

## Supplementary Online Content

Claeson M, Pandeya N, Dusingize J-C, et al. Assessment of incidence rate and risk factors for keratoacanthoma among residents of Queensland, Australia. *JAMA Dermatol*. Published online October 7, 2020. doi:10.1001/jamadermatol.2020.4097

**eTable 1.** Sensitivity Analysis of Phenotype Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

**eTable 2.** Sensitivity Analysis of Ultraviolet Exposure Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

**eTable 3.** Sensitivity Analysis of Lifestyle Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

**eFigure.** Directed Acyclic Graph for the Association Between Lifestyle Variables and Keratoacanthoma

This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1.** Sensitivity Analysis of Phenotype Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

Includes 24,079 men and women in a restricted QSkin cohort that excluded participants with a previously excised keratinocyte cancer

Variables	Participants with keratoacanthoma		Age & sex and phenotype and UV exposure adjusted <sup>b</sup>
	No (n=23,983)	Yes (n=96)	
	n (%) <sup>a</sup>	n (%)	HR (95% CI)
<b>Skin colour</b>			
Olive/Dark/Black	2,539 (10.7)	2 (2.1)	Reference
Medium	8,655 (36.3)	35 (36.8)	<b>4.37 (1.04 - 18.39)</b>
Fair	12,636 (53.0)	58 (61.1)	<b>4.54 (1.07 - 19.30)</b>
<i>Missing</i>	153	1	
<b>Sunburn tendency</b>			
Not burn	2,698 (11.3)	7 (7.3)	Reference
Burn a little	11,081 (46.5)	43 (44.8)	1.40 (0.62 - 3.16)
Burn moderately	7,443 (31.2)	35 (36.5)	1.67 (0.71 - 3.93)
Burn badly	2,614 (11.0)	11 (11.5)	1.63 (0.58 - 4.57)
<i>Missing</i>	147	0	
<b>Tanning ability</b>			
Tan deeply	6,425 (27.0)	16 (16.7)	Reference
Tan moderately	12,121 (50.9)	57 (59.4)	1.41 (0.80 - 2.49)
Tan a little	4,252 (17.8)	20 (20.8)	1.30 (0.65 - 2.63)
Not tan	1,024 (4.3)	3 (3.1)	0.74 (0.20 - 2.73)
<i>Missing</i>	161	0	
<b>Eye colour</b>			
Brown or Black	6,469 (27.3)	16 (16.7)	Reference
Green or Hazel	8,710 (36.8)	33 (34.4)	1.24 (0.67 - 2.29)
Blue or Grey	8,489 (35.9)	47 (49.0)	1.62 (0.88 - 2.98)
<i>Missing</i>	315	0	
<b>Hair colour</b>			
Dark brown/Black	11,116 (46.6)	35 (36.5)	Reference
Light brown	8,634 (36.2)	41 (42.7)	1.23 (0.76 - 1.96)
Blonde	3,162 (13.3)	16 (16.7)	1.26 (0.67 - 2.37)
Red/Auburn	935 (3.9)	4 (4.2)	0.89 (0.29 - 2.73)
<i>Missing</i>	136	0	
<b>Freckles at age 21 y (face)</b>			
None	12,505 (52.4)	49 (51.0)	Reference
A few	7,243 (30.4)	27 (28.1)	0.98 (0.60 - 1.59)
Some	3,063 (12.8)	13 (13.5)	1.13 (0.59 - 2.16)
Many	1,038 (4.4)	7 (7.3)	2.14 (0.88 - 5.24)
<i>Missing</i>	134	0	

CI – confidence interval; HR – hazard ratio; UV – ultraviolet; y – years

<sup>a</sup>Due to rounding, percentages may not add to 100%.

<sup>b</sup>Model considers other measures of phenotype and UV exposure variables.

Skin colour adjusted for age, sex, sunburn tendency, tanning ability, freckles at age 21 and previous actinic keratoses/keratinocyte cancers destroyed or excised.

Sunburn tendency adjusted for age, sex, skin colour, tanning ability, eye colour, hair colour, freckles at age 21, sunburns <10 y old, sunburns 10-20 y old, sunburns >20 y old and previous actinic keratoses/keratinocyte cancers destroyed or excised.

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Tanning ability adjusted for age, sex, skin colour, sunburn tendency, eye colour, hair colour, freckles at age 21 and previous actinic keratoses/keratinocyte cancers destroyed or excised.

Eye colour adjusted for age, sex, skin colour, sunburn tendency, tanning ability, hair colour, freckles at age 21 and previous actinic keratoses/keratinocyte cancers destroyed or excised.

