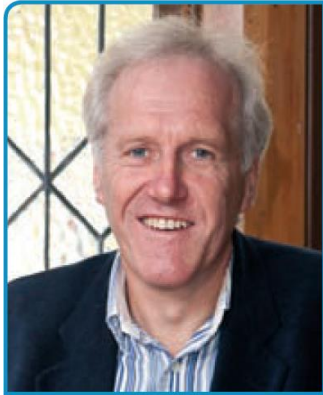




**A/Prof Brian
Cox**

Cancer
Epidemiologist



**Dr Mary
Jane Sneyd**

Cancer
Epidemiologist

UV light, sunscreens, Vitamin D and cancer - Concurrent Workshop Repeated

Friday, 16 August 2013

Start 4:30pm

Duration: 55mins

Monet

Start 5:35pm

Duration: 55mins

Monet



South GP CME 2013

General Practice Conference & Medical Exhibition

15-18 August | Edgar Centre | Dunedin

UV light, vitamin D and cancer.

Mary Jane Sneyd and Brian Cox

Hugh Adam Cancer Epidemiology Unit

Dunedin School of Medicine

Workshop: UV light, Vitamin D and cancer

Part 1

UV light

Public measures of solar UV

Non-solar sources of UV

Benefits of UV

UV and disease

Sunscreens

Discussion

Part 2

Summary of vitD metabolism and role of receptors.

Review effects of low and high vitD on disease causation or contribution to disease.

Effect of low vitD on cancer (IARC review, plus a bit) and other diseases.

Discussion

Part 3

Balance of UV exposure and adequate vitD metabolism.

