

Skin Cancers in Patients with Actinic Keratoses

Cassandra Mohr, BS¹, Yao Li, MS^{1,2}, Lucy J Navsaria, MBBCh BAO MPH¹, Candice L Hinkston, MPH¹, Mackenzie R Wehner, MD MPhil^{1,3*}

¹Department of Health Services Research, University of Texas MD Anderson Cancer Center, ²Department of Biostatistics, University of Texas MD Anderson Cancer Center, ³Department of Dermatology, University of Texas MD Anderson Cancer Center

INTRODUCTION

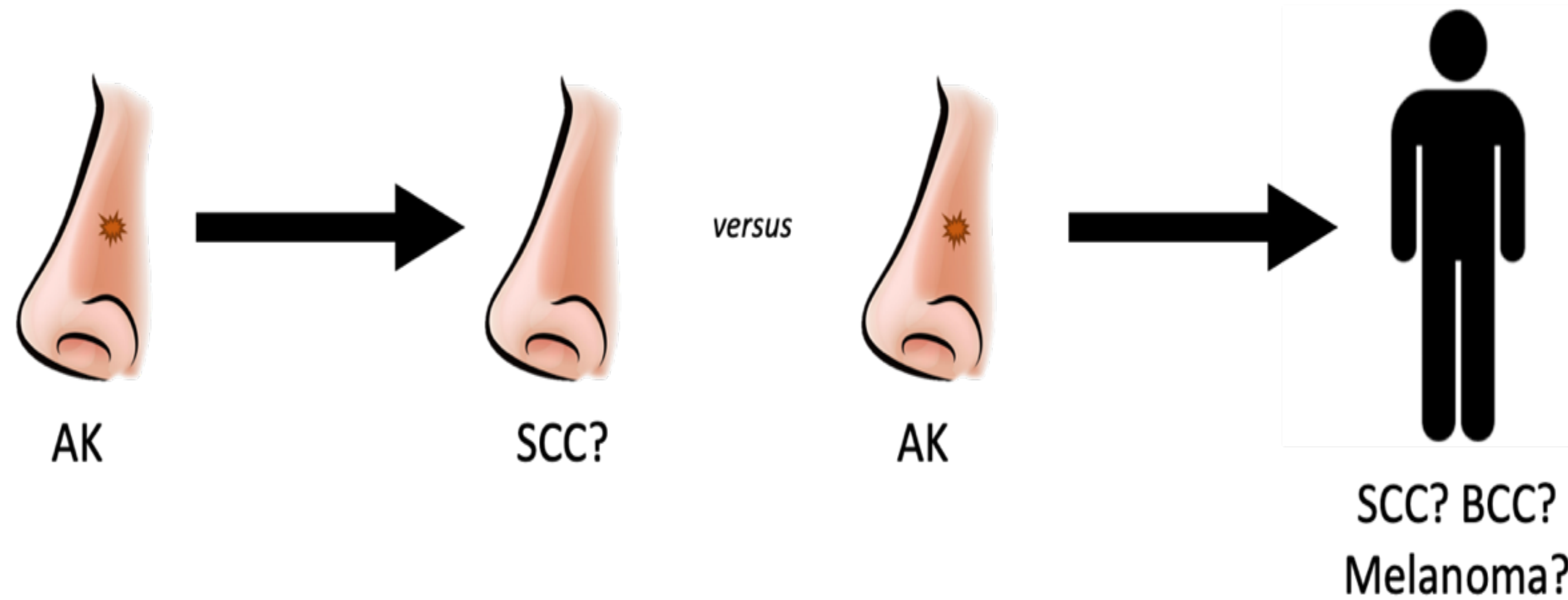
- **Actinic keratoses (AKs)** are premalignant skin lesions often diagnosed in older, Caucasian adults
- AKs are exceptionally common
- Individual AKs have a low risk of progression to SCC
- The **overall skin cancer risk** of AK patients is not well-studied

OBJECTIVE

To examine **absolute and relative risks** of skin cancer in patients with AKs to **guide clinical care** and form the foundation for future recommendations.

