

Measuring the Impact of Dissemination and Implementation Projects

National Academies of Sciences, Engineering, and Medicine

Accelerating the Use of Findings from Patient-Centered Outcomes Research in Clinical Practice to Improve Health and Health Care

Workshop #3

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Multi-level health interventions in health care and communities



- **Many ways to measure implementation**
 - Maintenance matters – but isn't always measured (**RE-AIM example**)
 - Long-term sustainability – you'll know it when you see it (**practice-based evidence**)
- **What outcomes matter?**
 - Implementation/adoption
 - Patient behavior/health outcomes



The RE-AIM Framework: Use Over Time

Most-Often Reported Elements (high to low):

- Reach
- Effectiveness
- Adoption – setting level
- Adoption – staff level
- Implementation
- *Maintenance – individual level*
- *Maintenance – setting level*

Current Issues and Outcomes (selected):

- ***Maintenance***: limited data on outcomes post-intervention
- Intervention fit and sustainability – need better understanding

Where's the practice-based evidence??

Glasgow et al., *Am J Publ Health*, 2013; Glasgow et al., *Frontiers in PH*, 2019
Green, *Fam Practice*, 2008



Timeline: Pool Cool Field Research and Implementation

Year(s)	Research Phase	Locations
1998	Initial Pilot Study	6 pools in HI and MA
1999	Efficacy Trial	28 pools in HI and MA
2000-2002	Pilot Dissemination Trial	280+ pools across the United States
2003-2008	Main Diffusion Trial (Hybrid implementation-effectiveness trial >> before Curran, 2012)	400+ pools across the United States
2003-2006	Process Evaluation	A sample of 120 pools participating in the Main Diffusion Trial each year
2006-2007	Sun Habits Measurement Supplement	16 pools in AZ, TX, OR, and NE
2008-2015	Data Analysis of Diffusion Trial and Publication of main results	Atlanta and Philadelphia
Up to 2022	Implementation: state and local health & recreation departments	Kansas, Idaho, California, Nebraska, New York, Arizona, Quebec, Virginia, Pennsylvania....

Funding Support:

CDC, Emory PRC, U-Hawaii, National Cancer Institute, GA Cancer Coalition



Key Program Components

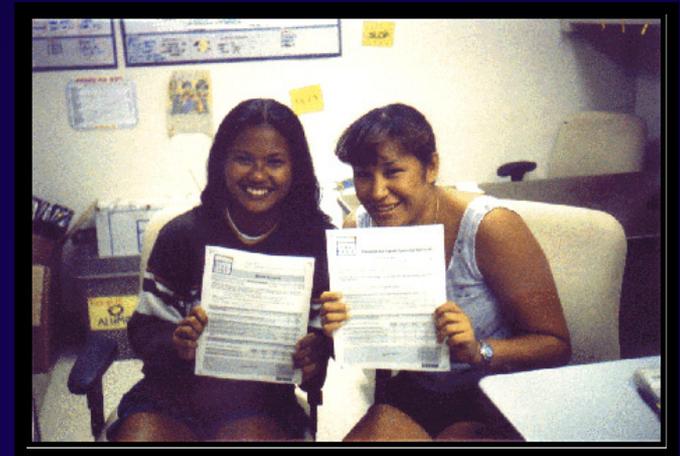


1. Lifeguard Training
2. Sun Safety Lessons
3. Poolside Activities
4. Signage
5. Sunscreen
6. Shade structures, policy guidance



Pool Cool Main Diffusion Trial: Assessment & Evaluation

- **Self-Report Measures**
 - **Most Practical**
 - **Most Commonly Used**
 - **Individual level behavior + organization level policies, environmental supports**
 - **May be Prone to Limitations due to Systematic Error**
 - **Recall**
 - **“Usual Behavior”**
 - **Social Desirability Bias**



Sources of Data for Process Evaluation

- Site Visits: Interviews & Observations
- Telephone Interviews
- Field Coordinator Logs
- Staff Journals
- Surveys of Pool Managers, Lifeguards/ AI's, and Parents
- Email communication
- Photo-documentation



