

# Patients' behavior and risk perception of non-melanoma skin cancer after organ transplant: what are patients' expectations for new preventive treatments? *A European online real-world study*

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## BACKGROUND

While organ transplants greatly improve patients' quality of life, transplant patients must nonetheless **take immunosuppressive drugs** to prevent organ rejection. Thus, new risks emerge, including a **higher chance of developing skin cancer**.

## OBJECTIVES

The objectives of the study were:

- To better understand the organ transplant patients' behaviors regarding non-melanoma skin cancer (NMSC) risk.
- To define patients' expectations regarding a new treatment to prevent NMSC lesions.

## METHODS

- Carenity, a global online patient community enabled to recruit adult transplanted patients from four European countries (France, Spain, Germany and Italy).
- A questionnaire has been created from a verbatim analysis of those patients and has been validated by a medical review committee (2 dermatologists). 1 NMSC patient proofread the questionnaire.
- 200 responses** have been collected between March, 14<sup>th</sup>, 2018 and May, 16<sup>th</sup>, 2018.
- Excel 2013®** was used to perform the different analysis. **R studio (v3.5.0)** was used to perform multiple correspondences analysis and statistical analysis. The p-value has been calculated for each analysis and may falls into one of the three cases :
  - \* 0.05 < p ≤ 0.10
  - \*\* 0.05 ≤ p ≤ 0.01
  - \*\*\* p ≤ 0.01

## RESULTS

### Respondents profile

- Respondents are virtually **equally distributed among males and females** (Fig 1).
- On average, patients were **37 years old** when transplanted with a mean time of **6 years since transplantation**.
- Kidney was the most frequent transplanted organ**, followed by liver and heart (Fig 1).
- German patients are far more affected by skin lesions** than the others (p-value < 0.01\*\*\*) (Fig 1).
- Among patients with lesions, **33% had precancerous lesions in the past, 28% have precancerous lesions today, 25% had cancerous lesions in the past and 19% have cancerous lesions today**. 3 patients have or had both precancerous and cancerous lesions.
- The younger the patients are transplanted, the more likely they are to develop lesions (p-value = 0.33) (Fig 3).
- All patients with lesions have received a curative treatment.

### Patients' NMSC risk awareness and sun exposure

- A majority of patients were informed of the risk of developing lesions associated with their anti-rejection treatment in all countries (Fig 4).
- Neither the presence of lesions nor the country of residence impact the level of information about the risk of developing precancerous/cancerous lesions: France (93%), Italy (90%), Germany (90%) and Spain (86%).
- While patients were aware of NMSC risk, over the past 5 years, **more than 70% were exposed to moderate sun at least once a week**. Paradoxically, the level of exposure was higher for patients with lesions (Fig 5).

### Patients' willingness to get protected from the sun

- To prevent the development of skin lesions, patients protect themselves using sunscreens, avoiding sun exposure or wearing adapted clothes (Fig 6). Only 14% apply the cream every 2 hours during sun exposure. Patients with lesions do not seem to protect themselves with more diligence.
- Most of the patients would be eager to have a new preventive treatment: **54% of patients without lesion assessed their willingness higher than 6/10 (10 = maximum willingness)**. 53% of patients with lesions assessed the importance of taking a preventive treatment higher than 8/10 (10 = maximum importance) (Fig 7).
- Even if patients with lesions are more willing to use a preventive treatment (Fig 7), they do not seem to protect themselves with more diligence than the others.

### Ideal type of preventive treatment from a patient perspective

- Cream, oral drug and spray are the 3 most appreciated galenic forms** (Fig 8). This varies depending on age: younger patients (18-40 y/o) would rather have a cream (47%) while the others would prefer an oral drug (45% for 61-80 y/o).
- Patients would be willing to apply a topical treatment more often than taking an oral drug: **53% would agree to apply a cream at least twice a day while only 37% would take an oral drug at this frequency** (Fig 9). Whatever the type of treatment, patients younger than 60 y/o would be eager to take/apply it more often than the others.

### Most important criteria for a preventive cream

- From a patient perspective, the most important appreciation criteria of a topical treatment were: **water resistance, a dry touch, easily spread and paraben-free** (Fig 8).
- Most important criteria may vary slightly on the country but generally speaking patients agree with the top 4.
- The top 3 inconveniences expected from simultaneously using a classical sunscreen and a preventive cream were **the risk of forgetting one of the creams, too frequent applications and fear of more side effects** (Fig 10).

