Does High SPF offer better protection?
An analysis of the issue

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Disclosures:
J and J – A, H, I
Beiersdorf – C, H

Cancer USA - 2018

1645000

More Skin Cancers than all other cancers combined

Skin Cancer USA - 2018

Melanoma – USA

Melanoma – US 2018

• Invasive = 91,270
• In-situ = 87,290
**Melanoma – USA 2018**

Lifetime Risk: Invasive and In Situ MM

178,560 total cases

Rigel et al., NYU Melanoma Cooperative Group, 2018

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**Leading Sites of New Cancer Cases – 2018 Estimates**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>194,290</td>
<td>296,120</td>
</tr>
<tr>
<td>Lung (bronchus)</td>
<td>122,130</td>
<td>112,370</td>
</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>75,730</td>
<td>64,860</td>
</tr>
<tr>
<td>Breast</td>
<td>60,900</td>
<td>65,250</td>
</tr>
<tr>
<td>Melanoma</td>
<td>39,150</td>
<td>68,960</td>
</tr>
<tr>
<td>Kidney</td>
<td>42,780</td>
<td>33,900</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>41,730</td>
<td>77,960</td>
</tr>
<tr>
<td>Oral cavity &amp; oropharynx</td>
<td>37,630</td>
<td>26,810</td>
</tr>
<tr>
<td>Leukemia</td>
<td>35,250</td>
<td>27,270</td>
</tr>
<tr>
<td>Lymph &amp; monophasic blast</td>
<td>39,150</td>
<td>22,680</td>
</tr>
<tr>
<td>All Others</td>
<td>864,269</td>
<td>878,369</td>
</tr>
</tbody>
</table>

Siegel et al., CA J Clinicians, 2018

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**US Annual Deaths from Melanoma**

ACS

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**MM Survival – US Trends over Time**

Siegel et al., CA J Clinicians, 2018

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**Skin Cancer Deaths US - 2018**

Over 1 American dies of Melanoma every hour

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**Primary vs Secondary Prevention**

Primary = Protection  Secondary = Early Detection

Impact → Incidence  Impact → Mortality
What can we conclude from this data?

- Secondary prevention efforts appear to be making an impact
- Primary prevention not as impactful
- Focus of our efforts on primary prevention – behavioral change

What Causes Melanoma?

The overwhelming majority caused by UV exposure

Sunlight is the major environmental risk factor for melanoma.
Examine if S-shaped curves describe the relationship between solar UV doses and MM incidence and the % of MM that can be directly related to UV exposure.
Analysis indicates that S-shaped associations describe the data well (P < 0.0001).
Conclusion:
- Between 89 and 95% of the annual CM cases are caused by solar UV exposure.
- Avoidance of UV radiation will reduce the incidence of MM.

Visible to UVA wavelengths cause sunburn, skin aging, and skin cancer.

Melanoma vs. Latitude USA

UV and Melanoma Risk

Are ALL melanomas caused by UV exposure?

No, but the vast majority are!
Does Sunscreen Usage Lower Skin Cancer Risk?

Reduced melanoma risk after regular sunscreen use

- 1,621 randomly selected residents of Nambour (Queensland) Australia, age 25 to 75 years, were randomly assigned to daily or discretionary sunscreen application to head and arms
- Treated for 5 years then followed for 10 years

Green et al, J Clin Oncol, 2011

Sunscreen Usage and Melanoma Risk

- All Melanomas
- Invasive MM
Reduced melanoma risk after regular sunscreen use

- 1,621 randomly selected residents of Nambour (Queensland) Australia, age 25 to 75 years, were randomly assigned to daily or discretionary sunscreen application to head and arms
- Treated for 5 years then followed for 10 years
- Only 11 new MMs in daily group vs. 22 (p=0.051)
- 2 Invasive MMs in daily group vs. 11
- Conclusions:
  - Melanoma risk significantly lowered by regular sunscreen use in adults

Green et al, J Clin Oncol, 2011

Skin cancers in Australia prevented by regular sunscreen use

- Estimated the proportion of skin cancers that would have occurred but were likely prevented by regular sunscreen use
- Regular sunscreen use prevented around 14,190 persons from developing SCCs (PF 9.3%) and 1,730 from Melanoma (PF 14%)
- Conclusions:
  - Prevailing levels of sunscreen use probably reduced skin cancer incidence by 10-15%
  - Sunscreen should be a component of a comprehensive sun protection strategy


How many melanomas might be prevented if more people applied sunscreen regularly?