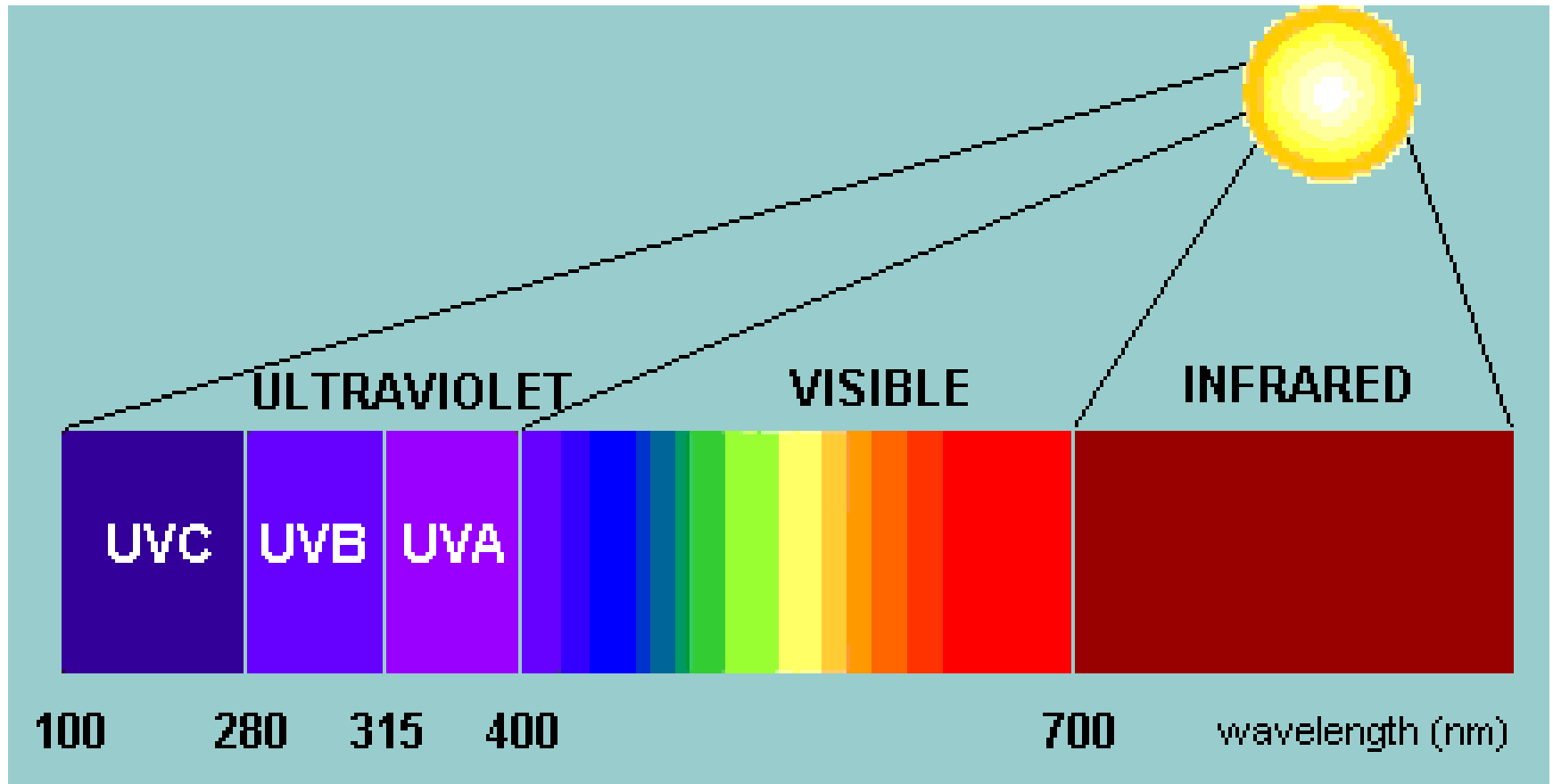
Part 4

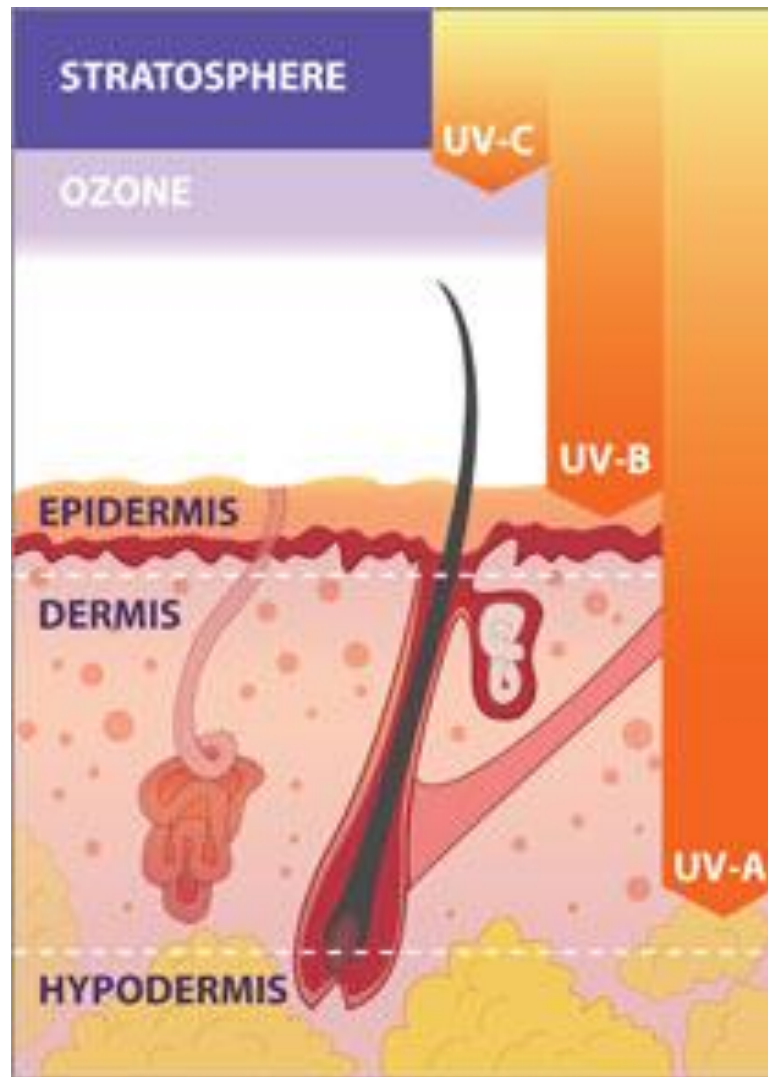
Discussion



Galileo 1564-1642.
'The father of astronomy.'