Hair colour adjusted for age, sex, skin colour, sunburn tendency, tanning ability, eye colour, freckles at age 21, sunburns <10 years old, sunburns 10-20 years old and previous actinic keratoses/keratinocyte cancers destroyed or excised.

Freckles at age 21 adjusted for age, sex, skin colour, sunburn tendency, tanning ability, eye colour, hair colour, sunburns <10 years old, sunburns 10-20 years old and previous actinic keratoses/keratinocyte cancers destroyed or excised.

**eTable 2.** Sensitivity Analysis of Ultraviolet Exposure Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

Includes 24,079 men and women in a restricted QSkin cohort that excluded participants with a previously excised keratinocyte cancer

	Participants with keratoacanthoma		Age & sex and phenotype adjusted <sup>b</sup>
	No (n=23,983)	Yes (n=96)	
Variables	n (%) <sup>a</sup>	n (%)	HR (95% CI)
Sunburns <10 years old			
Never	5,484 (25.2)	23 (27.1)	Reference
1-5	9,995 (45.9)	33 (38.8)	0.78 (0.45 - 1.33)
6-10	3,468 (15.9)	18 (21.2)	1.22 (0.65 - 2.28)
11+	2,817 (12.9)	11 (12.9)	0.90 (0.43 - 1.88)
<i>Missing</i>	2,219	11	
Sunburns 10-20 years old			
Never	1,555 (6.7)	6 (6.7)	Reference
1-5	10,727 (46.3)	35 (38.9)	0.81 (0.35 - 1.89)
6-10	5,500 (23.8)	25 (27.8)	1.23 (0.51 - 2.97)
11+	5,374 (23.2)	24 (26.7)	1.19 (0.49 - 2.91)
<i>Missing</i>	827	6	
Sunburns >20 years old			
Never	4,059 (17.6)	16 (17.8)	Reference
1-5	12,447 (54.1)	42 (46.7)	0.89 (0.50 - 1.57)
6-10	3,708 (16.1)	15 (16.7)	1.10 (0.54 - 2.24)
11+	2,793 (12.1)	17 (18.9)	1.58 (0.79 - 3.16)
<i>Missing</i>	976	6	
Previous actinic keratoses/keratinocyte cancers destroyed			
Never	15,363 (64.2)	33 (34.4)	N/A
Ever	8,554 (35.8)	63 (65.6)	N/A
<i>Missing</i>	66	0	

CI – confidence interval; HR – hazard ratio; UV – ultraviolet

<sup>a</sup>Due to rounding, percentages may not add to 100%.

<sup>b</sup>Model considers other measures of phenotype

Sunburns <10 years old adjusted for age, sex, skin colour, sunburn tendency, tanning ability, eye colour, hair colour and freckles at age 21.

Sunburns 10-20 years old adjusted for age, sex, skin colour, sunburn tendency, tanning ability, eye colour, hair colour and freckles at age 21.

Sunburns >20 years old adjusted for age, sex, skin colour, sunburn tendency, tanning ability, eye colour, hair colour and freckles at age 21.

(Note: The risk estimate for previous actinic keratoses/keratinocyte cancers destroyed changed minimally (<10%) when adjusted for other measures of phenotype – hence not adjusted.)

**eTable 3.** Sensitivity Analysis of Lifestyle Variables and Their Association With Keratoacanthoma Among Restricted Cohort of 24 079 Participants

Includes 24,079 men and women in a restricted QSkin cohort that excluded participants with a previously excised keratinocyte cancer

	Participants with keratoacanthoma		Age & sex and educational level adjusted <sup>b</sup>
	No (n=23,983)	Yes (n=96)	
Variables	n (%) <sup>a</sup>	n (%)	HR (95% CI)
Smoking status			
Never smoker	13,171 (55.1)	50 (52.1)	Reference
Past smoker	8,409 (35.2)	35 (36.5)	0.98 (0.63 - 1.52)
Current smoker	2,326 (9.7)	11 (11.5)	1.30 (0.67 - 2.53)
Missing	77	0	
Alcoholic drinks/week			
None	4,731 (19.8)	14 (14.7)	Reference
<1	4,128 (17.3)	17 (17.9)	1.63 (0.80 - 3.32)
2-13	11,210 (47.0)	45 (47.4)	1.60 (0.87 - 2.93)
14-28+	3,805 (15.9)	19 (20.0)	1.87 (0.92 - 3.81)
Missing	109	1	

CI – confidence interval; HR – hazard ratio; UV – ultraviolet; y – years

<sup>a</sup>Due to rounding, percentages may not add to 100%.

