Treatment Patterns in the Management of Prostate Cancer: Lessons Learned from the Florida Cancer Data System

Vonetta L. Williams, PhD, MPH, CTR

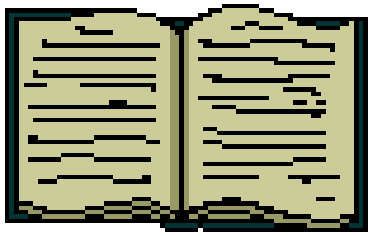
June 23, 2015

2015 International Conference on Prostate Cancer

University of South Florida, College of Public Health
Department of Environmental and Occupational Health

Topics of Discussion

- Summary of PCa Disparities
- Study Purpose
- Research Question 1
- Study Design/Methodology/Data Source
- Results
- Discussion (Strengths/Limitations)
- Future Directions
- Conclusion



Summary of PCa Disparities

- Incidence (AA versus NHW differences)
- Mortality (AA versus NHW differences)
- Age at diagnosis (AA versus NHW)
- Stage at diagnosis
- Treatment modalities
  - "Race-related variations in PCA tx patterns are poorly understood" (Mettlin et al, 1997)

Purpose of Study

- To examine differences in treatment/management strategies among newly diagnosed African American (AA) and Non-Hispanic White (NHW) men in Florida with histologically confirmed prostate cancer (PCa)

Hypothesis 1/Aim 1

- Hypothesis 1
  - There are differences in the patterns of first course of treatment between AA men and NHW men newly diagnosed with PCa in FL by stage at diagnosis, tumor grade, age at diagnosis.
  - Aim 1
    - To compare the first course of treatment modalities received by newly diagnosed PCa patients in FL between AA and NHW men with the same stage at diagnosis, tumor grade, age at diagnosis.

Study Design/Methodology



Study Design and Methodology

- Retrospective cohort study (data collected from cancer registries/facilities in Florida (FL))
- Newly diagnosed and pathologically confirmed PCa cases that were diagnosed in FL or elsewhere, AND received all or part of their first course of treatment in FL
- Florida Cancer Data System (FCDS) limited confidential dataset, 1982-2012
- SAS

Inclusion/Exclusion Criteria

- Primary site = prostate gland (C619)
- Sex = male
- Tumor Behavior = malignant
- Histology = adenocarcinoma (represent 95% of PCa tumors)
- Sequence number = 00 or 01
- Age at diagnosis ≥ 18 years of age

Inclusion/Exclusion Criteria, 2

- Known type of reporting source (exclude cases identified by autopsy or death certificate)
- Primary race (AA or White)
- Ethnicity (Non-Hispanic)
- Missing or unknown treatment data
- Final sample size = 244,438 cases

Results



Results: Localized Disease

Localized Disease	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
No first course treatment AOR=1.10, 95% CI (1.06, 1.14)	*+Surgery only or surgery in combo AOR=0.66, 95% CI (0.63, 0.68)
Radiation Therapy AOR=1.04, 95% CI (1.01, 1.07)	Surgery and Hormone Therapy AOR=0.86, 95% CI (0.75, 0.98)
Hormone therapy only or in combo AOR=1.20, 95% CI (1.16, 1.24)	
Radiation and Hormone Therapy AOR=1.06, 95% CI (1.03, 1.11)	
*Endocrine Therapy AOR=2.32, 95% CI (1.91, 2.83)	
*Other Therapy AOR=1.49, 95% CI (1.28, 1.73)	

*=common treatment pattern(s) between all stages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Regional Disease

Regional Disease	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
Radiation Therapy only or Radiation in combo AOR=1.14, 95% CI (1.05-1.24)	No first course treatment AOR=0.89, 95% CI (0.80-0.98)
Hormone Therapy only or Hormone Therapy in combo AOR=1.16, 95% CI (1.06-1.27)	*+Surgery only or surgery in combo AOR=0.63, 95% CI (0.57-0.71)
Radiation and Hormone Therapy AOR=1.18, 95% CI (1.03-1.34)	Surgery and Hormone Therapy AOR=0.66, 95% CI (0.52-0.85)
*Endocrine Therapy AOR=2.24, 95% CI (1.61-3.12)	Chemotherapy AOR=0.46, 95% CI (0.23-0.91)
*Other Therapy AOR=1.40, 95% CI (1.06-1.85)	

*=common treatment pattern(s) between all stages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Distant Disease