UV spectrum





- UV-A.
 - Main tanning UV.
 - Produces immediate but short-lived tanning response.
- UV-B
 - Main UV responsible for erythema (sunburn).
 - Contributes to 'delayed' tanning.
 - Minimum erythemal dose (MED)= minimum UV dose required to induce a defined erythema.

Publicly available UV measures 1

- Burn time – (old measure) length of sun exposure (minutes) before skin gets burnt.

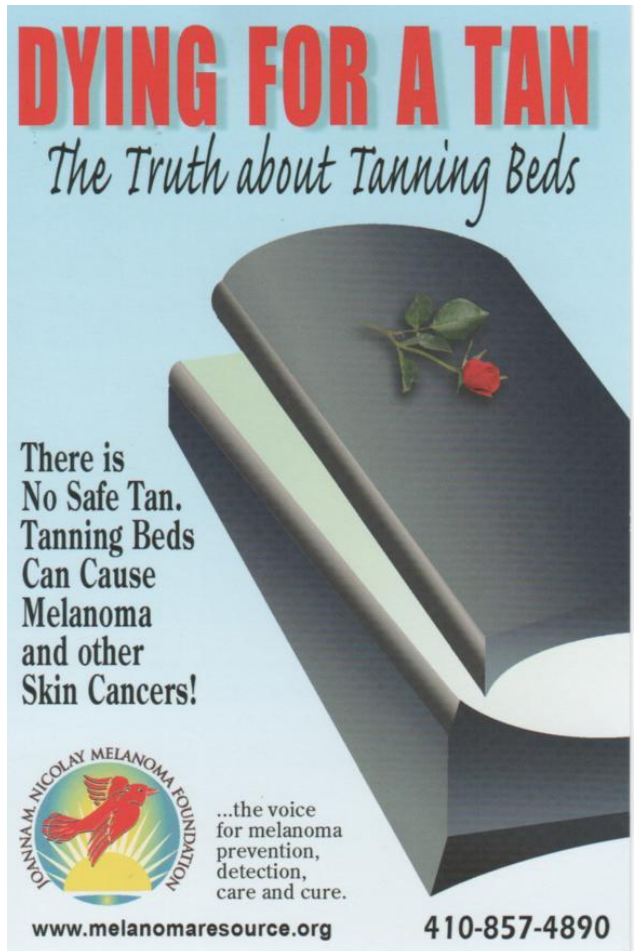
Note: Ozone hole-made v little measurable difference in ambient UV in NZ.