Individual lesion focus

Whole patient focus



METHODS

- Retrospective cohort study of **4,999,999 de-identified Medicare beneficiaries** (2009-2018)
- **Inclusion Criteria:**
 - **AK cohort:** AK diagnosis with treatment (cryotherapy, PDT, or medication)
 - **SK cohort:** SK diagnosis without history of AK diagnosis
- **Exclusion criteria:**
 - History of skin cancer
 - HIV/AIDS
 - Solid organ transplant
- **Primary outcome:** any surgically treated skin cancer
- **Analysis:**
 - **Absolute risk** of skin cancer in patients with AK using cumulative incidence curves
 - **Relative risk** of skin cancer in AK patients vs. SK patients using hazard ratios and competing risk regressions

Table 1: Patient Demographics

Characteristic	AK	SK	P-value
Total, n (%)	760412 (61.25%)	481024(38.75%)	
Age at diagnosis, y, mean ± SD	74.42 ±7.63	73.32±7.3	<0.0001
Race and ethnicity, n (%)			<0.0001
African American	2075 (0.27%)	12145 (2.52%)	
Asian	6052 (0.8%)	10498 (2.18%)	
Hispanic	13583 (1.79%)	16219 (3.37%)	
Non-Hispanic White	724679 (95.3%)	431037 (89.61%)	
North American Native	1335 (0.18%)	1304 (0.27%)	
Gender, n (%)			<0.0001
Female	418994 (55.1%)	348367 (72.42%)	
Male	341418 (44.9%)	132657 (27.58%)	
State UV index			<0.0001
Low (5 or lower)	486482 (63.98%)	335632 (69.77%)	
Medium (6-7)	234238 (30.8%)	123675 (25.71%)	
High (8 or higher)	39692 (5.22%)	21717 (4.51%)	
Was the first AK or first SK in a dermatology visit?			<0.0001
Yes	514924 (67.72%)	315905	
No	245488 (32.28%)	165119	

