Updates in Population Screening for Melanoma

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Disclosures
I have no relevant financial disclosures.

Overview
• Grading the evidence
• Ecologic trends
• Screening goals
• Recent studies
• Future directions

Grading the Evidence
• USPSTF on screening for skin cancer, 2016:
  – Insufficient (I) evidence to assess balance of harms and benefits of visual skin exam by a clinician to screen for skin cancer in adults
• USPSTF on behavioral counseling to prevent skin cancer, 2018:

Ecologic Trends

[Graph showing ecologic trends]
Screening Goals

- To detect cancer at an early stage prior to the onset of symptoms
  - Early stage has improved prognosis → reduce cancer associated mortality
- Potential downsides:
  - Harm of screening test
  - False positive results
  - False negative results
  - Overdiagnosis and overtreatment

Is there an overdiagnosis problem?

- Are multiple explanations occurring at once?
- Could there be subgroup differences?

The Thin Melanoma Problem

- Observational data suggests:
  - Most melanomas are patient-detected (> 50%)
  - Physician-detected melanomas are thinner than patient-detected (0.55 mm)
- A randomized controlled trial unlikely feasible
  - Low event rate
  - Low mortality from early lesions
  - Extended time interval from diagnosis to recurrence

Australia

- Case-control study
- Whole-body physician skin examination within past 3 years
  - OR thick melanoma 0.86 (95% CI 0.75-0.98)
  - Further OR decreases for thicker melanoma
  - OR thin melanoma 1.38 (95% CI 1.22-1.56)

Germany

- Observational study: pilot (Schleswig-Holstein)
  - 20% participation in 1 year
  - 1,620 melanoma detection rate
  - Melanoma incidence increased during screening
  - Invasive melanoma rate decreased after negative screen
  - 50% melanoma mortality rate reduction at 5 years
  - Returned to baseline after 2 years
  - Possibly affected by cause of death coding

Examining the data

- Effective screening → ↓ ↓ ↓
- Overdiagnosis → ↑ — —
- Increased true occurrence → ↑ ↑ ↑
- Improved treatment — — ↓
Germany

- Observational study: nationwide
  - 30% participation over 5 years
  - No significant change in:
    - Incidence
    - Tumor stage distribution
    - Mortality
  - Key differences in:
    - Awareness campaign
    - Referrals to dermatology
    - Participation rate

Pittsburgh

- Observational study
  - 16% participation
  - 1:215 melanoma detection rate
  - $32,594 per melanoma detected
  - RR melanoma diagnosis 2.4 (95% CI 1.7-3.4)
  - Significant difference in median thickness in screened
    - 0.37 vs 0.65 mm
  - No significant difference in RR thick melanoma

Belgium

Lesion-Directed Screening

- Cross-sectional study
  - TBSE vs. LDS in two similar communities
  - Higher participation rate in TBSE
  - TBSE detected more skin cancers (0.4% vs 0.1% of invited population)
  - No difference in skin cancer detection rate (2-3%)
  - Similar reduction in anxiety
  - LDS 5.6-fold less time consuming
  - LDS cheaper ($1008 vs $1096 per skin cancer detected)

Risk-Directed Screening

- Cross-sectional study
  - TBSE vs. LDS in two similar communities
  - Higher participation rate in TBSE
  - TBSE detected more skin cancers (0.4% vs 0.1% of invited population)
  - No difference in skin cancer detection rate (2-3%)
  - Similar reduction in anxiety
  - LDS 5.6-fold less time consuming
  - LDS cheaper ($1008 vs $1096 per skin cancer detected)

Future Directions

- Lesion-directed screening (LDS)
- Risk-directed screening
Risk-Directed Screening

Risk factors
- Personal history of CM
- Family history (first-degree) of CM
- Multiple common nevi
- Clinically typical nevi
- Congenital mole
- Any risk factor

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>No.</th>
<th>Screened</th>
<th>Detected</th>
<th>Missed</th>
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<tr>
<td>High risk</td>
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<td>585</td>
<td>546</td>
<td>4</td>
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<tr>
<td>Low risk</td>
<td>60</td>
<td>576</td>
<td>530</td>
<td>46</td>
</tr>
<tr>
<td>Any risk</td>
<td>125</td>
<td>515</td>
<td>493</td>
<td>22</td>
</tr>
</tbody>
</table>


Are the right people being screened?

- Only 24% of “high-risk” population reports ever having TBSE
  - High-risk defined as:
    - Non-Hispanic White age > 65 yo
    - History of sunburn
    - Family history of skin cancer
    - Does not include other risk factors (nevi)


Are we making progress?


Thank you!