

(19%) grade 3 anemia. Two hundred forty-three (29%) underwent workup for anemia, of which 68 (8%) had iron studies performed. Of those with iron studies performed, 12 (18%) patients had absolute iron deficiency and 4 (6%) had possible iron deficiency. Despite the small percentage of individuals with iron evaluation, 222 (19%) patients were placed on iron supplementation. Sixty-one were placed on oral iron and 6 were placed on iv iron supplementation.

**Conclusions:** Anemia is pervasive among gynecologic cancer patients, but compliance with NCCN guidelines is low. Our data suggest there are opportunities for improvement in evaluation and management of anemia among patients with ovarian and uterine cancer.

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#### Poster #44

##### Preparation for Gynecologic Oncology fellowship during obstetrics and gynecology residency training: Incoming fellows' perspectives

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**Objectives:** To assess the perceptions of incoming Gynecologic Oncology fellows on how Obstetrics and Gynecology residency prepared them for subspecialty training.

**Methods:** A previously validated questionnaire, used to survey Gynecologic Oncology fellowship program directors, was modified and distributed to all incoming first year Gynecologic Oncology fellows. Distribution was via email and used commercially available survey software. The fellows were identified using a contact list provided by the Society of Gynecologic Oncology. The 25-item survey contained questions about fellows' surgical experience, their perceived ability to function independently both in the operating room and in other care settings, and their research experience. A Likert scale was used for responses. Standard descriptive statistical methods were used to analyze survey data.

**Results:** Thirty-five first year fellows completed the survey, for a response rate of 52.2%. In the surgical domains, fellows reported being most experienced and most comfortable with laparoscopic hysterectomy. Over 80% of respondents had performed 30 or more laparoscopic hysterectomies in residency. Despite reporting being the least comfortable with robotic hysterectomies, 48.6% of fellows had performed 16 or more cases. The majority of fellows (88.6%) felt mostly or very comfortable evaluating and managing post-operative complications but 57.1% reported feeling at most only somewhat

comfortable discussing surgery and chemotherapy with patients. Most fellows reported formal research experience during residency, largely limited to written abstracts. Only 25.7% of respondents had presented more than two oral research presentations. Most (68.6%) rated their understanding of basic statistics as poor or fair and 57.2% reported their ability to formulate a research project and collect and analyze data as poor or fair.

**Conclusions:** Incoming Gynecologic Oncology fellows report being underprepared for advanced subspecialty training in certain aspects of surgery and oncologic counseling as well as independent research. In comparison to the perception of fellowship program directors, a greater percentage of fellows reported feeling overall prepared for autonomous surgical practice. In light of the ACGME changing guidelines with respect to surgical training and research curricula, appropriate preparation for fellowship training and independent practice remain important areas of education research.

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#### Poster #45

##### Tumor involution is associated with dampening of immune elements

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**Objectives:** This study aims to determine the immune microenvironment (MIV) alterations of ovarian carcinoma during intraperitoneal (IP) chemotherapy induced tumor involution.

**Methods:** We identified a cohort of 10 patients with ovarian adenocarcinoma treated with IP chemotherapy during which serial biological samples were collected. Our cohort had available samples from early (pre-chemotherapy, cycle 1), intermediate (cycle 2-4), and late time points (cycle 5, post chemotherapy). RNA was isolated from serially collected IP fluid cells and analyzed via a Nanostring multiplex gene expression panel focused on immune function. Genes differentially expressed between early, intermediate and late time points were identified. Paired tumor tissue samples pre- and post-chemotherapy were analyzed by immunohistochemistry (IHC) for CD8, CD19 and mucin-1 (MUC1). To evaluate humoral immunity in tumor involution, MUC1 antibody ( $\alpha$ -MUC1) levels in IP fluid were measured by ELISA.

**Results:** A total of 161 immune genes from IP fluid cells were differentially expressed between early and late time points. Most of the gene expression changes occur late in chemotherapy, with 126 genes differentially expressed between intermediate and late time points and only 48 genes differentially expressed between early and intermediate time points. After adjusting for false discovery rate, 6 immunoregulatory genes were differentially expressed (downregulated) late in chemotherapy and remain differentially expressed overall. IHC analysis of tumor tissue confirmed low immune cell infiltrate post-chemotherapy. Interestingly, 4 of the 8 genes that were differentially expressed early in chemotherapy and remain differentially expressed overall were specific to B-cell function and increasing in expression. Of all differentially expressed genes between early and intermediate time points, the largest portion (36%) were specific to B-cell function.  $\alpha$ -MUC1 presence was detected in IP fluid samples of 5 out of 8 patients. Average  $\alpha$ -MUC1 absorbance in both early and late time points differed between patients who are still alive compared with patients who are deceased. IHC analysis of tumor tissue identified two patients with tertiary lymphoid structures containing T-cells and B-cells, both of which have survived over 7 years with recurrent ovarian carcinoma.