Publicly available UV measures 2

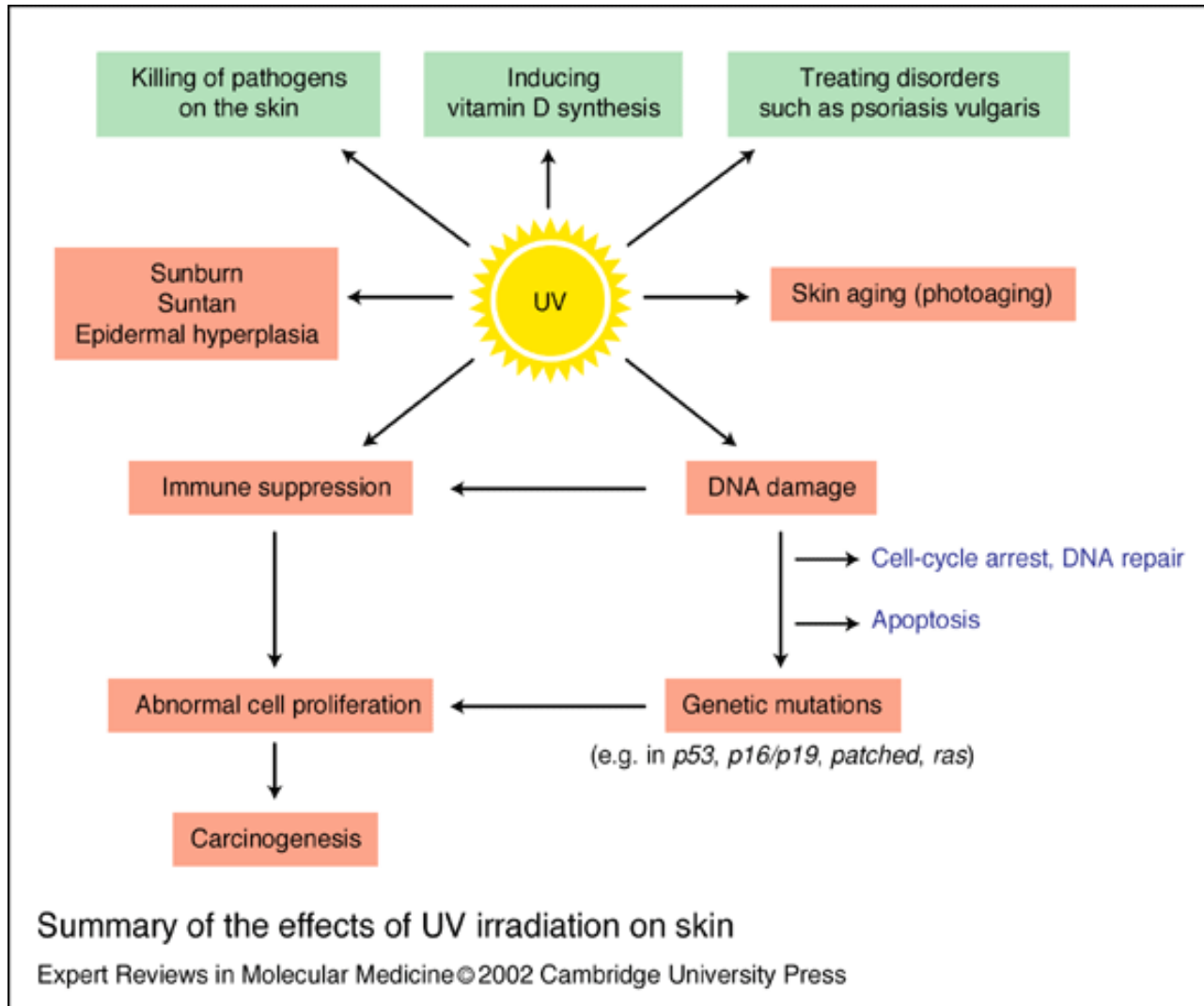
- UV index: higher the UVI → higher the potential skin damage.
 - International standard.
 - Aus range 11-15; NZ 8-13

UV index			UV strength	
UV PEAK 1	UV PEAK 2			LOW
UV PEAK 3	UV PEAK 4	UV PEAK 5	→ 	MEDIUM
UV PEAK 6	UV PEAK 7		→ 	HIGH
UV PEAK 8	UV PEAK 9	UV PEAK 10	→  	VERY HIGH
UV PEAK 11			→  	EXTREME