Observation - Objectivity - Outside the Intervention

Escoffery, Glanz & Elliott, *Health Educ Res* 2008

Hall, Dubruiel, Elliott, Glanz, *J Publ Health Practice Mgmt*, 2009



Linked Data Sources



- Pool Manager Surveys
- Lifeguard/Aquatic Instructor Surveys
- Site visits in the Measures Validation Study



Escoffery, Glanz et al, 2009, *Eval & Health Professions*
Elliott, Glanz & Nehl, 2009, *J Am Acad Dermatol*



Validity of Self-Reported Sunscreen Use, Sun Exposure and Covering-Up



- **Test the validity of self-reported measures of sun exposure & sun protection**
 - Compare self-reported measures with objective measures
 - Estimate magnitude and direction of systematic error in self-report among lifeguard, parents, and children
- **Objectively quantify sun protection from a sample of Pool Cool participants through:**
 - SUNSCREEN SWABBING
 - POLYSULPHONE DOSIMETERS
 - OBSERVATION
- **Improve the interpretability of Pool Cool Diffusion Study findings**

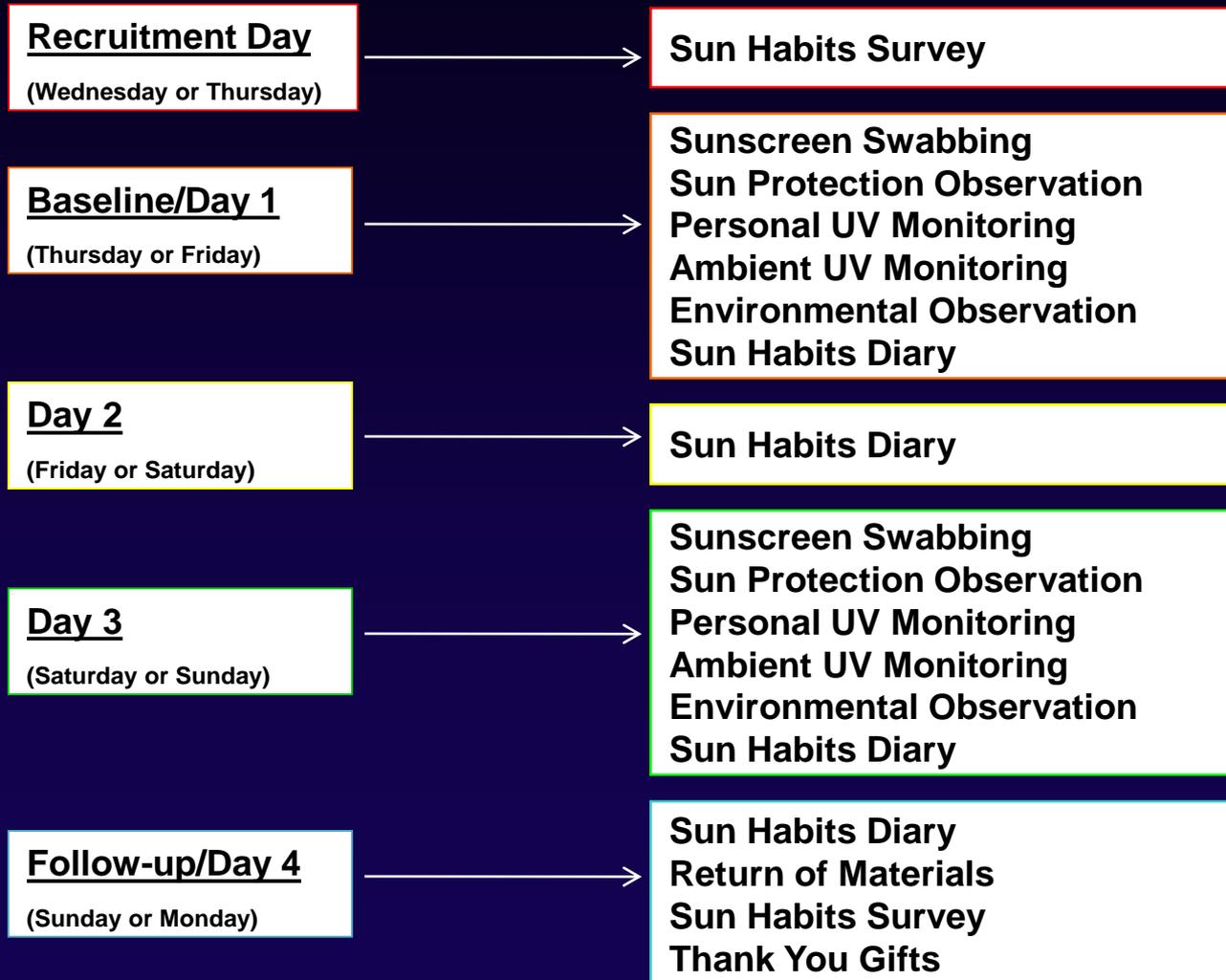
Instruments & Measures

- **Self-report measures**
 - Sun Habits Survey
 - Sun Habits Diary
- **Objective Measures**
 - Sunscreen Swabbing
 - Personal & Ambient Polysulphone Dosimeters
 - Observations
 - Participant Sun Protection Behaviors
 - Environmental and Weather Conditions



Data Collection Procedures

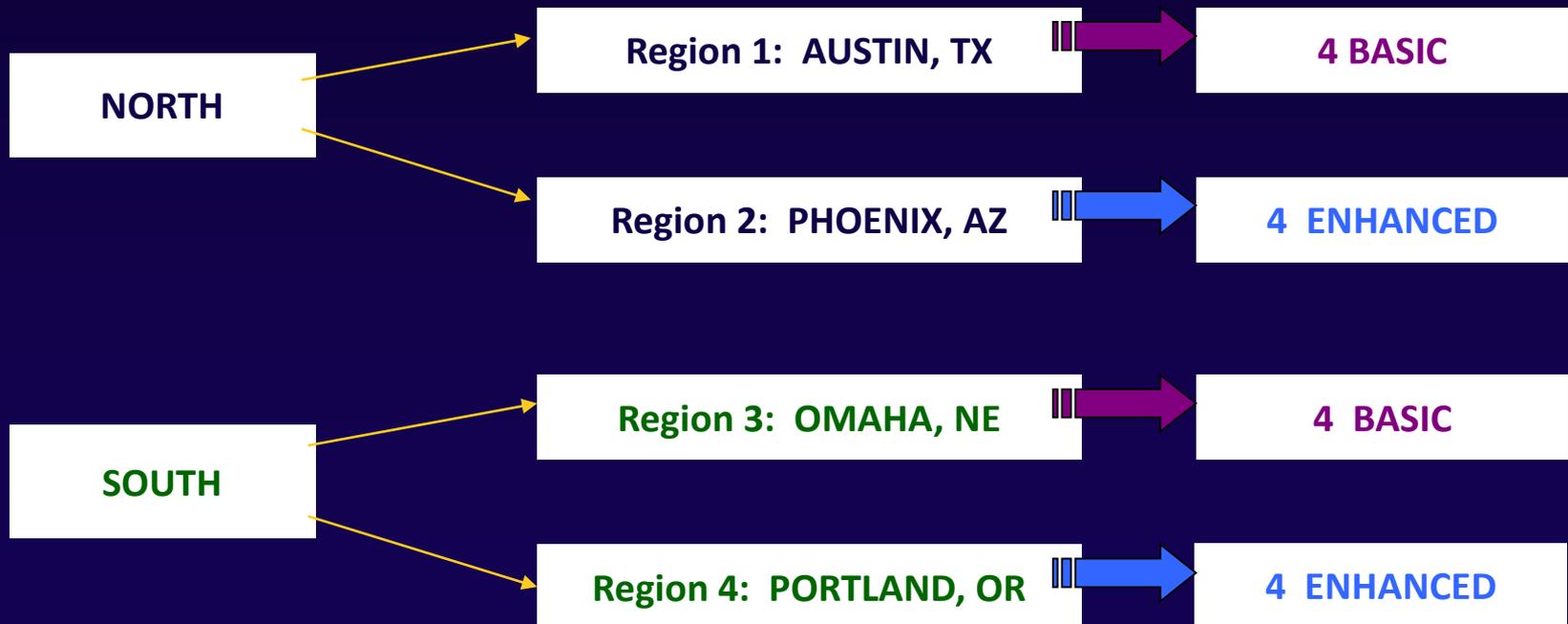
(N=564 lifeguards, parents, kids)



