**Supplemental Figure and Table Legends**

**Supplemental Figure 1. A.** Sema4-automated oncology data retrieval and curation platform**. B.** Sema4 automated abstraction engine for cancer diagnosis**.**

**Supplemental Figure 2**. Flow chart demonstrating patient selection for docetaxel and NHA cohorts.

**Supplemental Table 1.** A. Demonstrates dose and dose reduction for docetaxel cohort. B. Lists adverse effect associated with dose reduction.

**Supplemental Table 2.** Demonstrated the no of cycles and 2nd line therapy for patients treated with upfront docetaxel.

**Supplemental Table 3.** Demonstrates dose and dose reduction for NHA cohort. B. Lists adverse effect associated with dose reduction.

**Supplemental Table 4.** Demonstrated the 2nd line therapy for patients treated with upfront NHA.

**Supplemental Table 5.** Table of co-variants for the docetaxel and NHA cohorts for PSA progression free survival analysis.

**Supplemental Table 6.** Univariable and multivariable analysis of PSA PFS comparing upfront docetaxel to upfront NHA and other co-variants.

**Supplemental Table 7.** Univariable and multivariable analysis for failure-free survival (FFS) for upfront NHA or upfront docetaxel treated patients stratified by post treatment PSA and other co-variants.