Non-solar sources of UV

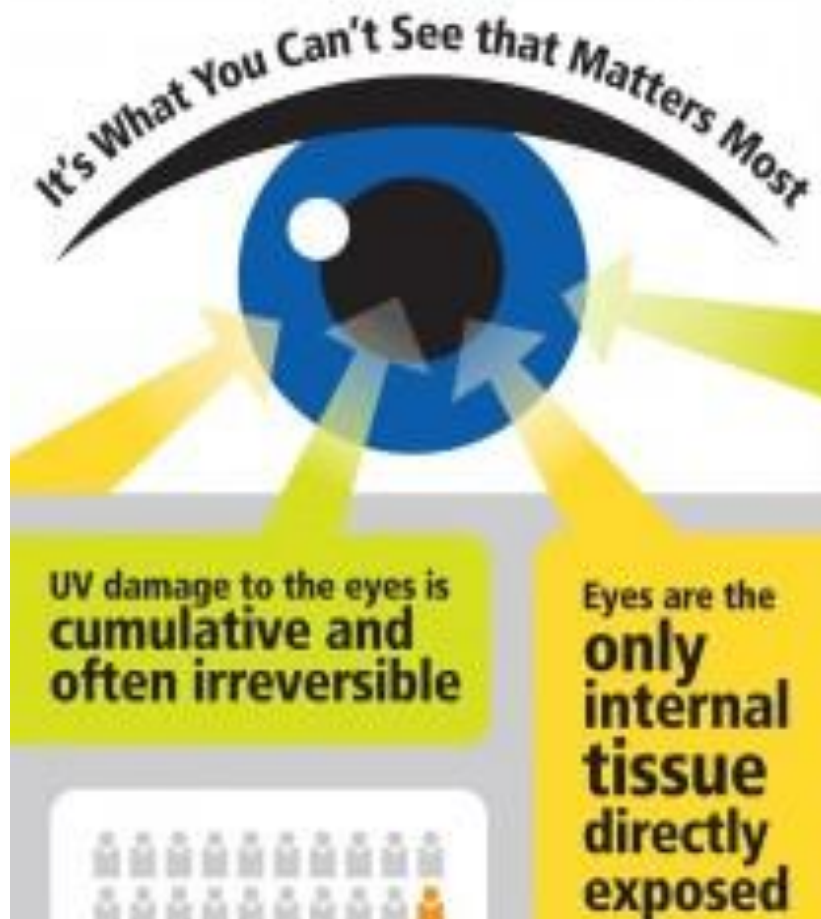


Harms and benefits of UV



UV and Your Eyes

It's What You Can't See that Matters Most



UV damage to the eyes is
**cumulative and
often irreversible**

Eyes are the
**only
internal
tissue
directly
exposed**



Evidence for association of UV and skin cancer (NMSC & melanoma)

- NMSC (BCC & SCC) most common on areas exposed to UV.
- People with pigmented skin, who sunburn much less, have much less skin cancer.
- Skin cancer much more common in white skinned people living in sunny regions.
- Genetic diseases resulting in greater sun sensitivity have marked increase in skin cancer.

Sun exposure and skin cancer

80% NMSC occur on sites exposed to sunlight.

BCC most commonly found on the nose.

	BCC	SCC	Melanoma
Chronic sun exposure		√	
Intermittent sun exposure.	√		√√
Mixed effects.	√		
UV-A (sun & sunlamps)		√	√
UV-B			√√
Sunburn	√		√

Non Melanoma Skin Cancer.

- Incidence in NZ is unknown, but NMSC is very common.
- Incidence increasing world-wide.
- World-wide, BCC more common than SCC (~ 4:1.2).
- Incidence >20x higher than melanoma. i.e. > 44,000 new cases per year.
- In Australia is a marked north-south gradient in incidence: incidence highest in north.
- Men have higher incidence than women.
- Mortality rate is low BUT ~40% higher than Australia. In 2009, 119 people died of NMSC in NZ.
- But very high numbers diagnosed mean total burden and cost to NZ is very high.

Melanoma - divergent pathway hypothesis.

More recent evidence -melanomas occurring on sun-exposed or non sun-exposed body sites arise from different causal pathways.

Predicts that melanomas developing in people with few naevi will arise on chronically sun-exposed sites.