Selection of Regions & 16 Pools

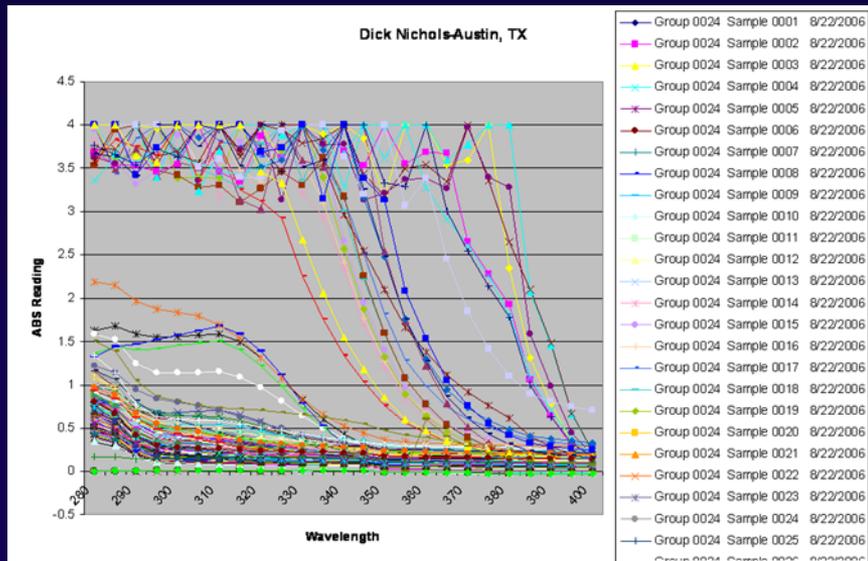
Geography:
North OR South

Main Diffusion Trial Treatment Group:
Basic OR Enhanced



Overarching Conclusions

- The diary method was better correlated with objective measures than the survey method
- Survey method validity estimates show that self-administered surveys are also an adequate way to measure sun exposure and sun protection habits
- Some pools were highly sun-safe (>95% sunscreen use)



Sunscreen – Glanz, McCarty et al.,
Am J Prev Med 2009

UV Exposure – Gies et al., *Am J Ind Med*, 2009

UV Exposure – Glanz et al., *CEBP*, 2010

Covering-up – O’Riordan et al., *JAAD*, 2009

Sun-Safe Policies & Environments

- Increased across both groups with each year of pool participation
- Greater increases from baseline to last follow-up within the Enhanced group [$F = 8.88, p = .003$]

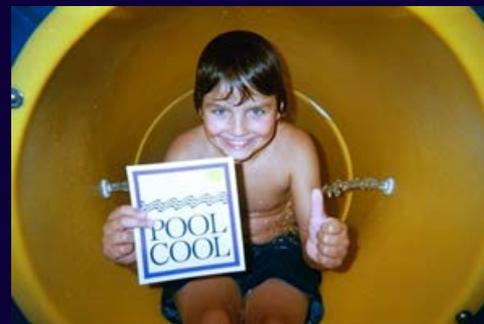
What about Maintenance & Sustainability?

