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SKIN CANCER SURVEILLANCE PROGRAM FOR SOLID ORGAN TRANSPLANT RECIPIENTS

2025 DOR/TPMG Cancer Research Symposium

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The Permanente Medical Group

DISCLOSURES

I have no conflicts of interest to disclose.

BACKGROUND

Solid organ transplant recipients (SOTs) at high risk for skin cancer

- Cutaneous squamous cell carcinoma (cSCC): **65X**
- Basal cell carcinoma (BCC): **10X**
- Melanoma: **3X**
- **Mortality risk: 9X**

Risk factors: age, skin phototype, organ type, sex, skin cancer history, medications

KPNC: ~5,000 SOTs

Past approach: non-stratified referrals, same pathway for all SOTs

In 2020, a multidisciplinary team sought evidence-based screening strategies

Goal: align screening intensity with individual risk

Skin and UV Neoplasia Transplant Risk Assessment Calculator (SUNTRAC)

SUNTRAC stratifies skin cancer risk in SOTs

Multicenter cohort of 6,340 SOTs across 26 U.S. centers

Incorporates 5 clinical variables:

- White race
- Pre-transplant skin cancer
- Age ≥50 years
- Male sex
- Thoracic organ

Assigns weighted scores to classify patients into **LOW**, **MEDIUM**, **HIGH**, or **VERY HIGH** risk groups

Strong prognostic performance

Publicly available calculator aids clinical use

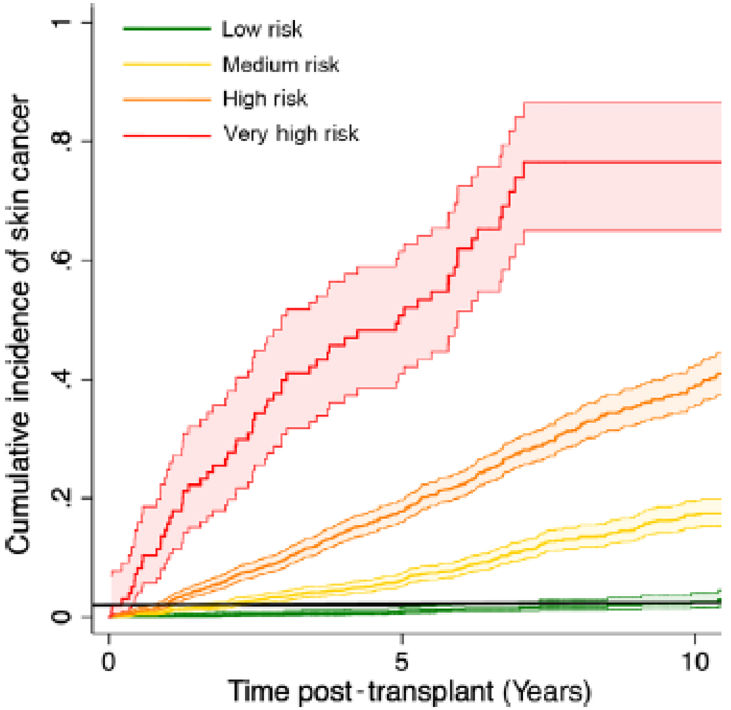


Figure 1 Cumulative incidence function curves for the Skin and Ultraviolet Neoplasia Transplant Risk Assessment Calculator (SUNTRAC) Tool. The faded orange-, green-, red-, and blue-shaded areas represent the 95% confidence interval for low risk, medium risk, high risk, and very high risk, respectively. Horizontal black line indicates screening threshold of 2%.

Jambusaria-Pahlajani A, et al. *Transpl Int*. 2019;32(12):1259-1267.