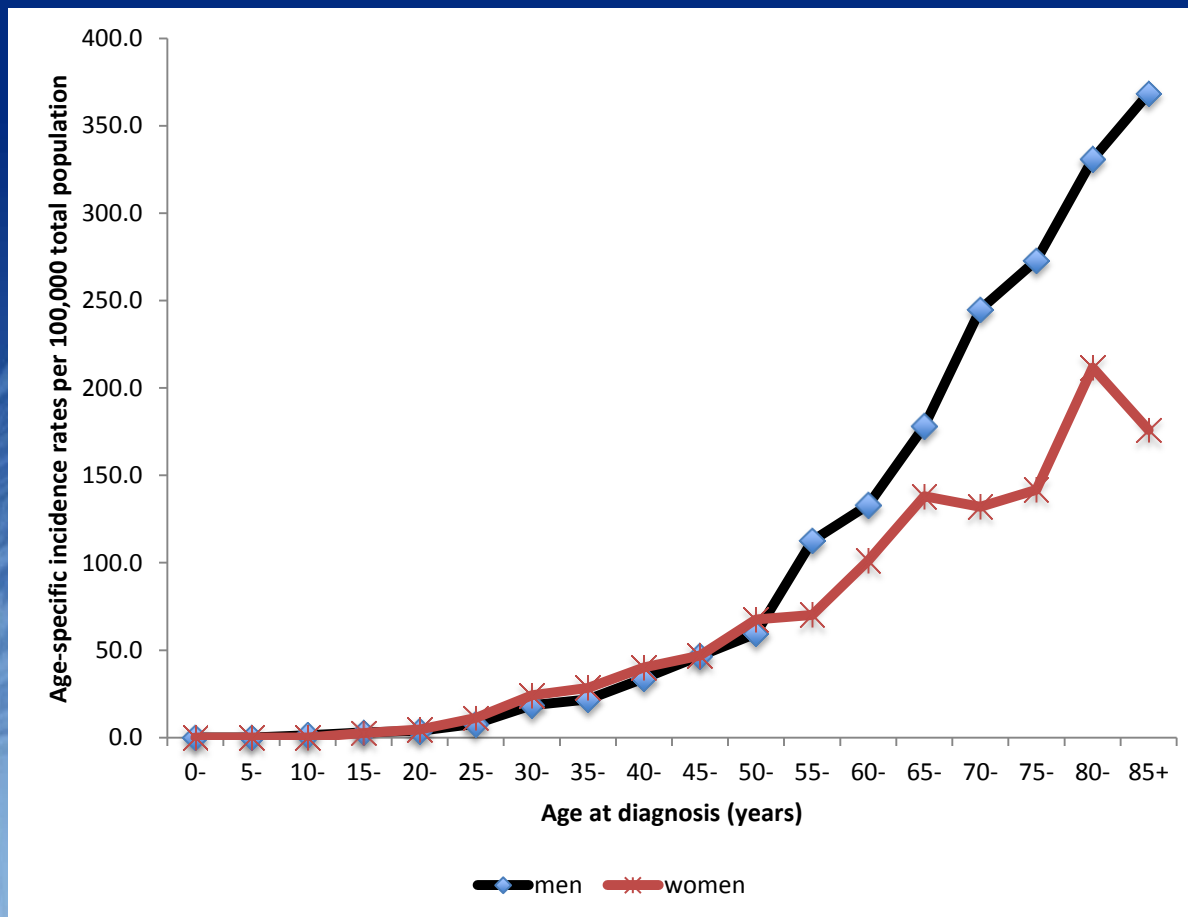
- tend to be LM.

But people with many naevi will develop melanomas on sites with high naevi counts on intermittently sun-exposed sites –