Calculated the PF, the proportional difference between the observed number of melanomas arising under prevailing levels of 5% annual increase in sunscreen use for 10 years (50% increase)

How many melanomas might be prevented if more people applied sunscreen regularly?

Calculated the PF, the proportional difference between the observed number of melanomas arising under prevailing levels of 5% annual increase in sunscreen use for 10 years (50% increase)

Estimated that cumulatively to 2031, 231,053 fewer melanomas would arise in the U.S. white population (PF 11%)

Conclusions:
  - Interventions to increase use of sunscreen would result in reductions in melanoma incidence
  - Countries with a high incidence of melanoma should monitor levels of sunscreen use

Olsen et al, Br J Dermatol, 2017

Olsen et al, Br J Dermatol, 2017
Norwegian Women Study, N = 143,844

Blond/Red Hair Freckling in Sun Using SPF >15

Percentage improvement with regular use of SPF >15

- Lowered risk of melanoma

Sayre et al, Arch Dermatol, 1978

Development of SPF

- Correlation of indoor solar simulator with natural sunlight
- Natural sunlight effects could be duplicated with solar simulator

How high is high enough?
**Sunscreen Use Not Only Protects, But Promotes Reversal of Photodamage**

- Clinical evaluations showed all photaging parameters improved significantly from baseline as early as week 1-2, and continued until week 52
  - Skin texture, clarity, and mottled/discrete pigmentation were most improved parameters
  - Self-assessment showed significant improvement in skin clarity and texture

100% of subjects showed improvement in skin clarity and texture

**SPF levels vs. UVB absorption**

- Marginal increase in UVB protection from SPF 50 to SPF 100 is only 1%

**It's Not About How Much Is Blocked**

- Moving from SPF 15 to 30 is only incremental 3.3% added "protection"
- Moving from SPF 30 to 50 is only 1.7% added "protection"

**SPF 100 = Greater Sun Protection Over Lifetime: The Bucket Theory**

- Broad spectrum high-SPF photostable sunscreen with high UVA-PF can protect against cellular damage at high UV levels
  - To evaluate if high-SPF sunscreen can protect skin at the cellular level under UV exposure doses (>50 MEDs) similarly to the SPF value
  - Sunburn cells, Langerhans cells, thymine dimers, protein 53 (p53), and matrix metalloproteinase (MMP)-1 and MMP-9 endpoints were evaluated in biopsies from 12 subjects:
    - Unprotected exposed to 0, 1 and 3 MED
    - SPF 55 protected exposed to 55 MED of UV radiation
  - After 55 MEDs, sunscreen-protected sites showed either significantly less damage or no difference than the 1 MED-exposed unprotected sites
  - Conclusions:
    - High-SPF sunscreen with high UVA-PF can provide proportionately high protection against multiple cellular damage markers

**SPF 100 = Greater Sun Protection Over Lifetime: The Bucket Theory**

- It's not about how much is blocked, but what gets through that counts against a lifetime of damage

**SPF 100 = Greater Sun Protection Over Lifetime: The Bucket Theory**

- SPF levels vs. UVB absorption
- Marginal increase in UVB protection from SPF 50 to SPF 100 is only 1%

**SPF 100 = Greater Sun Protection Over Lifetime: The Bucket Theory**

- SPF levels vs. UVB absorption
- Marginal increase in UVB protection from SPF 50 to SPF 100 is only 1%
Shift Conversation to Cumulative Damage

Although daily benefits of HIGH SPF are important, cumulative benefits over a lifetime can be life-saving

- Protection for a day at the beach against sunburn is one thing
- Protection over a lifetime against skin cancer and photoaging is a another critical consideration in sun safe behavior

Impact of under application of sunscreen

- SPF of sunscreens are tested using a thickness of 2 mg/cm²
- Investigations show that sunscreen under natural conditions is applied insufficiently with amounts about 0.39 to 1.0 mg/cm²
- Missing areas and UV radiation exposure before sunscreen application are other pitfalls that reduce the protective effect of sunscreens considerably

