

# Differential Risk of Malignant Melanoma by Sunbed Exposure Type

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## Purpose

The specific aims of the investigation were to:

1. Review the evidence examining the association between sunbed usage and malignant melanoma
2. Examine the association by location of sunbed unit (home use, professional tanning salon, medical use)
3. Explore the role of exposure misclassification on the association between sunbed usage and malignant melanoma
4. Investigate the interaction between age of first use and location of sunbed unit

## Introduction

- The role of sunbed exposure in the etiology of malignant melanoma has been controversial due to limitations in exposure measurement resulting in misclassification and bias.
- Lack of detailed measurement of sunbed usage limits the findings of a recent meta-analysis (IARC, 2006) which reported a weak positive association between any sunbed exposure (OR = 1.15, 95% CI: 1.0, 1.31) and initiation of exposure prior to 35 years (OR = 1.75, 95% CI: 1.4, 2.3) and malignant melanoma.
- Distinct differences in dose exist between unsupervised use of home sunbeds, regulated usage of professional salon sunbeds, and sunbeds used by doctors as medical devices.
- This investigation examined the moderating role of location of sunbed unit and age of initiation of sunbed use on the association between sunbed usage and malignant melanoma.

## Methods and Statistical Analysis

- To explore the moderating role of location of sunbed unit on the association between sunbed usage and malignant melanoma, additional data were abstracted from 19 studies identified by the IARC meta-analysis (IARC, 2006).
- Sunbed exposure was classified with three alternative categories not considered by the published meta-analysis: home, professional salon, and medical office.
- Age of initiation of sunbed usage by location of sunbed unit was explored.
- Summary odds ratios (OR) and 95% confidence intervals (CI) were computed by pooled analysis.

## Results

- Four out of nineteen studies had data available on the type and location of sunbed usage most commonly reported.
- One study provided data on both location of sunbed unit and age of first use
- Pooled OR for ever use of sunbeds by location were:
  - Home sunbeds: OR = 1.40 (95% CI: 1.2, 1.7)
  - Professional salon: OR = 1.06 (95% CI: 0.9, 1.2)
  - Medical office: OR = 1.96 (95% CI: 0.9, 4.3)

Table 1. Odds ratios and 95% Confidence Intervals for the association between sunbed usage and malignant melanoma by location of sunbed unit.

Home Tanning Units						
Study	Ever Exposed		Never Exposed		OR	95% CI
	Cases	Controls	Cases	Controls		
Walter et al., 1990	71	40	431	498	2.05	1.4, 3.1
Chen et al., 1998	96	51	483	417	1.63	1.13, 2.3
Westerdahl et al., 2000	34	38	319	538	1.51	0.93, 2.5
Bataille et al., 2005	126	142	113	107	0.84	0.59, 1.2
<b>TOTAL</b>	<b>327</b>	<b>271</b>	<b>1346</b>	<b>1560</b>	<b>1.40</b>	<b>1.2, 1.7</b>
Professional Tanning Salons						
Study	Ever Exposed		Never Exposed		OR	95% CI
	Cases	Controls	Cases	Controls		
Walter et al., 1990	59	55	431	498	1.24	0.84, 1.8
Chen et al., 1998	44	44	483	417	0.86	0.56, 1.3
Westerdahl et al., 2000	52	64	319	538	1.37	0.93, 2.0
Bataille et al., 2005	189	212	169	161	0.85	0.64, 1.1
<b>TOTAL</b>	<b>344</b>	<b>375</b>	<b>1402</b>	<b>1614</b>	<b>1.06</b>	<b>0.9, 1.2</b>
Medical Phototherapy Sessions						
Study	Ever Exposed		Never Exposed		OR	95% CI
	Cases	Controls	Cases	Controls		
Walter et al., 1990	17	10	431	498	1.96	0.9, 4.3

Figure 1. Pooled odds ratio of sunbed usage and malignant melanoma by location of sunbed unit

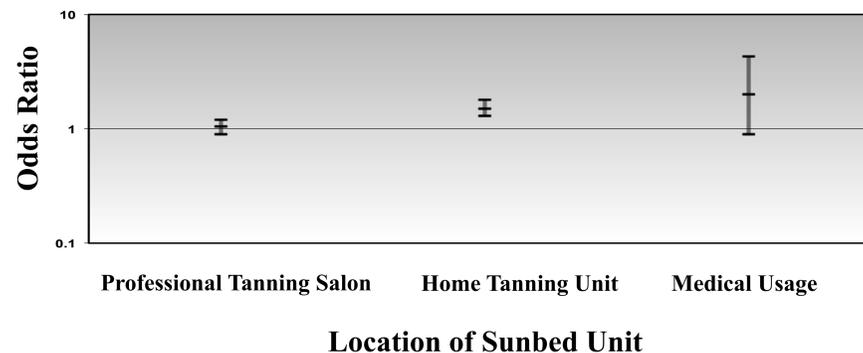
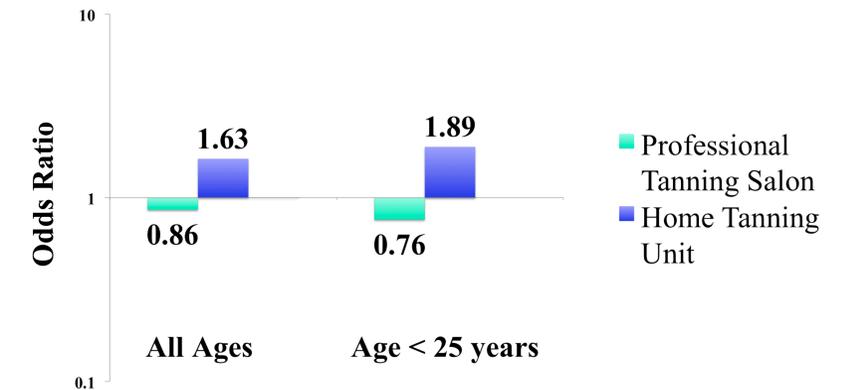


Figure 2. Odds ratio of sunbed use and malignant melanoma by location of sunbed unit and age of first use (Chen et al., 1998).



## Conclusions

1. Detailed exposure information is a critical limitation for observational studies of sunbed usage.
2. The reported association between sunbed usage and risk of melanoma appears to be biased by exposure misclassification.
3. When professional sunbed usage is considered independent of home and medical exposures there is no association with melanoma.
4. Consistent with data examining risk among all ages, the increased risk among those with first use under the age of 35 years is evident only among home sunbed users.
5. Differences in dose and usage patterns between unregulated home sunbed use and professional tanning salons merits further study.

## References

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