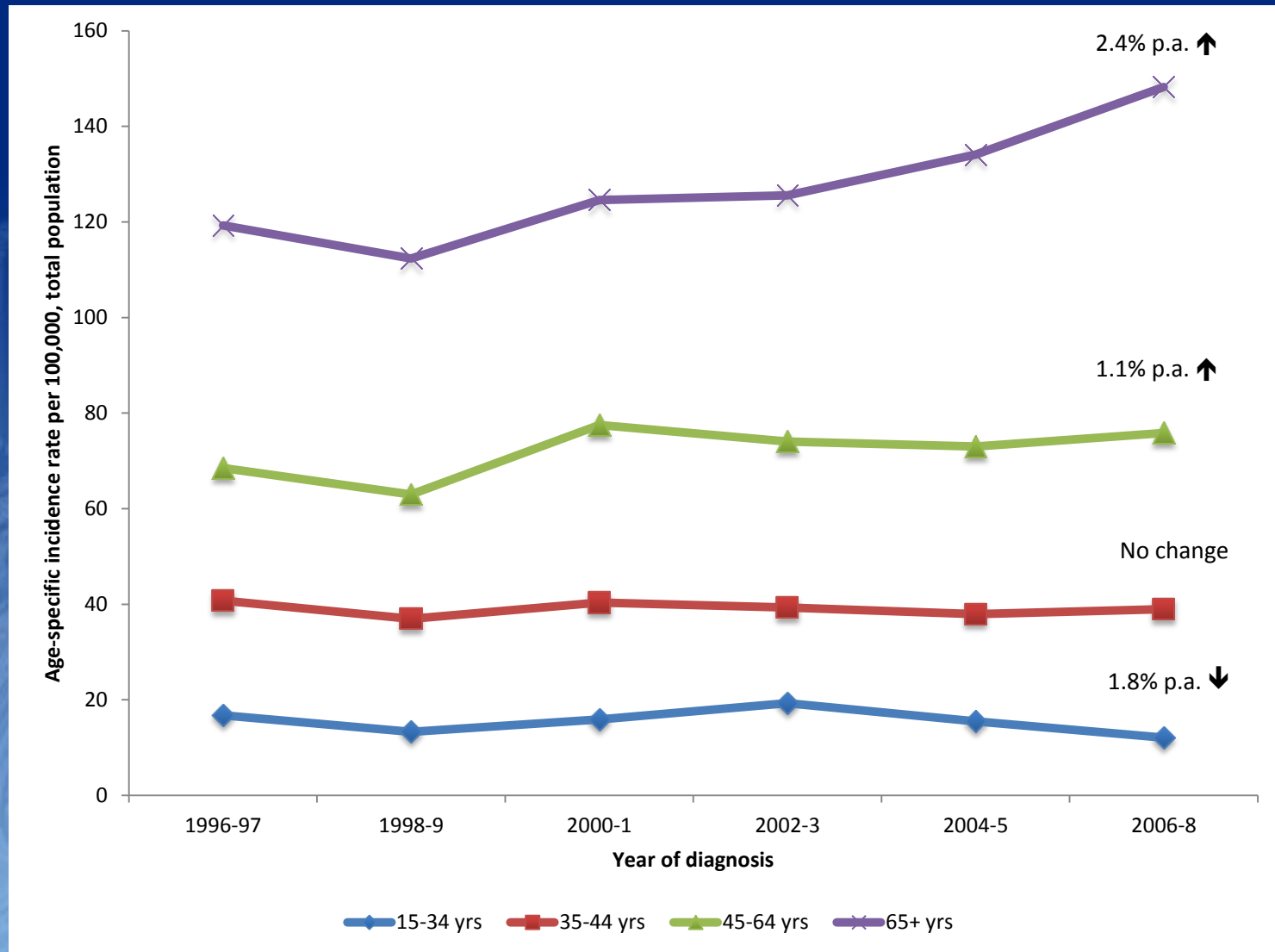
- tend to be superficial spreading melanoma (SSM) or NM.

This divergent hypothesis has not yet been explored in NZ.

