SKIN CANCER IN FARM WORKERS

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SUNLIGHT AS A CARCINOGEN

Puerto Rico is an island with very high UV radiation exposure throughout the year. The left panel shows the estimated daily UV Index for San Juan, Puerto Rico for 2001. The right panel shows UV data gathered at four wavelengths obtained by Dr. Roy Armstrong, Department of Marine Sciences, University of Puerto Rico.
EPIDEMIOLOGY OF SKIN CANCER

- Over 1 million new cases per year in the U.S. of BCC and SCC (Karagas et al. 1999, American Academy of Dermatology 2002).

- Most common neoplasm worldwide, significant portion of health care budget. NMSC ranks as No. 8 in terms of decade’s health priorities in the U.S. In terms of Medicare Expenditures among the top five cancers, incurring an average cost of $426 million per year.
Melanoma Statistics USA: 2005

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<tr>
<td><strong>New Cases</strong></td>
<td>59,580</td>
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<tr>
<td>- Male</td>
<td>33,580</td>
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<tr>
<td>- Female</td>
<td>26,000</td>
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<td><strong>Deaths</strong></td>
<td>7,770</td>
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<tr>
<td>- Male</td>
<td>4,910</td>
</tr>
<tr>
<td>- Female</td>
<td>2,860</td>
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- Incidence is increasing at a rate faster than any other cancer
- Lifetime risk for caucasians has increased dramatically to 1 in 55 in the U.S.
- Melanoma accounts for 4% of newly diagnosed cancers in the U.S. and 1% of cancer deaths, with it responsible for 6 out of every 7 deaths caused by skin cancer

CA: A CANCER J. CLIN, 2005
CLINICAL SIGNIFICANCE OF NMSC IN TERMS OF RISK TO OTHER MALIGNANCIES


Cancer Prevention Study II, USA and Puerto Rico. A prospective 12 year study involving nearly 1.1 million adults who completed a baseline questionnaire in 1982.

Death rates from all non-cutaneous cancers were 20-30% higher among participants who reported a history of NMSC. Biological mechanisms?
Projects funded to Ponce School of Medicine (Dr. J. Matta) through NC Agromedicine Institute

FIRST PROJECT

- Title: “Prevention of skin diseases in Puerto Rican Fishermen and Farmers” NIOSH GRANT# 1U50H07551-01, Period Funded: September 30, 2001 to September 29, 2002

Specific Aim:

Develop educational materials addressing different skin disorders common among fisherman and farmers. This will create awareness in these populations of methods that they can utilize to decrease their risk of skin diseases.

SECOND PROJECT

- Title: “Factors associated with injuries and illness in Puerto Rican agricultural farmers” NIOSH GRANT# U50-OH07551-04, Period Funded: September 30, 2004 to September 29, 2005
Specific Aims:

- Develop a questionnaire directed to our population of farmers and agricultural worker that elicits exposure to biological, chemical, environmental agents and health and injuries related to their work. The questionnaire will be developed in Spanish (culturally relevant).

- Administration of this questionnaire to a small sample (n=15) will allow us to collect the first data on risk factors for injuries and diseases related to Puerto Rican farmers and agricultural workers.

- Statistical analysis will be used to identify the most common injuries and disease that affect our population of agricultural workers with the sample of the population of 15.

- These will focus the attention on the agricultural health and safety and will provide basis for the future development of educational material to reduce occupational health and injuries risk.
GOALS OBTAINED FROM THE PROJECTS FUNDED

• FIRST PROJECT:
This pilot developed the educational material addressing skin disorders among fishermen and farmers. At the final of this pilot project a total of 2,210 educational materials were distributed in Puerto Rico. A network was created that included Ponce School of Medicine, Sea Grant College Program, University of Puerto Rico-Mayaguez Campus, (b) “Asociación Pescadores de la Guancha” (Fishermen Association), Ponce, P.R. (c) Auxiliary Dean Office, Educational Program, Oficina de Servicio de Extensión Agrícola, University of Puerto Rico-Mayaguez Campus for the distribution of these materials.