Distant Disease	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
*Endocrine Therapy AOR=1.54, 95% CI (1.27-1.86)	*+Surgery only or surgery in combo AOR=0.50, 95% CI (0.34-0.75)
*Other Therapy AOR=1.21, 95% CI (1.04-1.40)	Radiation Therapy only or in combo AOR=0.85, 95% CI (0.77-0.95)
	Radiation and Hormone Therapy AOR=0.86, 95% CI (0.76-0.98)

*=common treatment pattern(s) between all stages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Tumor Grade 1

Tumor Grade 1	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
*Radiation only and radiation in combination with other treatment modalities AOR=1.14, 95% CI (1.05-1.24)	No first course treatment AOR=0.87, 95% CI (0.80-0.94)
*Hormone only and hormone in combination with other treatment modalities AOR=1.23, 95% CI (1.09-1.38)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.55, 95% CI (0.46-0.67)
Other therapy AOR=1.85, 95% CI (1.27-2.69)	

*=common treatment pattern(s) between all tumor grades
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Tumor Grade 2

Tumor Grade 2	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
*Radiation only or radiation in combination with other treatment modalities AOR=1.09, 95% CI (1.05-1.13)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.68, 95% CI (0.65-0.71)
*Hormone only or hormone in combination with other treatment modalities AOR=1.22, 95% CI (1.17-1.27)	
Radiation and hormone therapy AOR=1.09, 95% CI (1.05-1.13)	
Endocrine therapy only or in combination with other treatment modalities AOR=2.03, 95% CI (1.65-2.49)	
Other therapy Aor=1.50, 95% CI (1.28-1.76)	

*=common treatment pattern(s) between all tumor grades

+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade

Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Tumor Grade 3

Tumor Grade 3	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
No first course treatment AOR=1.27, 95% CI (1.20-1.35)	*+Surgery only or surgery in combo AOR=0.57, 95% CI (0.53-0.60)
*Hormone only or hormone in combination with other treatment modalities AOR=1.20, 95% CI (1.15-1.26)	Radiation only AOR=0.94, 95% CI (0.90-0.99)
*Radiation and hormone AOR=1.08, 95% CI (1.02-1.14)	Radiation and surgery AOR=0.71, 95% CI (0.57-0.88)
Endocrine therapy only or in combination with other treatment modalities AOR=1.95, 95% CI (1.65-2.30)	Surgery and hormone therapy AOR=0.62, 95% CI (0.51-0.76)
Other therapy AOR=1.26, 95% CI (1.11-1.44)	Surgery and hormone and radiation AOR=0.67, 95% CI (0.50-0.89)
	Chemotherapy only or chemotherapy in combo AOR=0.62, 95% CI (0.49-0.80)

*=common treatment pattern(s) between all tumor grades
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Tumor Grade 4

- No statistically significant differences were detected between AA and NHW men for tumor grade 4

Results: Age at Diagnosis, <50

Age <50	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
Radiation only or radiation in combination with other treatment modalities AOR=1.48, 95% CI (1.27-1.72)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.71, 95% CI (0.61-0.82)
*Hormone only or hormone therapy in combination with other treatment modalities AOR=1.24, 95% CI (1.01-1.53)	
Radiation and hormone therapy AOR=1.43, 95% CI (1.09-1.86)	

*=common treatment pattern(s) between all ages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade

Results: Age at Diagnosis, 50-64

Age 50-64	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
No first course treatment AOR=1.09, 95% CI (1.04-1.15)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.65, 95% CI (0.62-0.68)
Radiation only or radiation in combination with other treatment modalities AOR=1.23, 95% CI (1.18-1.28)	Surgery and radiation AOR=0.81, 95% CI (0.67-0.98)
*Hormone therapy only or hormone therapy in combination with other treatment modalities AOR=1.40, 95% CI (1.33-1.47)	Surgery and hormone and radiation AOR=0.73, 95% CI (0.55-0.98)
Radiation and hormone therapy AOR=1.36, 95% CI (1.28-1.44)	
Endocrine therapy AOR=1.86, 95% CI (1.40-2.46)	

*=common treatment pattern(s) between all ages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade

Results: Age at Diagnosis, 65-74

Age 65-74	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
*Hormone therapy AOR=1.21, 95% CI (1.16-1.26)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.62, 95% CI (0.58-0.65)
Endocrine therapy AOR=1.86, 95% CI (1.50-2.31)	
Other therapy AOR=1.29, 95% CI (1.09-1.52)	