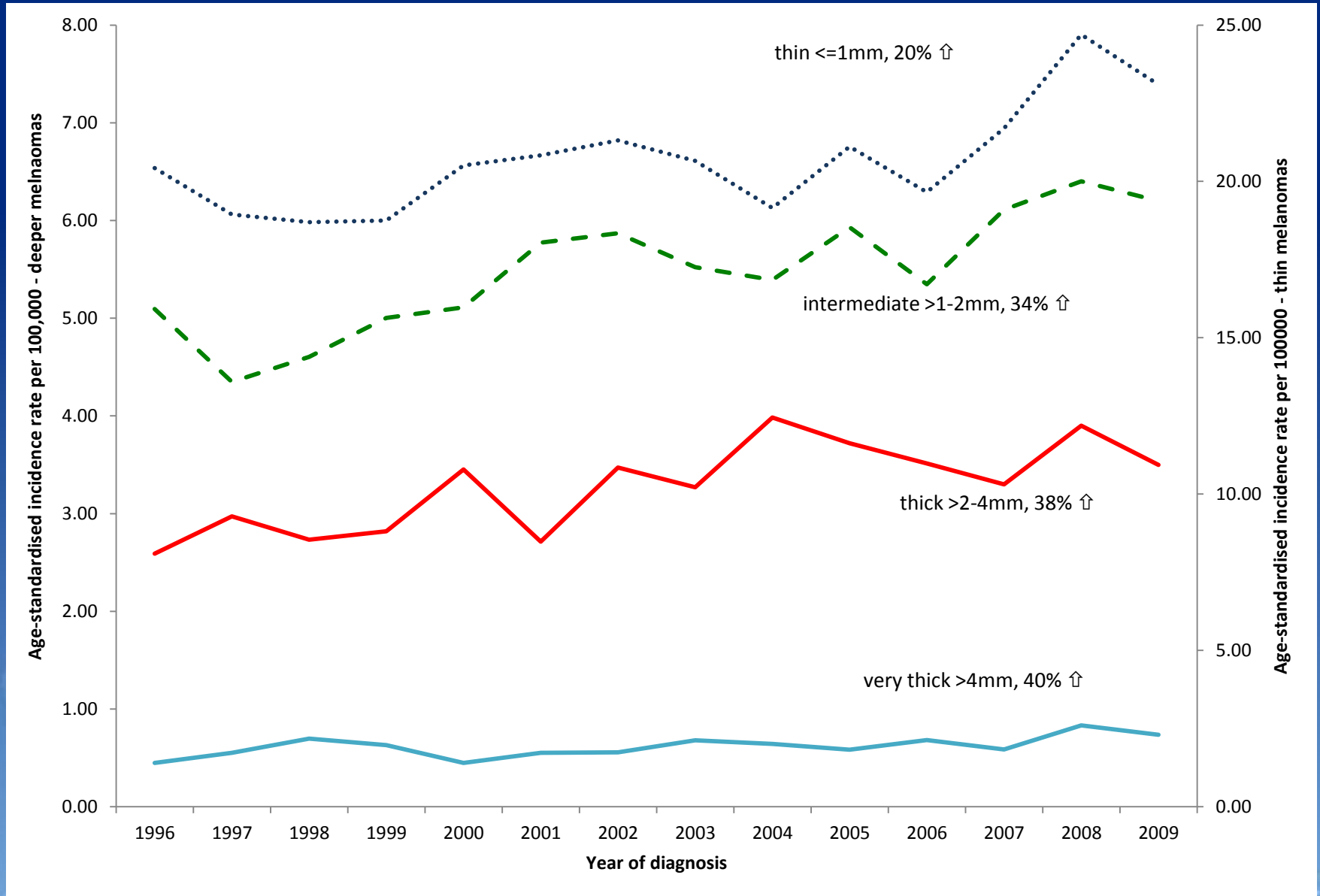
Age-specific incidence rate of melanoma in New Zealand by sex, for 2009.



Age-specific incidence rate of melanoma for the total female population, 1996/7 to 2006/8.*



Age-standardised* incidence rate of melanoma by depth category.



*using Segi standard

Sunscreen use

- Exposure to UV is the only known modifiable risk factor for melanoma.
- But role of sunscreen remains controversial.
- Sun exposure divided into:
 - Intentional sun exposure (ISE) eg tanning on beach. ~90% sunscreen use in this situation.
 - Non-intentional sun exposure (NISE) eg working on roadworks, gardening.
- Sunscreen has different effect in each situation.

IARC Handbook on sunscreens: FINAL EVALUATION (www.iarc.fr)

- When used during NISE, sunscreen use may decrease occurrence of SCC. Recommend use for NISE.
- Sunscreen use has no demonstrated influence on BCC.
- In ISE situations, sunscreen use may increase the risk of melanoma. Not recommended for ISE.
 - Prolong time in sun
 - No decrease in sunburns

Risk factors for melanoma

- Increasing age
- Sunburn, partic in childhood.
- Fair phenotype
- Multiple naevi.
- History of NMSC
- Geography