Effectiveness of Skin Cancer Prevention Programs for Reducing Melanoma and Non-Melanoma

Karen Glanz, PhD, MPH
University of Pennsylvania

- Evaluating the evidence: What works
- Evidence endpoints
- International examples & contexts
- Evidence to Action: Scaling up
- Best Buys
- Resources, political will, and the long run

Questions to be addressed

- What does evidence tell us about SC prevention programs’ long term effectiveness in reducing melanoma and non-melanoma rates?
- What have we learned about what can work to effect change in various settings & groups (school, workplace, young children, etc.)?
- How can we keep skin cancer prevention a high public health & healthcare priority?
- Given what we know, what are “best buys” for preventing skin cancer & reducing the burden?
Skin Cancer Prevention: Behavior Targets**

- Minimize sun/UV exposure
- Avoid indoor tanning
- Wear protective clothing, hats
- Use sunscreen
- Seek shade
- Wear sunglasses
- Skin self-exam, MD skin exam

**Do behaviors translate into prevention of cancers??

What Works?

Community Interventions
Policy and Environment Change
Education and Awareness Strategies adapted for countries

Evidence Pyramid

Systematic Reviews & Meta-analyses

RCTs

Cohort Studies

Case-Control Studies

Descriptive Studies, Case Series & Reports

Ideas, Editorials, Opinions

Skin cancer prevention programs: Systematic & narrative evidence reviews

Community Preventive Services Task Force (Community Guide):
- Updates 2011-2015 → completed, papers in review

Register of Multicomponent UV Protection Programs, 2014

UK Campaign Expert Paper, 2011
### Task Force Findings on Skin Cancer Prevention

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### Analytic Framework: Multi-Component Community-Wide Interventions to Reduce Incidence of Skin Cancer

#### Interventions

- **Educational, Behavioral, Mass Media**
  - Improved knowledge, attitudes, intentions, and social norms about:
    - Methods to protect against UVR
    - Skin cancer
  
- **Environmental and Policy Strategies**
  - Increased sun protective behaviors
    - Use of:
      - Sunscreen
      - Appropriate clothing
      - Hats
      - Shade
      - Sunglasses
      - Avoidance of sun exposure (especially in peak hours)

#### Decrease in UV exposure

- Reduced incidence of:
  - Sunburn
  - New mole formation
  - Actinic Keratosis

#### Decreased incidence of skin cancer

- Reduced morbidity & mortality

### Skin Cancer Interventions: Strategies/Components

- **Individually directed strategies** include:
  - Use of small media (e.g., brochures, pamphlets, printed materials)
  - Didactic programs (e.g., classroom lessons, lectures)
  - Interactive activities (e.g., games, photoaging feedback)
  - Skill development (e.g., role playing, instructions in sunscreen application)

- **Environmental interventions**:
  - Interventions increase opportunities for people to reduce UV exposure, such as:
    - Providing and/or broadening accessibility to supportive resources for skin cancer prevention (e.g., building shade, distribution of sunscreen)

### Skin Cancer Interventions: Strategies/Components (contd.)

- **Policy interventions**: Interventions establish formal rules and standards related to skin cancer protection measures. These can be developed by:
  - Organizations (e.g., school board, employers)
  - Legal/govt entities (e.g., municipal, state, and federal governments)

- **Mass media campaigns**: Disseminate information and persuasive messages using media channels:
  - Print media (e.g., newspapers, magazines)
  - Broadcast media (e.g., radio, television)
  - Internet/social media
Analytic Framework: Multi-Component Community-Wide Interventions to Reduce Incidence of Skin Cancer

**Interventions**

**Educational, Behavioral, Mass Media**
- Improved knowledge, attitudes, intentions, and social norms about:
  - Methods to protect against UVR
  - Sun protection
- Increased sun protective behaviors
  - Use of:
    - Sunscreen
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    - Sunglasses
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**Environmental and Policy Strategies**
- Decrease in UV exposure
- Reduced incidence of:
  - Sunburn
  - New mole formation
  - Actinic Keratosis
  - Decreased incidence of skin cancer
  - Reduced Morbidity & Mortality

