

**Conclusions:** The immune microenvironment is actively changing during tumor involution. Most immune gene expression changes occur late in chemotherapy and correlate with a dampening of the immune response. Early in chemotherapy immune genes are upregulated, specifically B-cell associated genes suggesting an important role of humoral immunity in the tumor MIV. Signals of robust immune activation, as reflected by increased quantitative tumor-specific antibodies ( $\alpha$ -MUC1) and tertiary lymphoid structures, may be MIV markers of longer survival.

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#### Poster #46

##### Quantitative computed tomography image feature analysis predicts response to immune checkpoint inhibitors in gynecologic cancers

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**Objectives:** To investigate the role of applying quantitative image (QI) feature analysis computed from computed tomography (CT) images for early prediction of tumor response to immune checkpoint inhibitors (ICPI) amongst patients with recurrent gynecologic cancer.

**Methods:** We conducted a retrospective review of 56 patients with gynecologic cancer at a single institution who received an ICPI for management of recurrent disease. Each patient had CT images prior to and after the initiation of therapy. A computer-aided detection scheme was applied to segment metastatic tumors previously tracked by radiologists on CT images and image features were computed. A QI feature pool was built and a features selection method was applied to select optimal features; an equal-weighted fusion method was used to generate a new quantitative imaging marker for each pool to predict 6-month progression-free survival (6PFS). The prediction accuracy between quantitative imaging markers and the response evaluation criteria in solid tumors version 1.1 (RECIST) criteria and immune RECIST criteria (iRECIST) were also compared. Complete response (CR), partial response (PR), stable disease (SD) and progressive disease (PD) were assessed by RECIST criteria.

**Results:** Of the 56 patients identified, 29 patients (51.8%) had ovarian cancer, 16 patients (28.6%) had cervical cancer, and 11 patients (19.6%) had uterine cancer. Thirty-eight patients (67.9%) received a programmed death 1 (PD-1) inhibitor, 11 patients (19.6%) received a programmed death-ligand 1 (PD-L1) inhibitor, 5 patients (8.9%) received a combination of PD-1 inhibitor and cytotoxic lymphocyte antigen-4 (CTLA-4) inhibitor, and 1 patient (1.8%) received anti-cell immunoglobulin and ITIM domain protein (TIGIT) and 1 patient (1.8%) received a GITR-agonist resulting in 1 CR, 9 PR, 9 SD, and 20 PD.

The area under the receiver operating characteristic curve (AUC) is 0.95 when using QI feature analysis to predict 6PFS and 0.81 when using RECIST criteria. The QI feature analysis resulted in a prediction accuracy level of 92.3% versus 61.5% when using RECIST criteria versus 70.9% when using iRECIST criteria.

**Conclusions:** Quantitative CT image feature analysis accurately predicts response to ICPI in patients with recurrent gynecologic cancer. This technology is a promising tool to predict the clinical benefit of ICPIs early in the course of treatment of gynecologic cancers.

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#### Poster #47

##### A cost-effectiveness analysis of universal genetic testing for common hereditary cancer mutations in women compared with family-history based testing

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**Objectives:** Identifying patients who would benefit from hereditary cancer genetic testing by family history alone can miss a significant portion of both BRCA and Lynch mutation carriers. The purpose of this study is to determine whether population-based testing with a common hereditary cancer panel in all women regardless of family history is a cost-effective cancer prevention strategy.

**Methods:** A Markov decision-analytic model was constructed to estimate life expectancy with universal testing versus family history-based testing. The model was run from age 20 to 85. Testing was performed at age 35. The option of risk reducing surgery was factored in for ovarian, breast, and uterine cancer. The model considered estimates of cancer development and death based on current screening guidelines for known and unknown BRCA and Lynch mutation carriers as well as non-compliance with recommendations for genetic testing and risk reducing surgery. In addition, known rates of tubal ligation, hysterectomy and bilateral salpingo-oophorectomy for non-malignant conditions were taken into account in both groups. The model calculated the development of and mortality from breast, ovarian, colon, and uterine cancer.

**Results:** The improvement in overall life expectancy with universal genetic screening compared with testing based on family history is 710 life-years per 100,000 persons screened, assuming a pathogenic BRCA mutation rate of 0.67% and Lynch syndrome related mutation rate of 0.23%. Universal genetic screening would save 52.8 deaths from cancer per 100,000 women screened (8.6 breast, 3.7 colon, 25.6 ovary, and 14.8 uterine). Testing would reduce the overall number of deaths from ovarian cancer by 3%. Based on the real-world cost of the common hereditary cancer panel of \$250 per screen, the calculated benefit would be \$35,162 per life year saved by universal genetic testing. When considering QOL (quality-of-life) utility adjustments for cancer, the undiscounted benefit of universal testing was \$20,725 per QALY (quality-adjusted life year).

**Conclusions:** Universal genetic testing appears to be an effective cancer prevention strategy. At current costs, universal genetic testing appears to be within the range of acceptable cost effectiveness under real world conditions. The benefit of screening is mainly due to the prevention of deaths from gynecologic cancers.

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#### Poster #48

##### Use of bowel preparation does not reduce post-operative infectious morbidity following minimally invasive or open hysterectomies

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**Objectives:** Bowel preparation (BP) is a controversial element within enhanced recovery protocols, and literature investigating its efficacy in gynecologic surgery is scarce. Our aim was to determine if mechanical bowel preparation (MBP) alone, oral antibiotics (OA) alone or a combination are associated with decreased rates of surgical site infections (SSI) or anastomotic leaks (AL) compared to no bowel preparation following benign or malignant hysterectomy.

**Methods:** We identified women who underwent hysterectomy between 01/2006-07/2017 using OptumLabs, a large US commercial