correlation of its baseline values to the efficacy of pemetrexed and performed a dynamic monitoring study in NSCLC patients who underwent first-line platinum-based chemotherapy.

**Methods:** This study enrolled 70 NSCLC patients who received first-line platinum-based chemotherapy. The CTCs were quantified by negative enrichment using immunomagnetic beads in combination with folate receptor-directed PCR that allows secondary amplification of tiny amounts of CTCs in peripheral blood. In this study, the CTC levels were examined by collecting 3 mL of anti-EDTA whole blood samples before the treatment and after every chemotherapy, and followed up until progressive disease (PD) or completion of first-line chemotherapy.

**Results:** Of twenty-two patients who received pemetrexed disodium/platinum combined therapy (AP/AC), the patients harboring high levels of folate receptor showed greater efficacy than those with low expression levels (8.7 < CTC level < 16, n = 7; PFS: 448 vs. 94 days, P = 0.0199; ORR: 75% vs. 11%). In the dynamic monitoring study, the CTC level (AUC = 0.8026, P = 0.0033), the CTC ratio (AUC = 0.8422, P = 0.0003), the rate of CTC changes (OR = 102.005, P = 0.0012) after the second chemotherapy and the CTC level (AUC = 0.9487, P < 0.0001), the CTC ratio (AUC = 0.8889, P < 0.0001), the changing rate of CTCs (OR = 51.662, P = 0.0031) after the fourth chemotherapy positively correlated to the disease progression.

**Conclusions:** The patients with high expression of folate receptor-positive CTCs appear to have superior response to pemetrexed than those with low expression. Additionally, the changes of CTC count can be used as a dynamic monitoring indicator in the treatment process to evaluate tumor burden and therapeutic outcomes.

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Serum tumor markers and the response to immunotherapy in advanced non-small cell lung carcinoma

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**Background:** Introduction of immunotherapy in advanced non-small cell lung carcinoma (NSCLC) has revolutionized therapy. Radiological response assessment however, has become more complex. Objective tools are needed to prevent continuation of unnecessary and costly treatment. It was hypothesized that serum tumor markers provide additive value.

**Methods:** For the analysis we included 65 patients with advanced NSCLC (all histologies) who were treated with immunotherapy in different clinical trials between 2013 and 2015. Serum tumor markers were measured at baseline and every visit. Response criteria of tumor markers were based on the reference change value (RCV) according to the Westgard method of biological variation resulting in RCV for Cyfra 21.1, CEA, SCC, CA125 and NSE of 58%, 33%, 103%, 64% and 35%, respectively. All serum tumor markers were analyzed both separately and in combination and results were reported as not assessable (= NA, markers stay below upper limit of normal), response (MD = marker decrease), no change (MS = marker stable), progression (ME = marker elevation) or mixed response (MMR, mixed marker response). Radiologic assessment was performed at 6-weekly intervals according to RECIST and best overall response was used for the current analysis.

**Results:** At time of reporting 62 out of 65 patients received single agent PD (L1) and CTLA-4 blockade. Twenty-one patients (32%) had a radiologic response. Of those 38% had MD, 9% MS or NA, 14% ME, and 38% MMR. Twenty patients (31%) had radiologic stable disease, in this group 20% had MD, 0% MS, 45% ME and 35% MMR. Twenty-two patients (34%) had radiologic progressive disease, with 14% MD, 36% MS, 45% ME, and 5% MMR. Two patients died before radiologic response measurement, they both had progressive tumor markers and no clinical response. Concordance between radiology and tumor markers was best for Cyfra21.1. Eighty-one percent of radiological response patients had either NA, MS or MD and ninety-one percent of progressive disease patients had either ME, MS or MMR.

**Conclusions:** Serum tumor markers can be used for monitoring response to immunotherapy in patients with advanced stage NSCLC.

**Legal entity responsible for the study:** Antoni van Leeuwenhoek hospital

**Funding:** Antoni van Leeuwenhoek hospital

**Disclosure:** All authors have declared no conflicts of interest.
Table 1 (abstract 158P).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number Percentage</th>
</tr>
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<tbody>
<tr>
<td>Gender: Male / Female</td>
<td>19 / 21</td>
</tr>
<tr>
<td>Age: Median (range)</td>
<td>62 (40-85)</td>
</tr>
<tr>
<td>Race: European / Others</td>
<td>38 / 2</td>
</tr>
<tr>
<td>Smoking: Yes / No</td>
<td>9 / 31</td>
</tr>
<tr>
<td>Pathology: Adenocarcinoma / Others</td>
<td>37 / 3</td>
</tr>
<tr>
<td>Stage: IIIB / IV</td>
<td>2 / 38</td>
</tr>
<tr>
<td>Number of prior CT: 0 / 1-2 / &gt;2</td>
<td>17 / 20 / 3</td>
</tr>
<tr>
<td>TKI: Erlotinib / Gefitinib / Afatinib</td>
<td>30 / 8 / 2</td>
</tr>
</tbody>
</table>

### Early radiological response (ERR) as predictor of overall survival in non small cell lung cancer (NSCLC) patients with EGFR mutations

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#### Background

New cancer agents have been active in the treatment of advanced NSCLC with EGFR mutations. Currently, the response to chemotherapy is evaluated after the patient completes the 2nd course of treatment. The time for evaluation of TKI is not well-defined.

#### Methods

EGFR mutation status was analyzed in 360 NSCLC patients’ samples (January 2009 to November 2014). 55 patients (15%) were EGFR mutation positive and only 40 of them were stage IIIB-IV and had received treatment with gefitinib, erlotinib or afatinib were included in this analysis. The principal analysis was to correlate the ERR to TKI by CT with PFS and OS in advanced NSCLC patients with EGFR mutations (16 patients). 26 patients (65%) had ERR. 4 patients were mainly exon 19 deletions (14 patients) and L858R point mutations (12 patients).

#### Results

Patient characteristics in Table 1. The EGFR mutations (15%) were EGFR mutation positive and only 40 of them who were stage IIIB-IV and had received treatment with gefitinib, erlotinib or afatinib were included in this analysis. The principal analysis was to correlate the ERR to TKI by CT with PFS and OS in advanced NSCLC patients with EGFR mutations.

#### Conclusions

ERR could identify a subgroup of patients with activating EGFR mutation and poor prognosis in spite of the treatment with TKI. Further efforts are needed to improve the diagnosis and the treatment of this subgroup of patients.

### Depressive symptoms, performance score, and personality traits as predictors of (health related) quality of life in patients with advanced stage lung cancer

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#### Background

Identification of determinants of (Health Related) Quality of Life (HR)QoL after diagnosis offers opportunities to enhance care during chemotherapy. We examined the importance of sociodemographic variables, trait anxiety and personality traits, and depressive symptoms as predictors of (HR)QoL in patients with advanced stage non-squamous non-small cell lung carcinoma (NSCLC).

#### Methods

Patients (n = 168) completed the trait anxiety subscale of the State-Trait Anxiety Inventory (short version), the Center for Epidemiologic Studies Depression (CES-D), the Neuroticism-Extraversion-Openness-Five Factor Inventory (NEO-FFI), the World Health Organization Quality of Life-BREF, and the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30). Simple linear regression analyses were performed to select predictors of (HR)QoL (P < 0.10) followed by multiple linear regression analyses using a backwards stepwise selection process.