INTERVENTION: KP-SUNTRAC Surveillance Program

Risk Group	Screening Specialty	Screening Interval
LOW MEDIUM	Primary Care (January 2024)	Annually
	Post-transplant skin cancer (PTSC)	
HIGH VERY HIGH	Dermatology (January 2022)	At least annually

STUDY DESIGN & POPULATION

Two retrospective cohort studies using the same population of adult SOTRs (2016–2024)

Study 1: Skin Cancer Risk in SOTs vs. Non-SOTs

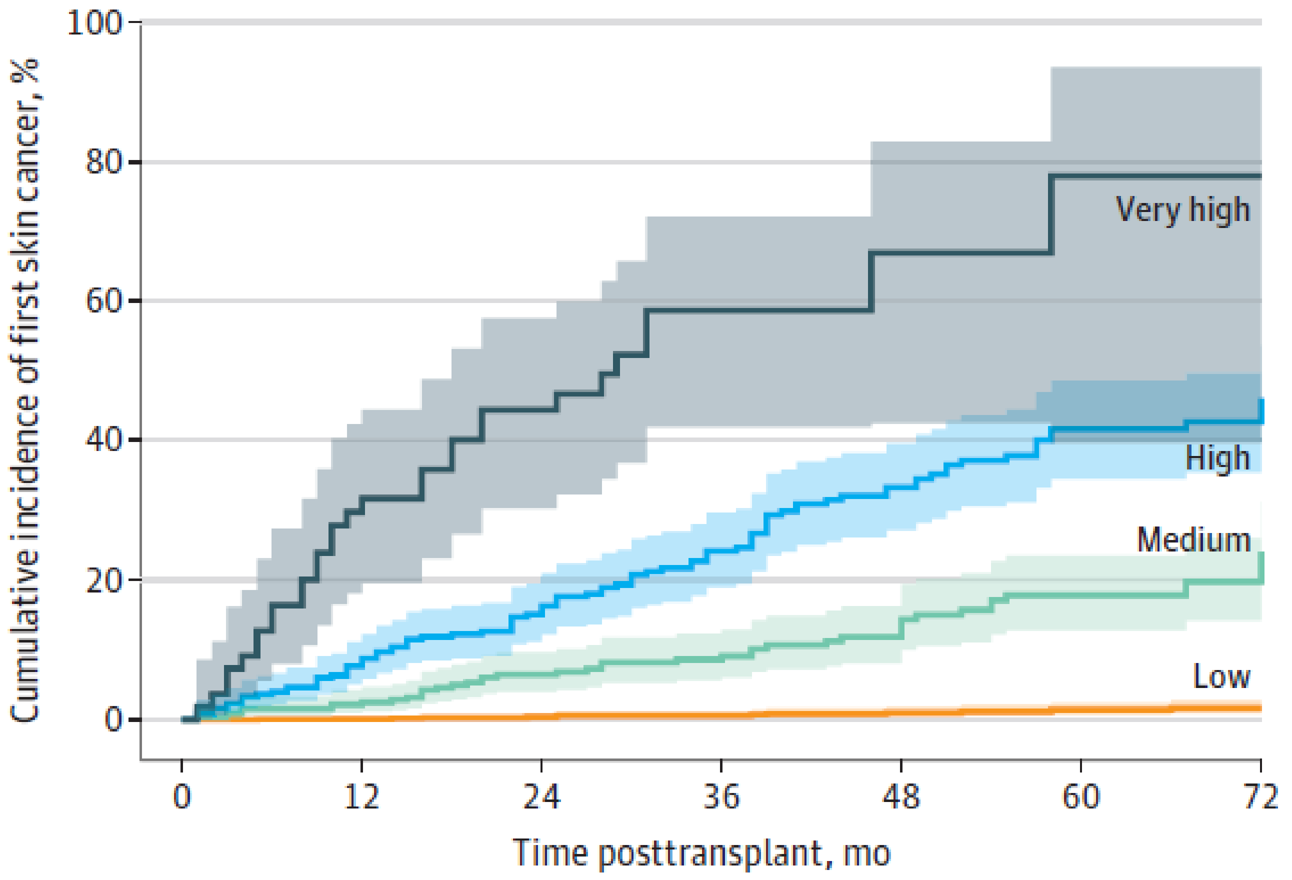
- 2,083 SOTRs vs. 26,199 matched non-SOTR controls
- **Outcome:** Skin cancer incidence
- **Timeframe:** 2016–2024 (full study period)