Figure 1: Cumulative Incidence Curve-Skin Cancer

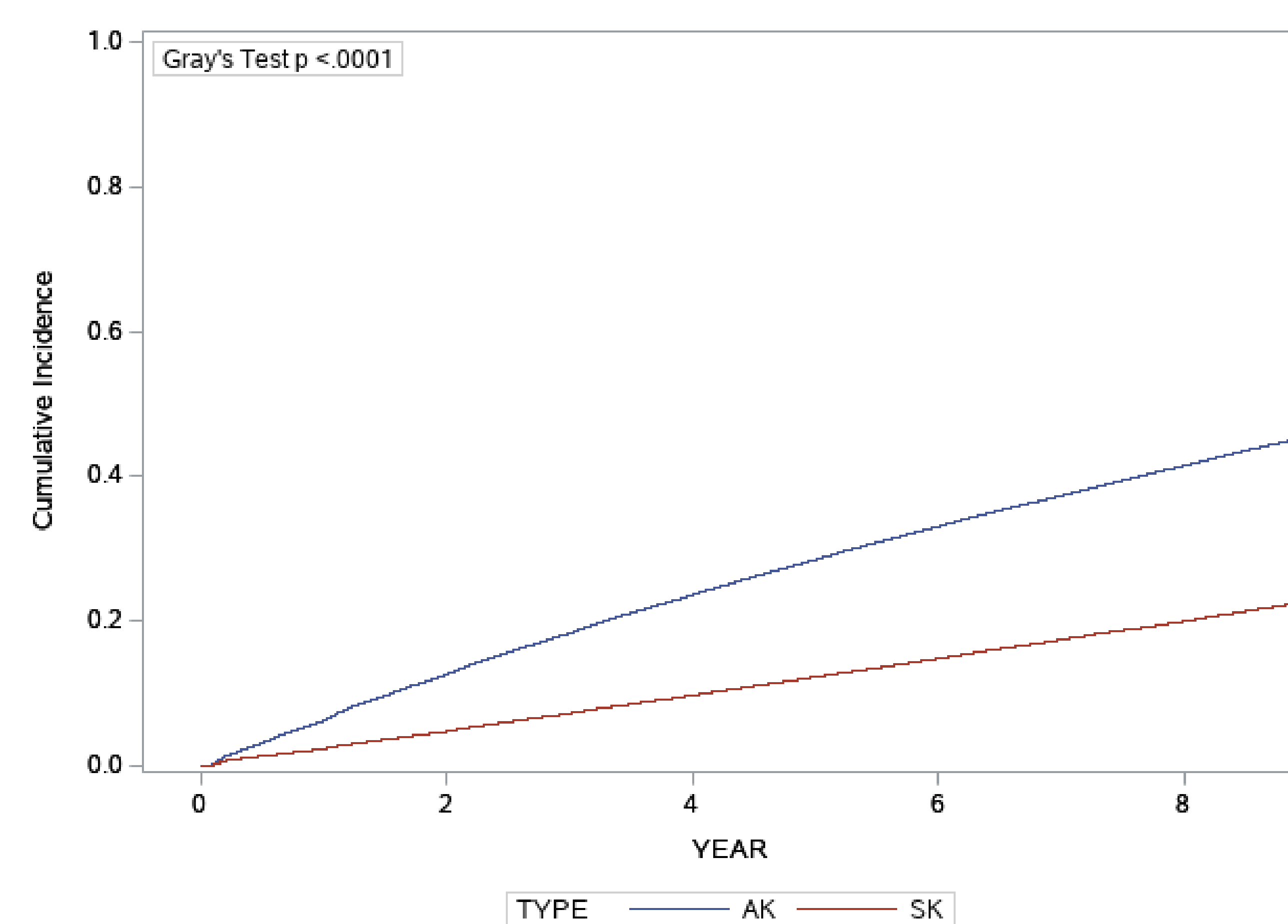


Figure 2: Cumulative Incidence Curve- KC

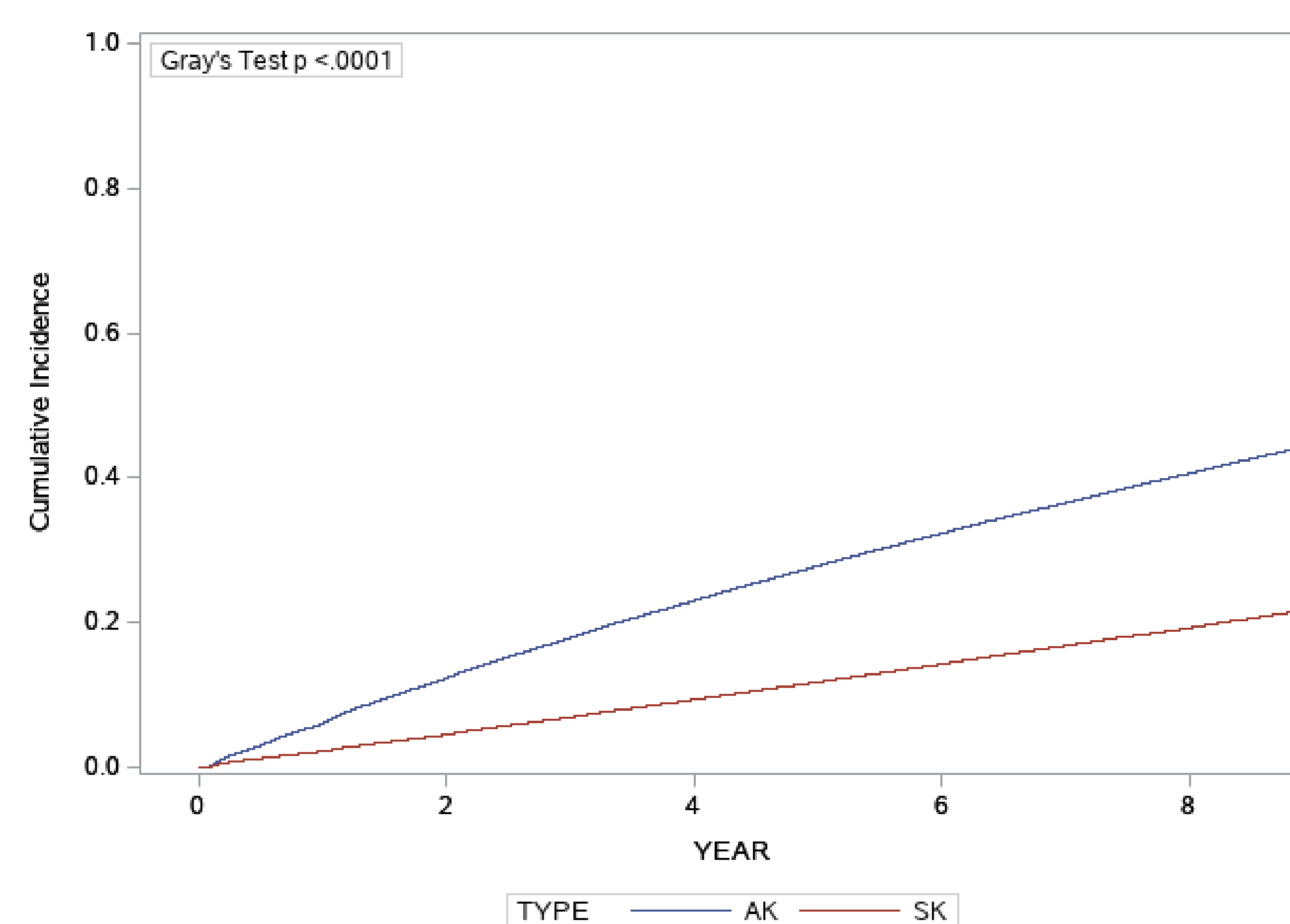
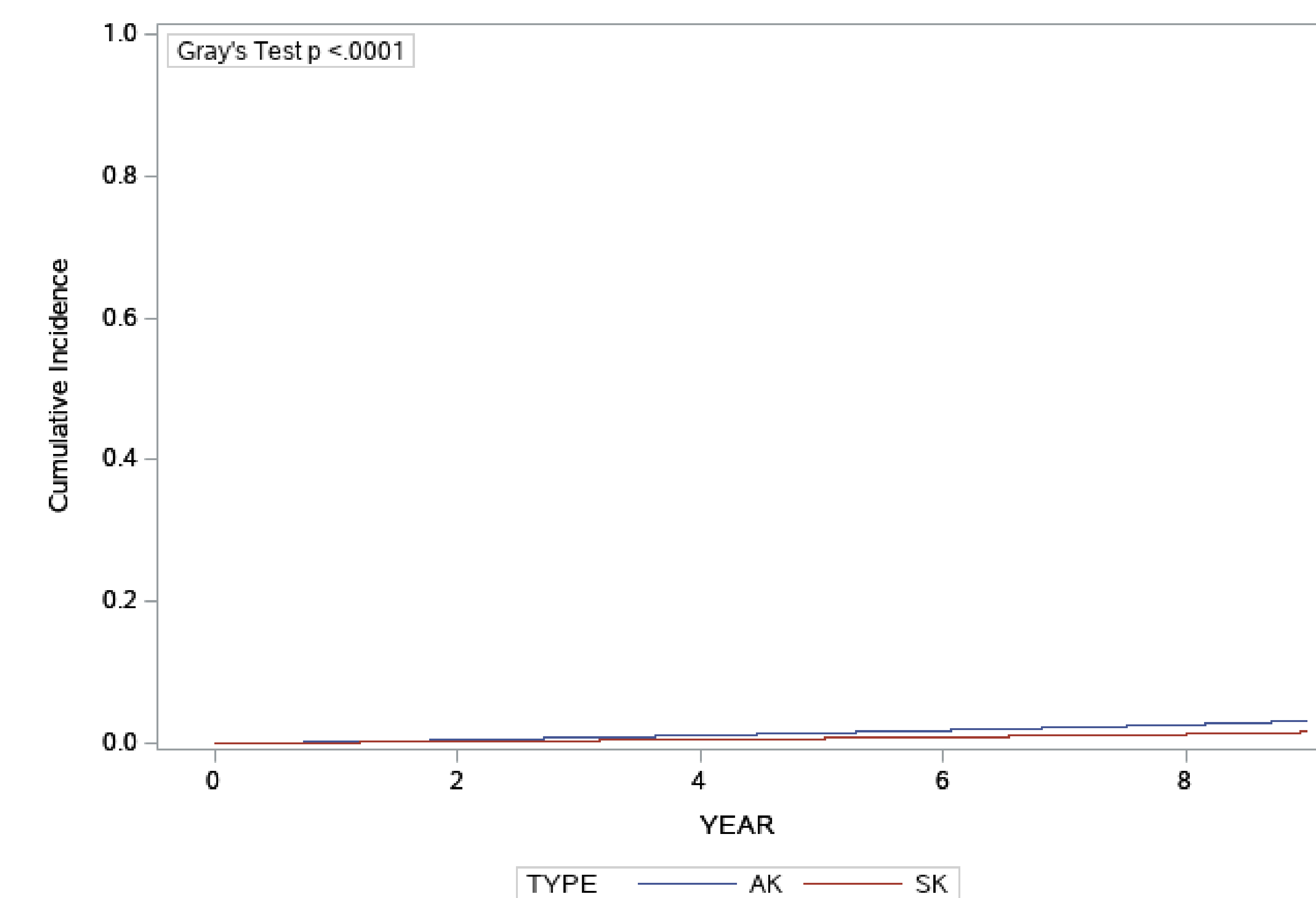


Figure 3: Cumulative Incidence Curve- Melanoma



RESULTS

- A total of **555,945 patients** (53.61%) patients had AKs and **481,024** (46.39%) had SKs
- Patients had a mean follow-up of 5.63 (SD 2.75) years for patients with AKs and 4.55 (SD 2.74) years for patients with SKs
- **Absolute risk** of skin cancer after a first AK was:
 - **1-year:** 6.30% (95% CI 6.27%-6.40%)
 - **2-year:** 12.70% (95% CI 12.60%-12.79%)
 - **3-year:** 18.40% (95% CI 18.25-18.47%)
 - **4-year:** 23.60% (95% CI 23.48%-23.73%)
- Patients with AKs had a significantly increased risk for future skin cancer compared with patients with SKs (adjusted for age, race, gender, and UV index):
 - **Hazard ratio:** 2.17, 95% CI 2.15-2.19

CONCLUSION

- Patients with AKs are at significantly increased risk of skin cancer, with **nearly 1 out of 4 having a skin cancer within 4 years**
- Patients with AKs require **heightened attention**, and efforts to create guidelines for skin cancer surveillance for these patients is paramount