Patients Under Apply Sunscreen

- Numerous studies have shown that consumers typically under apply product by 1/4 to 1/2 of what should be applied
- Data shows that consumers seldom re-apply after the initial application
- Not all body areas get comprehensive application and coverage

High-SPF Compensates for Under-Application of Sunscreen

- OBJECTIVE: To measure the actual SPF values of various sunscreens (SPF 30 to 100) applied in the reduced amounts typically used by consumers
High SPF Offers Meaningful Margin of Safety

Methods

- Application densities: 0.5, 1.0, 1.5 and 2.0 mg/cm²
- Products applied according to the standard protocol for SPF Testing, on the back of human volunteers

Actual SPF at different application doses

<table>
<thead>
<tr>
<th>Application Dose</th>
<th>SPF 30 Lotion</th>
<th>SPF 100 Lotion</th>
<th>SPF 100 Spray</th>
<th>SPF 50 Lotion</th>
<th>SPF 50 Spray</th>
<th>SPF 70 Lotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mg/cm²</td>
<td>31.0</td>
<td>51.8</td>
<td>70.6</td>
<td>104.6</td>
<td>58.7</td>
<td>105.3</td>
</tr>
<tr>
<td>1.0 mg/cm²</td>
<td>21.8</td>
<td>41.3</td>
<td>56.9</td>
<td>79.3</td>
<td>38.6</td>
<td>75.0</td>
</tr>
<tr>
<td>1.5 mg/cm²</td>
<td>16.0</td>
<td>26.8</td>
<td>37.1</td>
<td>55.9</td>
<td>25.7</td>
<td>58.1</td>
</tr>
<tr>
<td>2.0 mg/cm²</td>
<td>11.1</td>
<td>15.9</td>
<td>19.3</td>
<td>27.1</td>
<td>17.4</td>
<td>22.4</td>
</tr>
</tbody>
</table>

Results

- There was a linear relationship between application density and the actual SPF
- Sunscreens labeled SPF > 50 provided significant protection even when applied at “real world” typical application densities

SPF 50+ Status

- Sunscreens with SPF of 50 or more are available in some other developed countries, including New Zealand, the US and many European countries
- Australia and other countries have an SPF 50+ cap
**Objective:**

- To directly measure sunburn protection offered by shade from a beach umbrella in comparison to a high SPF sunscreen

**Methods**

- Randomized, Evaluator-blinded, Controlled Study

  - Lakeside Beach near Dallas Texas, August 12
    - 75-90 degrees F
    - Horizontal UV Intensity 3-5 MEDs/hour

  - 81 Participants
    - Sunscreen ONLY Group (SPF 100)
    - Shade ONLY Group (beach umbrella)
Methods

SUNSCREEN Group

- Neutrogena Ultra Sheer SPF 100
- Instructed to apply following label directions
- Sit at beach (no water activity) for 3.5 hours
- Reminded to reapply after 2 hours

Ou-Yang et al, JAMA Dermatol, 2017

Methods

SHADE Group

- Standard beach umbrella
- Round, 80” diameter, 75” height
- UPF rating 1000+
- Sit under umbrella shade at beach for 3.5 hours
  - Not allowed to use sunscreen
- Reminded to reposition as solar angle changed

Ou-Yang et al, JAMA Dermatol, 2017

Methods

Evaluation

- 24 hours after beach sun exposure
- 7 body sites evaluated (evaluator blinded to group)
  - Face, upper chest, back of neck, left/right arm, left/right leg
- Clinical Evaluation
  - 0 = no sunburn
  - 1 = possible sunburn, not clearly defined
  - 2 = defined redness
  - 3 = severe sunburn, pronounced redness
  - 4 = edema, blisters
- Compared scores to baseline (baseline = 0 = NO evidence of sunburn at start study)

Ou-Yang et al, JAMA Dermatol, 2017

Results

SUNSCREEN ONLY - Average Sunburn Score

Sunscreen group had significant increase (p<0.05) in sunburn for face only

Ou-Yang et al, JAMA Dermatol, 2017

Results

SHADE ONLY - Average Sunburn Score

Shade group had significant increase (p<0.001) in sunburn for all body sites

Ou-Yang et al, JAMA Dermatol, 2017

Conclusions

- Seeking shade alone may not provide sufficient protection for extended sun UV exposure
- Shade Protection Factor: challenging to quantify given multiple factors

Ou-Yang et al, JAMA Dermatol, 2017
Does higher SPF protect significantly better in real world settings?