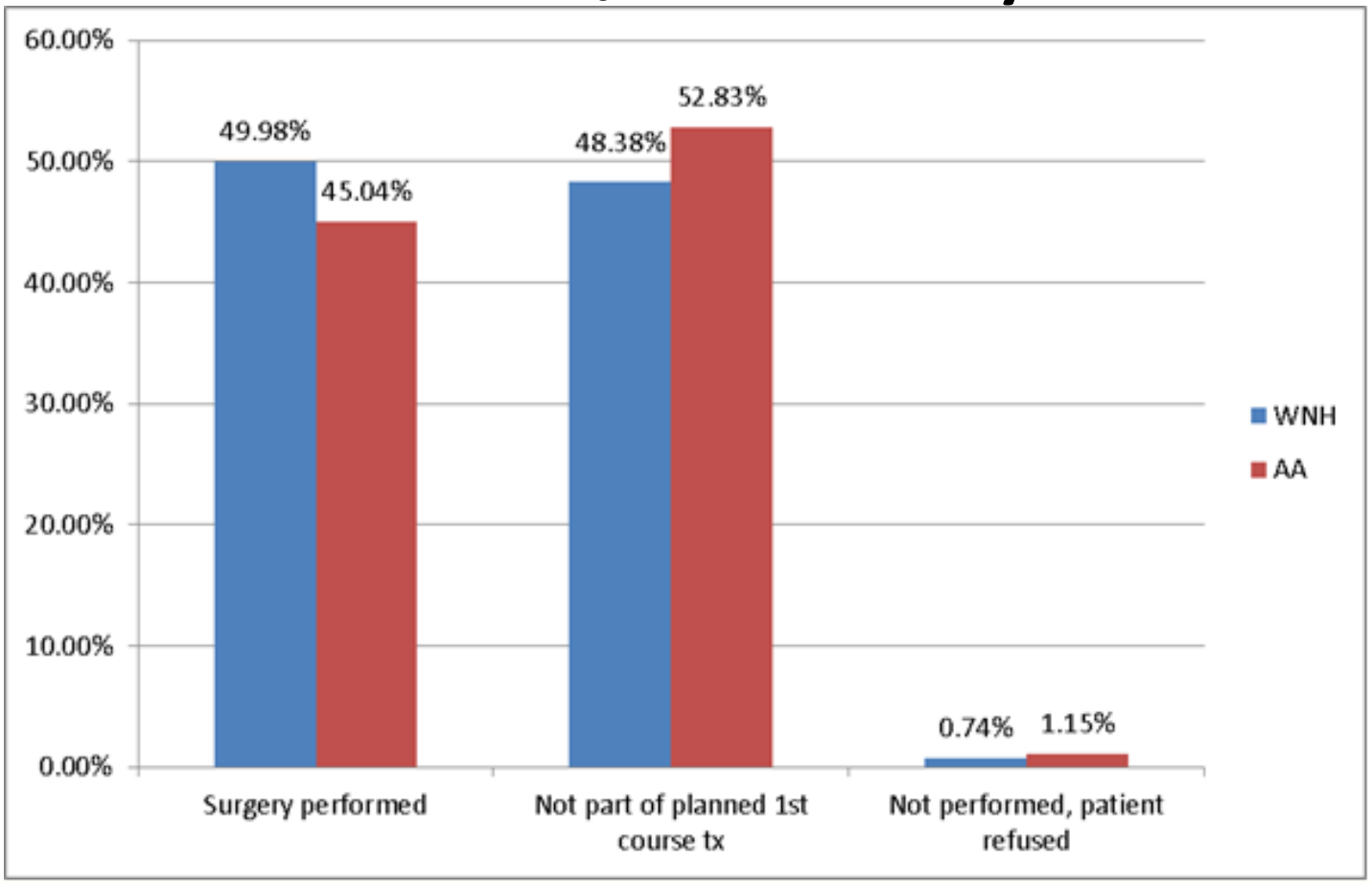
*=common treatment pattern(s) between all ages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Results: Age at Diagnosis, 75+

