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Title: The utility of bronchoscopically acquired tissue for successful lung cancer molecular profiling (LC-MP)

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Body: Background: Molecular profiling of NSCLC is key to personalized LC therapy. Until now, the focus has been on EBUS- TBNA sampling of regional Lymph Nodes. This study compares tissue from primary lung cancers Vs LNs for successful lung cancer molecular profiling (LC-MP). Methods: Retrospective review of primary lung adenocarcinomas diagnosed bronchoscopically by single physician (RY). Tissue adequacy was determined by pathologists (K.L; P.I) who selected the best source of material for LC-MP. The cases were tested sequentially for KRAS, followed by EGFR, ALK and on occasion BRAF. Results: 54 cases of adenoCA, & 7 Not-Otherwise-Specified CAs from 94 NSCLC were analyzed. 36 of these 61 cases (59%) had adequate tissue for LC-MP testing. KRAS+:14/36 (39%), EGFR+:7/36 (19%), ALK+: 2/36 (6%) and BRAF+: 1/36(3%) .

In these 36 patients, we tried 80 approaches with different biopsy techniques and had 69 positive tumor sample sources, Pathologists preferentially selected primary LC biopsies in 80% of cases (47% Transbronchial forceps bx; 25% Endobronchial bx; 8% TBNA extrabronchial central tumor) and 20 % from LNs (EBUS-TBNA) for LCMP. Conclusion: Primary LC tissue obtained from transbronchoscopic biopsy techniques are suitable and sufficient for multiple cancer biomarkers, and are often preferred over LNs for molecular profiling. Multi-source sampling is recommended at time of initial tissue diagnosis.