Centers for Population Health and Health Disparities Initiative

From Cells to Society: Transdisciplinary Approaches to Addressing Cancer Health Disparities
Mission

- **Integrate** the basic, population, and clinical sciences.
- **Develop** innovative transdisciplinary methods.
- **Create** linkages with the community.
- **Translate** research to change policy and practice.
Research Teams of the Future

- Separate bodies of knowledge
- Different "languages"
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- **Multidisciplinary**
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- **Interdisciplinary**
  - Shared bodies of knowledge
  - Shared “vocabulary”
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- **Transdisciplinary**
  - Shared language
  - Pooled bodies of knowledge and theory
  - Jointly-developed new methods

- "collective efficacy"
- "apoptosis"
- "hypervigilance"
CPHHD Transdisciplinary Research Framework: Emerging Cross-Center Themes

Neighborhood/Community Context

Community Engagement

Biomarker & Animal Model Studies

Preclinical and Clinical Studies

Impact on Patient and Community

Genetics, Biological Basis of Disparities, Biomarkers for Risk Assessment and Screening

Etiology, Screening, Treatment

Dissemination of Research, Quality of Life, Access to Care, Policy
Cells to Society: Overcoming Health Disparities
Reducing Cervical Cancer in Ohio Appalachia (CARE)

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Supported by NCI Grant Number P50 CA105632
Goal

To understand why Appalachian Ohio women have high incidence and mortality rates for cervical cancer.
Cervical Cancer

- Risky Behaviors
  - Smoking
- HPV Infection
- Screening
  - Pap Test
Pap Test Utilization

- 79% of women at high risk for developing cervical cancer \((\text{biology})\)
- Only 69% screened appropriately \((\text{behavior})\)
- Local clinics do not have sufficient staff, space or resources \((\text{institution})\)

Can a Lay Health Advisor Intervention Improve Pap Test Use?
### Summary of Self-Reported Pap Test Status (N=235)

<table>
<thead>
<tr>
<th>Treatment Arm</th>
<th>Did not have Pap test after intervention</th>
<th>Had Pap test after intervention</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>55 (46%)</td>
<td>64 (54%)</td>
<td>119</td>
</tr>
<tr>
<td>Intervention</td>
<td>31 (27%)</td>
<td>85 (73%)</td>
<td>116</td>
</tr>
<tr>
<td>Total</td>
<td>86 (37%)</td>
<td>149 (63%)</td>
<td>235</td>
</tr>
</tbody>
</table>

Missing survey results for 50 participants (18% of 285 total)

**Odds Ratio** = 2.43; 95% confidence interval (1.39, 4.25); p=0.002
Lesson Learned:
Lay advisors are effective in improving Pap test use among an at-risk population in low resource areas.

Is Getting a Pap Test Enough to Prevent Cervical Cancer?
Genetic Susceptibility to Cancer

- TGF-B *6A tumor susceptibility allele shown to be more prevalent in colon, breast cancers.
- What about cervical cancer? What about Appalachian populations?
Tobacco Use in Appalachia

- High rate of smoking – 28% vs. 21% in U.S.
- High rate of smoking among women with abnormal Pap tests – 69%
- Smokers had fewer social contacts
- Depression more common among smokers

Can a Lay Health Advisor Intervention Improve Tobacco Cessation Rates?
Cotinine-Validated Cessation Rates

All p-values are <0.02 except for 12 month (p=0.09)
Lesson Learned:

Lay advisors are effective in improving tobacco quit rates.

But What About Those Women Who Continue to Smoke?
HPV Prevalence in Appalachian Women

- HPV (any type):
  - CARE: 43.0%
  - U.S.: 26.8%

- HPV (high risk types):
  - CARE: 30.0%
  - U.S.: 15.2%

- HPV (types 6,11,16,18):
  - CARE: 12.0%
  - U.S.: 3.4%

- HPV (types 16 & 18):
  - CARE: 11.0%
  - U.S.: 2.0%
Lesson Learned:
HPV prevalence is extremely high, especially among women with abnormal Pap tests.

*Is the HPV Vaccine a Solution?*
HPV Vaccine

Acceptability
- Knowledge
- Attitudes
- Poor in Appalachia

Access
- Beliefs
- Cost
- High costs, limited supply

Host Response
- Supply
- Immune System
- Poor Immune Function

US uptake - 25%
Appalachia - 10%
Progression of Research Scope & Results: CARE I to CARE II

Components
- SDH Framework
- Transdisciplinary Research Teams
- Multi-Level Interventions
- CBPR

CARE I: Results
- High rate of (+) Pap tests
- High smoking rates among women with (+) Pap tests
- High rate of TGF-beta receptor polymorphisms
- High smoking rates
- Fewer social contacts and higher depression rates among smokers
- Reduced immune functioning and low SES and women with (+) Pap test
- Women with HPV have lower SES, higher depression, and less coping
- High HPV prevalence
- Low rates of vaccine uptake
- Poor knowledge of HPV

CARE II: Research Projects
- Project 1: TGFβ Receptor Polymorphisms and ICC PI: Weghorst
- Project 2: Social Networks & Tobacco Use PI: Wewers
- Project 3: HPV Vaccine Immune Response & Stress PI: Ruffin
- Project 4: Multi-level Intervention to Increase Uptake Of HPV Vaccine PI: Paskett

Scope
- Downstream
  - Biologic/Genetic Pathways
  - Individual Risk Factors
- Social Relationships
- Social/Physical Context
- Institutions
- Social Conditions & Policies
- Upstream
Thank you to our field staff and participants!!!!