Study 2: Impact of KP-SUNTRAC Implementation

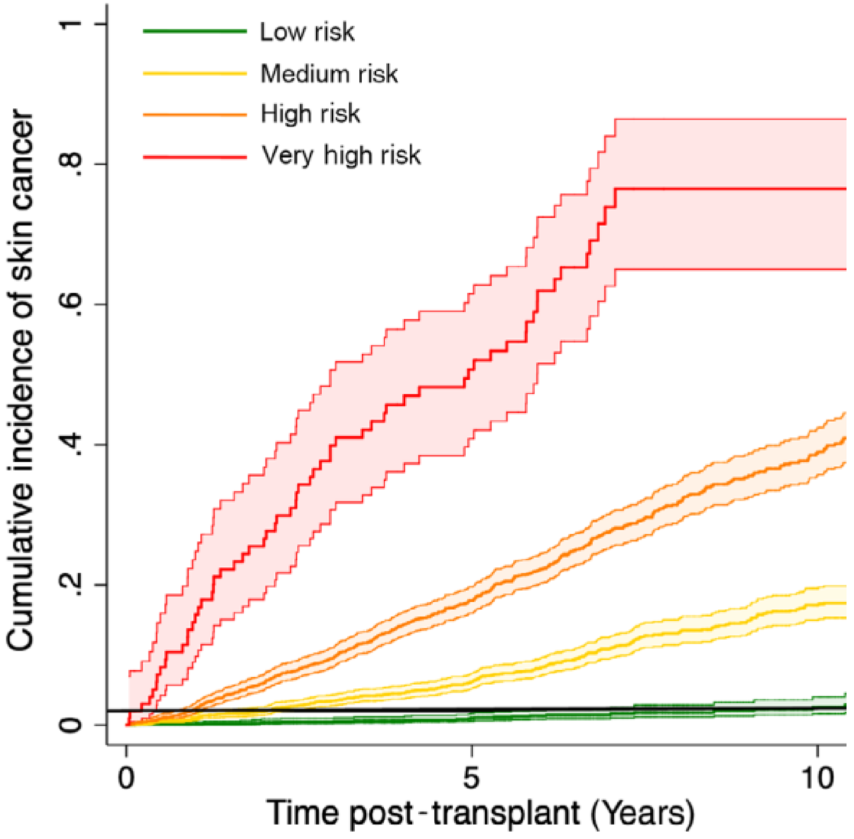
- 2,083 SOTs (1,502 Pre vs 581 Post)
- **Outcomes:**
  - First skin cancer screening
  - First skin cancer diagnosis (cSCC, BCC, melanoma)
  - Resource utilization (appointment counts, pathology specimen counts)
- **Timeframes:**
  - **Pre-implementation:** Jan 2016 – Dec 2021
  - **Post-implementation:** Jan 2022 – Mar 2024

