2018 ASCO ANNUAL MEETING
DELIVERING DISCOVERIES: EXPANDING THE REACH OF PRECISION MEDICINE

June 1-5, 2018
McCormick Place | Chicago, IL
#ASCO18

**Abstract:** # 6513

**Poster Board:** #339

**Poster Discussion Session:** Saturday, June 2, 2018, 4:45 – 6:00 p.m., at S102

**Post Discussion Location:** Hall A

---

## *Cost-effectiveness of multi-gene panel sequencing (MGPS) for advance non-small cell lung cancer (aNSCLC) patients*

**Background:** MGPS, compared to single-marker genetic testing (SMGT), has the potential to identify more patients who could benefit from targeted therapies, but the impact on outcomes and total costs of care is uncertain. Our goal was to estimate the cost-effectiveness of MGPS vs SMGT in aNSCLC.

**Methods:** aNSCLC patients (stage IIIB or metastatic) diagnosed between 2011-2016 were identified from the Flatiron Health database, representing curated electronic health record-derived clinical information from >250 oncology practices nationwide. After stratifying patients in MGPS or SMGT cohorts, we analyzed the percentage of patients that receive targeted treatment; survival; and total costs of care. SMGT included EGFR and ALK testing; MGPS also allowed detection of BRAF, RET, ROS1, HER2 and MET mutations. Cost data sources were the CMS Fee Schedule and 2017 ASP drug cost. We estimated the incremental cost-effectiveness ratio (ICER) and performed sensitivity analyses from a US payer perspective over a lifetime horizon, using a decision model.

**Results:** We identified 5688 aNSCLC patients receiving MGPS (n=875) or SMGT (n=4813), of which 22% tested positive for EGFR (18.5% MGPS, 17.3% SMGT) or ALK (3.59% MGPS, 3.78% SMGT). Among MGPS tested patients, an additional 8% were found to have BRAF, RET, ROS1, HER2 or MET mutations. Of MGPS tested patients, 21% received targeted treatments vs 19% with SMGT. Observed survival was 1.14 life years (LYs) in SMGT vs 1.20 LYs in MGPS. Lifetime total costs were $8,814 higher per patient for MGPS. The ICER of MGPS vs SMGT was $148,478 per LY gained. If all patients with actionable mutations would receive targeted treatment in MGPS-guided care vs the proportion currently receiving targeted treatments under SMGT, the ICER would be $110K/LY gained. Sensitivity analyses shows widely varying ICERs ($139/LY to $661,625/LY).

**Conclusion:** Based on data from a nationwide oncology patient database, MGPS has moderate cost-effectiveness compared to SMGT in aNSCLC patients. Efforts to increase the proportion of patients who receive targeted therapies would improve the cost-effectiveness of MGPS, assuming incremental costs and outcomes of targeted treatments remain unchanged.