Does higher SPF protect significantly better in real world settings?

**High SPF formulation more effective during intense UV exposures**
- SPF 85 formulation tested vs. SPF 50
- 56 subjects applied sunscreen to face while skiing at Vail, Colorado 1/13/08
- 1 application only at start of day
- Average hours exposed 5.0 hours
- Noon Sun 22 minutes = 1 MED
- 7/28 sunburned SPF 50 vs. 1/28 SPF 85 (p=0.02)

**Conclusion:**
- SPF 85 formulation more effective than SPF 50 in protecting from sunburn with a single application in a high UV test environment

**Sunscreen – Proposed Rule on SPFs**
- Proposing to limit SPF to “50+”
  - Acknowledged that SPFs higher than 50 have been substantiated and results are validated and repeatable
  - Additional data demonstrating additional clinical benefit above SPF 50 are being collected by the FDA
- Sunscreens labeled with SPFs above 50 may remain on the market until this proposed rule becomes final, provided they follow the appropriate SPF test.
- Depending on how this proposed rule is finalized, these products may/may not be able to continue on the market.

**Federal Register / Vol. 76, No. 117 / Friday, June 17, 2011 / Proposed Rules**
- We are only aware of one study that examined the relative effectiveness of sunscreen products with SPF values of 50 compared to products with SPF values above 50. Russak et al. compared the sunburn protection provided by an SPF 85 sunscreen product compared to an SPF 50 sunscreen product (Ref. 3). In the double-blind study, each subject was randomly assigned to apply the SPF 85 product to one side of the face and the SPF 50 product to the other. Following a one-time morning application subjects went skiing or snowboarding during a bright, sunny day at a well-known ski resort.

**Federal Register / Vol. 76, No. 117 / Friday, June 17, 2011 / Proposed Rules**
- For each subject:
  1. How much sunscreen was used?
  2. How much time did each individual subject spend in the sun?
  3. Were there reapplications (not allowed in study)?

**E. Data Necessary To Demonstrate Additional Benefit**
- To increase the maximum specific SPF value above 50, we would need data demonstrating that sunscreen products with SPF values above 50 provide additional clinical benefit relative to SPF 50 sunscreen products. The study by Russak et al. described earlier in this section of the document is one type of study that we would accept for consideration, if it would have contained the detail required to make a determination of its adequacy.
In-vivo comparison of SPF 100 vs 50 in Actual Use Conditions

BACKGROUND
- In the 2011 proposed monograph, the US Food and Drug Administration requested additional data stating "there is currently insufficient evidence that there is clinical benefit to the consumer at SPF above 50."
- In real-world settings, consumers apply sunscreens at densities lower than are used to clinically determine SPF and the linear dependence of SPF to application density is well established.

OBJECTIVE
- It is hypothesized that a sunscreen with a higher SPF would provide greater in-use efficacy compared with one currently labeled at the proposed maximum of SPF 50+.
- Objective of this study was to evaluate the difference in sunburn protection provided by different SPF sunscreens during a day of downhill snow skiing.

METHODS
- 199 healthy men and women ≥18 years of age participated in a one day split face, randomized, double blind study in Vail, Colorado.
- The difference in sunburn protection provided by two currently available sunscreens (SPF 50+ and SPF 100+) was evaluated.
- Products were supplied in a kit containing two overwrapped tubes of sunscreen marked "right" and "left." Each subject wore both sunscreens simultaneously, with product application randomized to either the right or left side of the face.
- Subjects utilized the sunscreens as they would normally during ski activities. Diaries were used to record sun exposure time and the frequency and timing of sunscreen re-applications.
- Subjects reported the next morning for clinical evaluation.