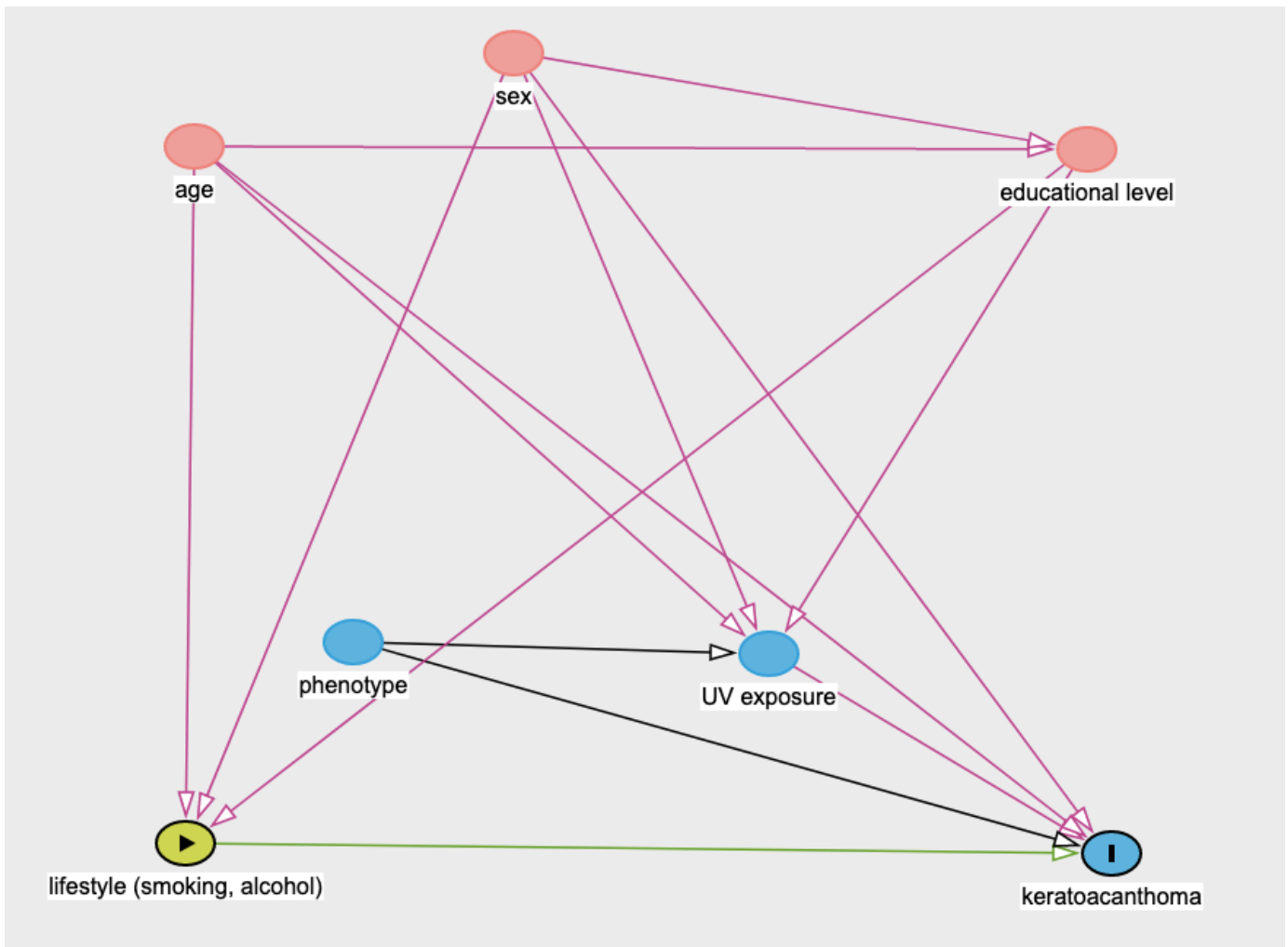
<sup>b</sup>Model considers age, sex and educational level as per directed acyclic graph in eFigure 1.

Smoking status adjusted for age, sex and educational level.

Alcoholic drinks/week adjusted for age, sex and educational level.

(Note: No change in the risk estimates when additionally adjusted for phenotype or UV exposure measures – hence not adjusted.)

**eFigure.** Directed Acyclic Graph for the Association Between Lifestyle Variables and Keratoacanthoma



UV – ultraviolet