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**“The Impact of Next Generation Sequencing Testing (NGS) on overall survival rate of advanced stage endometrial cancer patients diagnosed between 2018-2023 in Louisiana.**

Background: The high prevalence of Endometrial Cancer (EC) and disparate impact on black EC patients in the US, particularly, makes determining areas of inequitable care more urgent. Endometrial cancer is the most diagnosed gynecologic malignancy and is usually diagnosed at an early stage with favorable survival outcomes. Black EC patients are more likely to be diagnosed with aggressive or advanced stage of EC that will require adjuvant treatment. The use of next-generation sequencing (NGS) testing allows prognostic value in identifying specific genomic alterations within a DNA sequence. Thereby, providers can prescribe targeted therapies that improve outcomes and limit toxicity for those tumors that test positive for certain mutations such as mismatch-repair protein deficiencies (MMRd), kirstenrat sarcoma viral oncogene (KRAS), or cell surface expression of certain signaling proteins such as HER2 or estrogen and progesterone. Furthermore, NGS testing has the potential to impact the survival rate for advanced-stage EC patients in Louisiana.

Objectives: To compare the utilization for Next Generation Sequencing (NGS) in a large South Louisiana gynecologic oncology population according to specific socioeconomic factors such as race, ethnicity, and insurance type. To describe NGS utilization according to cancer type and stage and if NGS impacts survival of EC. To identify if there are areas to improve equitable use of NGS for EC.

Methods: A retrospective cohort study was conducted of all EC patients with and without NGS testing who received care within a large urban healthcare system of academic and community hospitals between 2018-2023. Chart review was conducted to extract patient demographic, clinicopathologic, molecular, and survival data.

Results: Data analysis is ongoing, but thus far, N= 127 patients were included in the study. Of those, n=60 (47.2%) identified as Caucasian, n=55 (43.4%) identified as Black, n=7 (6.3%) identified as Hispanic, n=3(2.4%) reported as Asian, and n=1(.8%) not reported. From our population, n=36 (28.3%) did receive NGS testing; of those who received NGS, n=17, (47.2%) identify as White Race, n=16, (44.4%) identify as Black race, n=2 (5.55%) are Hispanic, n=1, (2.78%) are Asian. Preliminary data of NGS testing found n=2 MMRd (14.3%), n=3 MLH1 deficient (21.4%), n=1 MSH6 deficient (7.1%), n=2 PMS2 deficient (14.3%), n=4 HER2/3 2+ or 3+ (28.6%), n=1 HER2 1+ ( 7.1%), n=8 ER+ (57.1%), n=6 PR+ (42.9%), n=6 PTEN (42.9%), and n=1 PIK3CA ( 7.1%). Comparisons of NGS by race/ethnicity and associated survival are forthcoming.

Discussion: Based on our study on NGS in EC patients of South Louisiana, thus far, we describe a molecularly, racially and ethnically heterogenous population. This diversity emphasizes the need for a robust approach to the treatment of high risk or advanced EC, for which NGS can play a central role.