RESULTS – External Validation of SUNTRAC

KP-SUNTRAC Cohort



Original SUNTRAC Cohort



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RESULTS

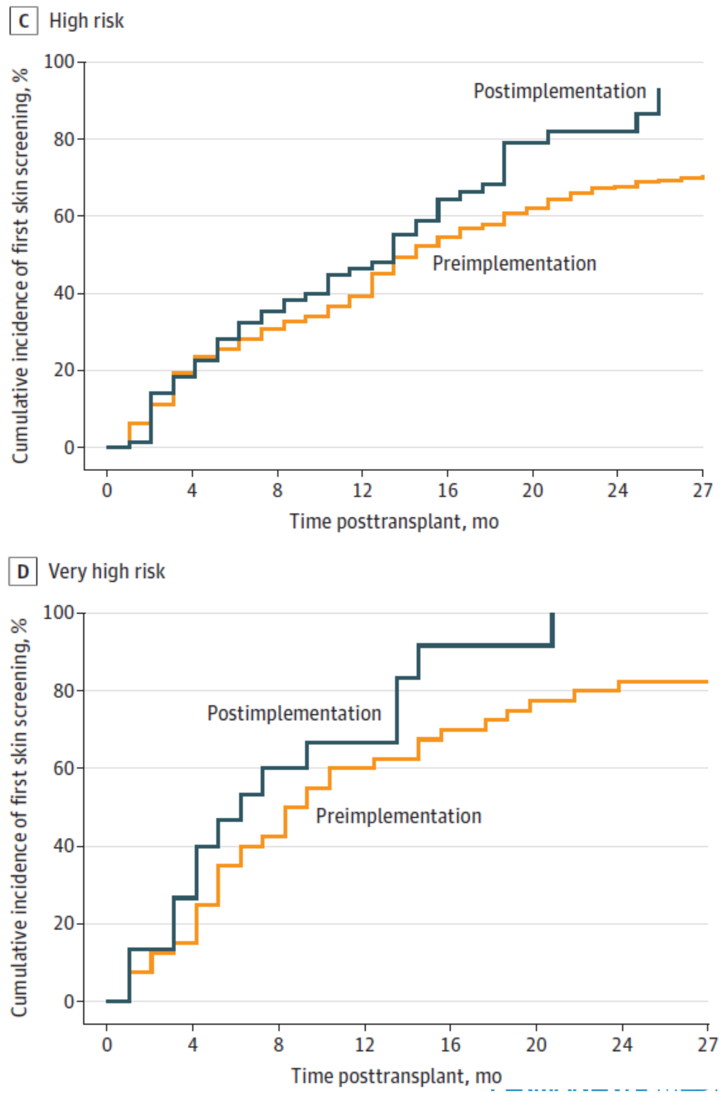
Higher Skin Cancer Risk in SOTs vs. Non-SOTs

- **Overall skin cancer risk: HR 7.8** (95% CI: 5.97–10.10)
- **cSCC risk: HR 10.9** (95% CI: 7.24–16.40)
- **BCC risk: HR 5.6** (95% CI: 3.87–7.98)

RESULTS

Impact of KP-SUNTRAC Implementation

- **Screening improved**
  - **Median time to first screening** decreased from **10 months** (95% CI, 9.0-11.0) to **6 months** (95% CI, 5.0-9.0)
  - **High risk: 174%** risk of first screening (**HR 2.7**; 95% CI: 1.77–4.24)
  - **Very High risk: 122%** risk of first screening (**HR 2.2**; 95% CI: 1.20–4.12)
- **Skin cancer detection improved**
  - **2.6X** risk of skin cancer detection (**HR 2.6**; 95% CI: 1.76–3.73)
- **Resource utilization stable**
  - No differences in appointment or pathology specimen counts



CONCLUSION

SOTs had significantly higher skin cancer risk compared with matched non-SOTs

External validation of SUNTRAC

Risk-based screening led to **earlier skin cancer detection, without increasing clinical burden**

Supports a **scalable, resource-efficient approach** for post-transplant surveillance

Future directions

- Long-term outcomes SOTRs (morbidity, **mortality**)
- Integrating **AI/ML** could further personalize risk prediction using complex data

Research

JAMA Dermatology | Original Investigation

Skin Cancer Surveillance Program for Solid Organ Transplant Recipients

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Lee DS, Gigoyan L, Sells RE, Nugent JR, Goes NB, Harris HR, Nishime EO, Rihal GK, Conant DL, Pham N, Kwan ML. Skin Cancer Surveillance Program for Solid Organ Transplant Recipients. JAMA Dermatol. 2025 Oct 15:e253890. doi:10.1001/jamadermatol.2025.3890. Epub ahead of print. PMID: 41091513; PMCID: PMC12529332.

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Thank You!

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