010 ASCO Annual Meeting
General Poster Session**

Cost-Effectiveness of an Autoantibody Test as an Aid to Diagnosis of Lung Cancer

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Background: An AABT to aid in lung-cancer diagnosis has been recently developed. While less sensitive than computed tomography (CT), it can detect smaller and less advanced cancers and has greater specificity. The cost-effectiveness of AABT in this use is unknown.

Methods: We developed a model depicting the consequences of screening – a single time – a hypothetical cohort of 100,000 high-risk screening-naïve patients for lung cancer using CT followed by AABT if positive (CT->AABT) vs CT alone and no screening (with CT or AABT). Non-small-cell lung cancer (NSCLC) – indolent and aggressive types – and small-cell lung cancer (SCLC) were considered. Sensitivity and specificity of AABT (price=\$300) were assumed to be 40% and 90% (data on file, Oncimmune Ltd.); for CT (price=\$301), were calculated to be 47% and 49% from a “prevalence-screen” perspective using data from the Mayo Clinic screening study. Cancers detected with CT->AABT were assumed, on average, to be smaller and less advanced due to more aggressive work-up of patients positive on both tests. Cost-effectiveness was calculated as the ratio of the difference in expected costs (2008US\$) to the difference in life-years (LY) (and quality-adjusted life-years [QALYs]) for CT->AABT vs CT alone and no screening.

Results: A total of 2901 of the 100,000 high-risk persons would be expected to have undiagnosed aggressive NSCLC or SCLC. Of the 2901 cases, 1363 (true-positives) would be detected with CT->AABT or CT alone and would gain 6.3 and 5.7 LYs, respectively, vs no screening; false-positives would total 49,079.

Model outcomes (discounted)	No screening	CT	CT -> AABT
LY	1,505,557	1,509,526	1,510,392
QALY	1,303,417	1,305,991	1,306,651
Costs	\$230,946,859	\$311,161,933	\$327,875,140
Screening	\$0	\$30,051,000	\$43,780,230
Diagnostic	\$10,480,549	\$51,227,441	\$55,250,510
Treatment	\$220,466,310	\$229,883,492	\$228,844,400

Cost per LY gained with CT->AABT vs no screening was \$20,044, and vs CT alone, \$19,293. Estimates of cost per QALY gained were similar.

Conclusions: Screening high-risk patients for lung cancer using AABT as an aid to CT based on the above assumptions is likely to be cost-effective by current standards in comparison with screening with CT alone or no screening.