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Solar ultraviolet radiation

Assessing the environmental burden of disease
at national and local levels

Robyn Lucas



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Robyn Lucas

Editors

Annette Prüss-Ustün and Emilie Perkins van Deventer

A Microsoft Excel spreadsheet for calculating the estimates described in this document can be obtained from WHO/PHE. E-mail contact: EBDassessment@who.int

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Preface

Exposure to ultraviolet radiation (UVR) from the sun is a well-known risk factor for human disease. Indeed, in many countries, skin cancers are the most common types of cancer and account for a large economic burden to health-care systems. The health risks associated with exposure to UVR are distributed unevenly across the world, depending on the match between skin type and ambient levels of UVR. However, public health policies promoting appropriate sun protection at both personal and population levels may contribute to the reduction of health risks from UVR exposure. Indeed, many countries have developed comprehensive sun protection programmes.

Quantitative assessment of the size and distribution of UVR-associated health risks can be an important tool in comparing the associated disease burden with that due to other risk factors to guide public health spending and the focus of sun protection programmes. Such assessments will also provide a means for countries to assess the relative risks and benefits of UVR exposure with regard to their specific population and location. This guide provides a method by which countries can estimate their current disease burden (in terms of incidence, mortality and a combined measure of mortality and morbidity, called disability-adjusted life years) from UVR exposure—and thus the burden that could be avoided by use of selected protective measures.

This guide is based on the methods developed in the framework of the global assessment of burden of disease from UVR (Lucas et al., 2006). Certain methodological aspects are only summarized in the present guide but can be found in more detail in the global assessment.

This guide is part of a series providing guidance on quantifying the disease burden from various environmental risks. It is complemented by an introductory volume on methods for estimating the environmental burden of disease (Prüss-Üstün et al., 2003).

Affiliations and acknowledgement

This document is based on previous work on the global assessment of the burden of disease due to solar UVR (Lucas et al., 2006). Dr Robyn Lucas is a researcher at the National Centre for Epidemiology and Population Health, Canberra, Australia. The other authors of the global assessment include Professor Anthony McMichael, National Centre for Epidemiology and Population Health, Canberra, Australia; Professor Bruce Armstrong, School of Public Health, University of Sydney, Sydney, Australia; and Professor Wayne Smith, Centre for Clinical Epidemiology and Biostatistics, University of Newcastle, Newcastle, Australia.

The global assessment was carried out in the framework of the INTERSUN programme, a global project that is engaged in protecting the public from health hazards associated with UVR exposure. Editorial and scientific support at the World Health Organization was provided by Drs Colin Mathers, Emilie Perkins van Deventer, Annette Prüss-Üstün, Michael Repacholi and Hajo Zeeb.

Acronyms

BCC	basal cell carcinoma of the skin
CMM	cutaneous malignant melanoma
DALY	disability-adjusted life year
DNA	deoxyribonucleic acid
HIV	human immunodeficiency virus
ICD-10	International Classification of Diseases 10
NMSC	non-melanoma skin cancers
PAF	population attributable fraction
SCC	squamous cell carcinoma
SCCC	squamous cell carcinoma of the cornea and conjunctiva
SPF	sun protection factor
UV	ultraviolet
UVA	ultraviolet radiation A
UVB	ultraviolet radiation B
UVC	ultraviolet radiation C
UVR	ultraviolet radiation
WHO	World Health Organization

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