STUDY DESIGN
- Participants and evaluator were blinded to test product identity. Participants (Fitzpatrick skin type I to III, Erythema Score of 0.5 or less) were randomized to one of two treatment regimens for the face and neck:
  (SPF 50+ on left & SPF 100+ on right) or (SPF 100+ on left & SPF 50+ on right)
- Products Evaluated
  - Neutrogena® Ultra Sheer® Dry-Touch Sunscreen Lotion Broad Spectrum SPF 100+ (UPC 086800873105)
  - Banana Boat® Sport Performance® with Powerstay Technology Sunscreen Lotion Broad Spectrum SPF 50+ (UPC 079656045130)

Williams et al, JAAD, 2018
## STUDY DESIGN

### Primary Endpoint

<table>
<thead>
<tr>
<th>Bilateral Comparison Score</th>
<th>R</th>
<th>O</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right side more sunburned</td>
<td>No difference</td>
<td>Left side more sunburned</td>
<td></td>
</tr>
</tbody>
</table>

### Secondary Endpoint

<table>
<thead>
<tr>
<th>Erthema Score</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Burn</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Possible sunburn, not defined</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sunburn, clearly defined</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Severe sunburn</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Edema and blisters</td>
<td></td>
</tr>
</tbody>
</table>

• Participants self-applied the pre-weighed study products upon receipt, prior to outdoor sun exposure as they normally would. To address any questions by subjects about product application or usage, subjects were referred to the product study labels which contained the complete sunscreen Drug Facts information without ingredients list.

• Time spent outdoors was captured by the subjects in the provided exposure diary and solar conditions were tracked utilizing a stationary radiometer. An application diary was used to record the frequency and time of any product reapplications.

• Primary and Secondary efficacy endpoints were evaluated by clinical grading the morning after the recreational sun exposure period. At which time study products were also collected and weighed to determine usage.

## STUDY PARTICIPATION AND CONDITIONS

• Conducted on a sunny day (March 21st, 2016) during normal recreational skiing/snowboarding in Vail, Colorado, USA (base elevation approx. 8,200').

• 199 participants (42% women, 37±16 years old); Fitzpatrick skin Type I (16%), Type II (73%), & Type III (11%)

• Participants averaged 6.05 ± 1.29 hours of sun exposure

## RESULTS

### Primary Endpoint

**SPF 50 side of face 11x more likely to be sunburned than SPF 100 side**

P = 0.001

### Group 1

- Left ≤ SPF 50+<br>- Right ≤ SPF 100+

- 6.0% more sunburned on SPF 50+ side

### Group 2

- Left ≤ SPF 100+<br>- Right ≤ SPF 50+

- 3.0% more sunburned on SPF 100+ side

- 7.9% more sunburned on SPF 100+ side
RESULTS
Secondary Endpoint
Erythema was significantly lower on the SPF 100+ protected side of the face, and erythema progression was observed to be more than twice as severe on the SPF 50+ protected side.

Usage
No differences were observed in usage, application density, or reapplication frequency of the study products.

Average Product Application Density

RESULTS
Post Hoc Analysis
The number of sunscreen reapplications was not observed to diminish the enhanced protection benefit of the SPF 100+ product.

SPF 100+ sunscreen was significantly more effective at protecting against sunburn in all examined skin types.

CONCLUSIONS
• The SPF 100+ sunscreen was significantly more effective in protecting against sunburn than the SPF 50+ sunscreen for all skin types evaluated.
• These findings demonstrate that there is a need for sunscreens labelled with SPFs greater than 50+ to provide consumers with better choices for sunburn protection.

New measures of measuring sunscreen effectiveness.
A new approach for evaluating the water resistance of sunscreens: Tap water vs. Salt water vs. Chlorine water

- In-vivo screening approach to measure water resistance using UVA-induced fluorescence imaging
- All testing performed on the forearms of 10 subjects using UVA fluorescence imaging with tap, salt and chlorinated water.
- Method effective and also tests water specific sunscreens such as a beach dedicated product showing a 20% higher resistance to salt water versus tap and chlorine waters
- Conclusion:
  - The use of UVA-induced fluorescence imaging on skin proved a useful in-vivo approach for measuring the water resistance performance


New non-invasive approach assessing in vivo SPF using Diffuse Reflectance Spectroscopy and in vitro transmission