Skin Cancer Prevention Endpoints

**Incidence/prevalence** of melanoma & non-melanomas
- Develops over many years
- Increases with age
- Pre-cancerous lesions may be seen earlier

**Mortality**
- Reductions with earlier stage diagnoses
- Treatment advances
- Even longer term
- Few interventions/programs continue over many years
- Real-world evaluation >> surveillance

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Multi-Component Community-Wide (MCCW) Interventions: Update

7 studies included 1966-2011
- Median increased sunscreen use 10.8 %age points,
- Decreased tanning bed use 4.0 %age points
- Slight decrease in UV exposure
- Mixed results for other outcomes

**SUFFICIENT Evidence to Recommend MCCW**


- Request for submissions from WHO UV Listserv

**Program reports from:**
- Australia (5 states)
- Canada
- United States (Florida)
- Europe and UK: UK, Spain, Germany, France
- Scandinavia: Denmark, Sweden

**Broad variability in** – strategies, reach, longevity, evaluation (process/monitoring vs impact)
**Effects of SunSmart Victoria**

Over ~ 20 years:
- Improvements in attitudes and behaviors
- Sunburn declines

Modeled effects on skin cancer
Observed vs predicted incidence in Victoria, for melanoma (Mel) & BCC

- 103,000 skin cancers prevented (9,000 Mel & 94,000 NMSC)
- 1,000 deaths averted


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**Trends over time in WA: SunSmart WA** (T Slevin, 2015)

Sustained program
High(est) investment per capita in skin cancer prevention

Trends in incidence vary by age group:
- Reductions for younger groups
- Little/no change for older adults

Mortality rates not declining

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**Characteristics of SunSmart Australia Programs**

**Context:**
- High skin cancer rates
- High priority for skin cancer prevention

Multi-level, multicomponent

Population-wide

Long term commitment

*Strategies change over time*

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**Characteristics of Other Countries’ Programs** (in the CCV Register)

- Lower skin cancer rates
- Lower priority for skin cancer prevention
- Resource commitments variable
- Duration usually not long-term
- Evaluation often limited (monitoring vs effect evaluation)
Remember, Setting-Based Prevention Programs Have Shown Positive Effects

Interpretation Issues
Multifactorial determinants of change in skin cancer rates (e.g., casefinding, migration)
Variation across countries (climate/salience/culture)
Few long term studies
Mixed results
Primary prevention vs. high risk focused
Adaptation & replication

What Can Be Achieved in Prevention? And Can We Keep It Simple?
Provocative Idea: Preventable Fraction

63% of melanoma & all keratinocyte cancers in AUS: attributable to high UVR levels

→ Estimate preventable by regular sunscreen use: 14% of melanoma, 9% of SCC

Olsen, Wilson, Green… Whiteman, ANZ J Pub Health, 2015

Best Buys for Skin Cancer Prevention

Best Evidence from Research

Decisions for Public Health Practice
- Interventions
- Programs
- Policies

Social values, Politics, Economics, Expertise, Knowledge

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Child Care Settings, Schools and Recreation Settings

Environment and policy strategies
- Shade
- Access to Sunscreen

Adults

- **Workplace**: policies, environmental supports, incentives
- **Recreation settings**: environmental supports (shade, sunscreen)
- **Healthcare setting**: provider reminders/prompts, skin exams as indicated, treatment for early cancers

Population-Wide: Scaling Up

Mass Media – awareness, prompts, social norm change, targeted locally/nationally

- Aim for the long term
  - Political will, priority
  - Leadership
  - Partnerships

- Sound (even rigorous) evaluation, monitoring, surveillance

"An ounce of prevention is worth a pound of cure"
- Ben Franklin

Thank you!
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