Age 75+	
AA men more likely (statistically significant)	**AA men less likely (statistically significant)**
No first course treatment AOR=1.19, 95% CI (1.11-1.27)	*+Surgery only or surgery in combination with other treatment modalities AOR=0.56, 95% CI (0.44-0.72)
Radiation only or radiation in combination with other treatment modalities AOR=0.72, 95% CI (0.67-0.77)	Radiation and hormone therapy AOR=0.73, 95% CI (0.66-0.79)
*Hormone therapy only AOR=0.83, 95% CI (0.77-0.89)	
Endocrine therapy AOR=2.05, 95% CI (1.70-2.48)	
Other therapy AOR=1.67, 95% CI (1.42-1.97)	

*=common treatment pattern(s) between all ages at diagnosis
+=common treatment pattern(s) between stage at diagnosis, age at diagnosis and tumor grade
Other therapy = other tx only, chemotherapy only, endocrine therapy only, immunotherapy only

Reason for No Surgery by Race/Ethnicity



Summary of Study Findings

- AA men were less likely to receive surgery or surgery in combination with other treatment modalities compared to NHW men.
- AA men were more likely to receive radiation or radiation in combination with hormone therapy compared to NHW men.

Study Strengths/Limitations

- (+) FCDS data represent a population based, statewide CR database
- (+) Cancer Registry data are collected by trained staff using a standardized format
- (-) Cannot evaluate the receipt of specific drugs/regimens
- (-) FCDS does not routinely collect SES, income, or family history of cancer
- (-) FCDS does not collect physician info (General versus Urologic specialist)
- (-) FCDS started collecting urologic cases from private physician offices in 2012
- (-) No collection of recurrence, progression, salvage tx by FCDS
- (-) Psychiatric, military, and the VA hospitals/clinics not required to submit data to FCDS (voluntary)

Next Step

- Determine if the treatment modalities administered to AA and NHW men differ from the treatment recommendations of the National Comprehensive Cancer Network (NCCN) among men with the same stage at diagnosis/tumor grade, age at diagnosis and life expectancy.
  - Research Question 2

Future Directions

- Link the FCDS data with the FL Agency for HealthCare Administration (AHCA) and Centers of Medicare and Medicaid Services (CMS) data
- Obtain up-to-date information on vital status, date of last contact and date of death in order to evaluate survival/outcome
- Evaluate treatment patterns among Hispanic men in FL

Conclusion

- This study adds to the current body of knowledge as it relates to detectable differences in treatment strategies among AA and NHW men in FL newly diagnosed with pathologically confirmed PCa

Questions/Discussion

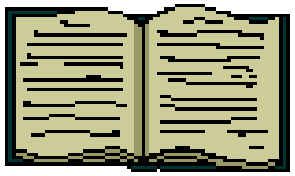
Contact Information:

Dr. Vonetta L. Williams

Vonetta.Williams@Moffitt.Org

ACKNOWLEDGEMENTS

- Dr. Thomas Mason
  - University of South Florida, Tampa
- Dr. Jennifer Permuth-Wey
  - University of South Florida and Moffitt Cancer Center
- Dr. Hamisu Salihu
  - Baylor College of Medicine, Texas
- Dr. Philippe Spiess
  - Moffitt Cancer Center



Comparison of Results for Treatment Received by Race/Ethnicity

			Treatment Modality		
Manuscript	**Study Sample Size**	**Race/Ethnicity**	**No Treatment**	**Radiation**	**Surgery**
Polednak and Flannery, 1992 (CT State CR)	4,621 (5.69% AA)	AA versus W	Localized 9.8% vs 10.2% p-value=0.986	Localized 15.8% vs 13.5% p-value=0.541	Localized 6.8% vs 10.8% p-value=0.182
Mettlin et al, 1997 (ACoS, NCDB)	251,416 (9.95% AA)	AA versus W	29.1% vs 23.9%	28.5% vs 28.8%	22.3% vs 29.1%
Shavers et al, 2004 (SEER-Medicare)	24,974 (10% AA)	AA versus W	Adjust OR = 1.3, 95% CI (1.2, 1.6)	NA	NA
Xiao et al, 2009 (FCDS)	104,050 (9.4% AA)	AA versus W	Localized 12.8% vs 10.8%	Localized 25.3% vs 26.6%	Localized 33.3% vs 32.7%
Cooperberg et al, 2010 (CaPSURE, 40 urology practices)	11,892 (10.35% AA)	AA versus W	6.2% vs 6.9%	26.0% vs 24.75%	44.5% vs 50.7%
Xiao et al, 2013 (FCDS)	60,497 (11.9% AA)	AA versus W	No definitive tx 14.94% vs 13.09%	20.69% vs 23.77%	40.57% vs 40.61%