- Seventeen test materials with known in vivo SPF values were tested
- Combines the evaluation of UVA absorption spectrum as measured by diffuse reflectance spectroscopy (DRS) with the spectral absorbance "shape" of the UVB absorbance of test material as determined with in-vitro thin film spectroscopy
- Strong correlation of this new method with in vivo clinical SPF values $r^2 = 0.98$
- Conclusion:
  - This methodology provides a new approach to determine SPF values without the extensive UV irradiation procedures (and biological responses) currently used to establish sunscreen efficacy

Ruvolo et al, Photodermatol Photoimmunol Photomed, 2014

Immune Protection Factor of Sunscreens

- UV exposure leads to decreased immune response in skin
- UV induced suppression of Nickel allergy measure in subjects wearing sunscreen
- IPFs derived from the ratio of the minimal immune suppression dose (MISD) of UV in sunscreen applied sites vs. MISD of unprotected sites
Conclusions:
  - IPF can be used as a measure of UV protection

Damian et al, Photochem Photobiol, 1999

Accumulated p53 protein and UVA Protection Levels in Sunscreen

- 2 sunscreens (SPF 7 – PFA 3 or 7) tested
- p53 levels measured in biopsies from UVA exposed skin
- Increased p53 with same exposure levels with lower UVA protection
- Conclusions:
  - p53 levels could be a biologic measure of UVA protection

Seith et al, Photoderm Photobiol Photomed, 2000

Chemiluminescence Evidence of Free Radical Generation

Free Radical Generation After 20 J/cm2 UVA Irradiation

- Untreated
- Photostable Sunscreen
- Non-photostable Sunscreen

Intensity (cps)

Time (s)

• Free radical formation from UV exposure in the skin measured in pig skin biopsies with electron spin resonance spectrometry
• Correlated with in-vivo measurements in human skin
• The effectiveness of UV filters inversely correlate with level of radical generation
• Conclusions:
  - Biophysical endpoint of free radical and reactive oxygen species in skin (RSF) can measure UV protection in sunscreens


Radical Sun Protection Factor - RSF
DNA Dosimetry Assessment for Sunscreen Genotoxic Photoprotection

- Sun Protection Factor for DNA (DNA-SPF) is calculated by using specific DNA repair enzymes, and it is defined as the capacity for inhibiting the generation of cyclobutane pyrimidine dimers (CPD) and oxidised DNA bases compared with unprotected control samples
- 5 commercial sunscreens and 17 sun protection formulations were tested
- All of the commercial brands of SPF 30 sunscreens provided sufficient protection against simulated sunlight genotoxicity
- Conclusions:
  - DNA dosimeter is an alternative, complementary, and reliable method for the quantification of sunscreen photoprotection at the level of DNA damage


Integrated Sun Protection Factor - IPF

- Free radical formation occurs from UV, IR-A and visible light exposure in the skin
- Measured in skin biopsies with electron spin resonance X-band spectrometry
- Integrates radiation exposure effects in all skin layers
- Conclusions:
  - Method effective for testing overall UV protection

Zastrow et al, Skin Pharmacol Physiol, 2004

What do our colleagues think?

Dermatologists' Perceptions Recommendations and Usage of Sunscreen


Dermatologists' Beliefs

N = 156

Dermatologists' Recommendation Factors

N = 156

Dermatologists' Views

N = 156
High SPF is proven to offer clinically significant benefits in real-world settings and actual use scenarios.

Discuss value of High SPF sunscreens for:
- patients who under-apply
- acute and long-term exposure
- extended outdoor activity

Summary
- Photoprotection important and lowers Skin Cancer risk
- Higher SPFs have been proven to have clinical benefits to users
- Measures of UVA protection better but still not optimal
- Dermatologists are recommending higher SPFs
- Measures of protection are evolving in future with new approaches coming
- Have to improve getting the message to our pts

Despite Decades of Science, Education, Sunscreen Compliance is Low

Only 30% of women and >10% of men use sunscreen on face and exposed skin

Only 39.1% of American households purchase sunscreen

Source: IRI, US Sunscreen Household Penetration, 52 weeks ending 6/29/2014, all major retail outlets