- Sustainability scores marginally higher [$F = 3.10, p = .08$]

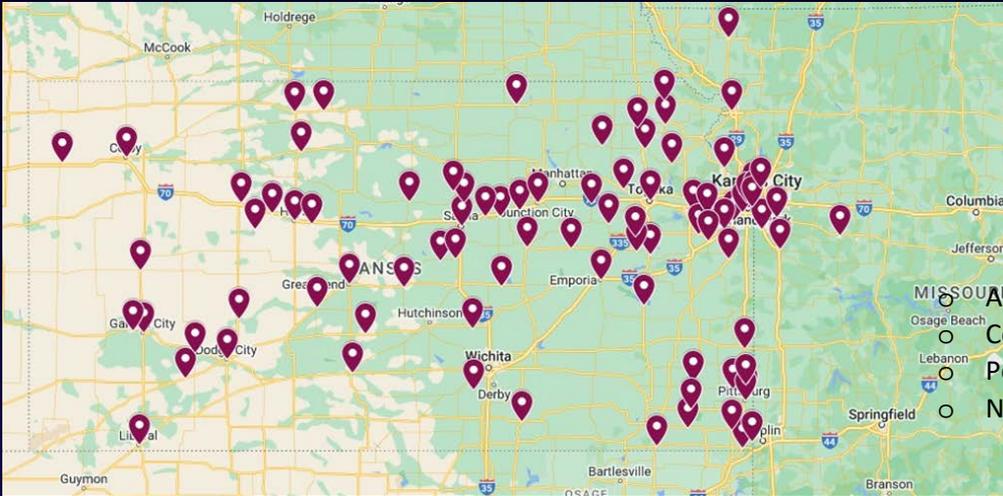
Randomized Trial of Two Dissemination Strategies for a Skin Cancer Prevention Program in Aquatic Settings

Karen Glanz, PhD, MPH, Cam Escoffery, PhD, MPH, Tom Elliott, MPH, and Eric J. Neel, PhD

Glanz et al., *Am J Public Health*, 2015



Pool Cool in 2021-2022



Aquatics Staff Trained: 1289
Communities Visited: 41 + growing in '22
Pools Visited: 44
New Communities: 14

Kansas Pool Cool 2021-2022

- Aquatics staff trained: 1289
- Communities visited: 41 + growing in '22
- Pools visited: 44
- New communities: 14



[Masonic Cancer Alliance \(CREDITS: Ashley Adorante, Hope Krebill\)](#)

[#OutpacingMelanoma](#) [#KansasPoolCool](#) [#BeSunSafe](#)

Pool Cool in Idaho

In Their Own Words

*Yesterday, several weeks after your visit, I had a mother come into my classroom after school to say thanks for teaching her daughter the importance of sunscreen. They had been skiing and her daughter, who had fought wearing it [sunscreen] for years, asked if her mom had remembered to pack it. **Authentic learning at its best!***

Boise School District
Middle School Health Educator

I do think that it [POOL COOL] has and will make a difference if we all continue making our community aware of small steps to lower their chances [of skin cancer]. We see such a difference in the awareness of children and their parents. Programs such as these are worthwhile and important to continue. Thank you for your support.

Manager, Filer City Pool
Filer, Idaho





Use all available types of measures

Be creative

Conduct more labor-intensive measures on a sub-sample of participants and sites

Long-term sustainability – you'll know it when you see it (practice-based evidence)

What outcomes matter?

- Implementation/adoption
- Patient behavior/health outcomes

Strategic Framework to Guide AHRQ's PCORTF Investments

High-Level Goal

Improve health outcomes by promoting high-value, safe, evidence-based, integrated, coordinated, team-based, patient-centered care....

Desired Outcomes

Uptake of EBP's

Improved outcomes for priority conditions

Improved equity/reduced disparities



Examples of Implementation vs Outcome “debates”

Tobacco dependence treatment in cancer patients

Prescribing statins and blood pressure medication in patients with high ASCVD risk

Scaling up antibiotic prescribing reduction strategies

Physician nudges

Patient nudges

Issues to consider:

- *Time to effectiveness*
- *Challenges of opt-in trials*
- *Sample size considerations (cluster randomized trials)*

PIONEERING IDEAS

Imagination and Vision



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All Field Coordinators, pools, managers, lifeguards, parents, and kids who have participated in Pool Cool program research

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