• SECOND PROJECT:
This pilot study allowed us to estimate some quantitative and statistical conclusions of the risk factors in our population of farmers and agricultural workers. This study can provide preliminary data for a case-control study to identify factors risk factors in our population of farmers and agricultural workers. A prospective study of injuries and illness related to the agricultural occupation in PR can be undertaken utilizing the findings and questionnaire of this study.
These two pilots studies provided preliminary data for the R-01 proposal that was submitted to NIOSH as part of the Center Grant Competitive Renewal Application of the Southern Coastal Agromedicine Center on January 20, 2006.
Title: SKIN CANCER PREVENTION IN FARM WORKERS

Abstract

Skin cancer is associated with multiple genetic and environmental risk factors particularly UV exposure. Occupational groups such as farmers with high UV exposure have a high skin cancer risk. A survey of the skin cancer database in the laboratory of the P.I. showed that 37% of the non-melanoma skin cancer patients over a six year period, who had high UV exposures associated with an outdoors occupation, were farmers. This proposal is centered on occupational cancer research methods, one of the 20 priority research areas that became the National Occupational Research Agenda (NORA). The proposed three-year NIOSH study is based on an innovative three pronged approach; 1) a “needs assessment” initial stage (year 1) aimed at identifying prevalence of sun exposure behaviors, beliefs and practices relevant to skin cancer prevention and risk factors from existing databases and focus groups in order to design an interventional study in farm workers, 2) implementation of interventional strategies based on information gathered in year 1 by means of a research to practice approach (r2p) (year 2), 3) data analysis and assessment of the efficacy of interventions aimed at skin cancer prevention (year 3). This overall approach will be accomplished through the following Specific Aims:
SPECIFIC AIMS

1: To develop a culturally and socially sensitive survey/self-report questionnaire on skin cancer, that will help to determine the risks, beliefs, and practices of farm workers in Puerto Rico, and to pilot test the questionnaire (Aim 1).

2: To estimate the prevalence of sun-exposure sustained by farm workers, as well as ascertaining what, if any, protective measures are taken by members of the study population. We will develop optimal r2p skin cancer prevention strategies by utilizing skin cancer risk factors in the study population, as well as defining participants’ beliefs about skin cancer and its prevention by means a self-report questionnaire in 100 farm workers and from existing databases.

3: To administer a self-report questionnaire to 400 farm workers in order to obtain baseline pre-intervention data on the prevalence of sun-exposure sustained by farm workers, as well as ascertaining what, if any, protective measures are taken by members of the study population; their beliefs about skin cancer and its prevention prior to the intervention.
Specific Aims R-01
Cont…

4: To implement a r2p skin cancer intervention strategy with 400 farm workers aimed at reducing skin cancer risk factors in this population.

5: To measure the outcome of the intervention in terms of skin cancer prevention by means of a post-intervention questionnaire. The proposed studies will directly address some of the most compelling research priorities and recommendations made by NORA, the U.S. Department of Health and Human Services (Healthy People 2010), the International Agency for Research on Cancer (IARC), and by the U.S. Preventive Services Task Force (USPSTF).
RESEARCH DESIGN

1. Obtain farm worker list from Puerto Rico Department of Agriculture
2. Identify 8 geographical agricultural regions
3. Create eight focus groups
4. Modify epidemiological questionnaire
5. Pilot test the modified epidemiological questionnaire
6. Administer the questionnaires to 400 farm workers for baseline pre-intervention data
7. Identify prevalence of behaviors prior to intervention
8. Intervention involving five components
9. Measure outcome of intervention by questionnaire
10. Publications and dissemination of results
June 5, 2009

Dr. Jaime Mata
Pharmacology Department
Ponce School of Medicine
Ponce, PR 00732

RE: Protocol No. 000509-JAN

Dear Dr. Mata:

Based on your certification regarding points raised by the IRB members and the response to your questions, we are pleased to inform you that your protocol entitled "Skin cancer prevention in tobacco users" has been approved.

This approval is valid only one year maximum, and if any information arises that it needs to be altered, it should be brought to the attention of the IRB as soon as possible.

We wish you luck in your study.

Cordially,

[Signature]

Eugenio Cotto, M.D.
PSC Chairman

Approval Date: June 5, 2009
Expiration Date: June 4, 2010