Fig 1: Characteristics of respondents (n=200)

Age, Mean	Gender	Top 3 transplanted organs	Global (n)	Skin lesions	No skin lesions
43.2 y/o	Male 54% (n=108) Female 46% (n=92)	Kidney 67% (n=134) Liver 24% (n=48) Heart 8% (n=15)	France 58 Germany 52 Spain 49 Germany 41	16% 31% 20% 71%	84% 69% 80% 29%
		Lesions (n=64)	No lesions (n=136)		
		32%	68%		

Fig 2: Presence of lesions depending on date of transplant (n=200)

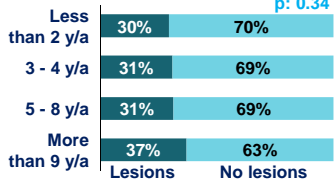


Fig 3: Presence of lesions depending on age when transplanted (n=200)

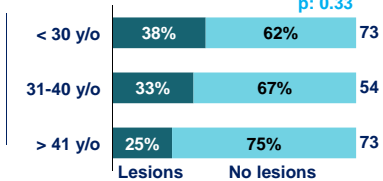


Fig 4: NMSC Risk awareness level (n=200)

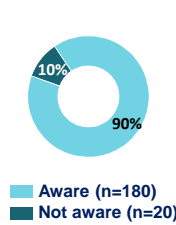


Fig 5: Sun exposure (n=200)

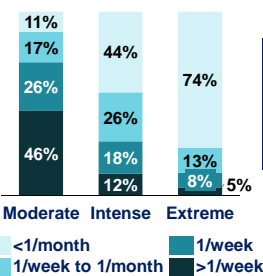


Fig 6: Preventive strategies (n=200)

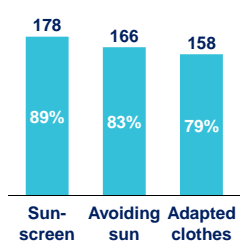


Fig 7: Willingness to get protected from the sun depending on the presence of lesions (n=200)

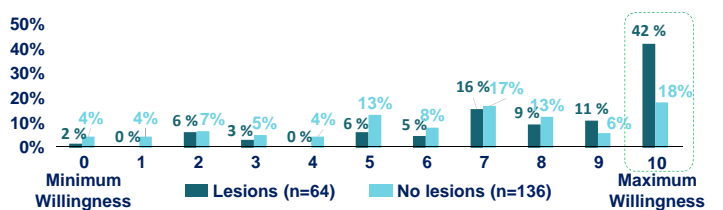


Fig 8: Characteristics of the ideal treatment (n=200)

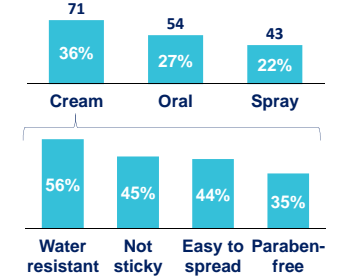


Fig 9: Maximum acceptable frequency (n=200)

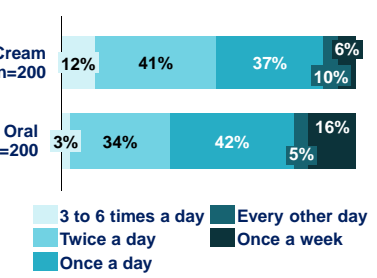
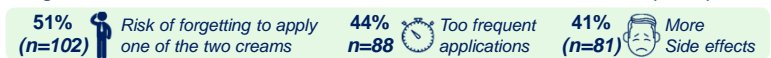


Fig 10: Main inconvenience related to the use of 2 creams at the same time (n=200)



## CONCLUSION

While Transplant patients protect themselves from the risk of developing lesions, they keep on adopting risky behaviors. Hence a preventive treatment matching patients' expectations would help reduce the risk of developing NMSC lesions. **This online real-world study put the light on the characteristics of the ideal preventive treatment from a patient perspective: a water-resistant cream which is not sticky, easy to spread, paraben-free and that does not need to be applied more than twice a day.** This new type of treatment would strongly contribute in improving patients quality of life.