

Improving Mouth Care in Nursing Homes: Pilot Testing to Pragmatic Trials


Sheryl Zimmerman, PhD, University Distinguished Professor
 Co-Director, Program on Aging, Disability, and Long-Term Care
 Cecil G. Sheps Center for Health Services Research
 University of North Carolina at Chapel Hill



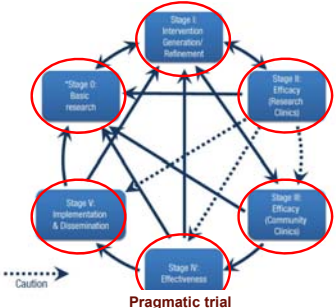
The Goal of Research

Produce new knowledge or deepen understanding


... to improve well-being




The NIH Stage Model




Pragmatic trial



REVIEW


The answer is 17 years. what is the question: understanding time lags in translational research

Zoë Skote Morris¹ • Steven Wooding² • Jonathan Grant³
¹NIH, ²NIH, ³NIH

The NIH Stage Model 

Reenvisioning Clinical Science: Unifying the Discipline to Improve the Public Health

Lisa S. Onken¹, Kathleen M. Carroll², Varda Shoham³, Bruce N. Cuthbert⁴, and Melissa Riddle⁵

What's Your Perspective on Mouth Care (Tooth Brushing)?


I brush my teeth every day.

I have taken care of my teeth throughout my life.

If I can't clean my teeth, I hope someone will do it for me.

I know nursing home residents' mouth care is done regularly and well.


What *is* the status of mouth care for people who are dependent?


August 4, 2013

In Nursing Homes, an Epidemic of Poor Dental Hygiene
By Catherine Saint Louis

Katherine Ford visited her father, Dean Piercy, a World War II veteran with dementia, at a nursing home in Roanoke, Va., for months before she noticed the dust on his electronic toothbrush ...

... after he complained of a severe, unrelenting headache, she badgered the staff to make an appointment with the dentist. The dentist found that a tooth had broken in two ... and part had lodged in the roof of her father's mouth.



The New York Times August 4, 2013

The Status of Mouth Care In Nursing Homes

Kansas: 540 residents in 20 nursing homes

- 30% had "substantial oral debris" on two-thirds of their teeth
- more than one-third had untreated decay

Wisconsin: 1,100 residents in 24 nursing homes

- 31% had teeth broken to gums
- 35% had substantial oral debris

New York: residents in 5 nursing homes

- only 16% received any care at all
- among those who did, the average time spent brushing teeth was ... 16 seconds

The New York Times August 4, 2013

The Status of Mouth Care In Nursing Homes

- Today's residents require more care because more have teeth
- Cavities, gum disease, and cracked teeth result because mouths aren't kept clean
- Aides are swamped with other tasks; tooth brushing falls to the bottom
- Few staff are trained to care for residents who resist care

"You can measure quality in a nursing home by looking in people's mouths, because it's one of the last things to be taken care of."

Dr. Judith Jones, Chair, Department of General Dentistry, Boston University

The New York Times August 4, 2013


Some of the 207 comments

- Dentist: *"I'm baffled that facilities have designated rooms for licensed hair care but no room for health care. In the picture with the article, the woman is getting treated in a conference room! No privacy, infection control, dignity or HIPPA compliance. Note the other residents watching the procedures being done."*
- Daughter: *"I bought and they lost 3 different electric toothbrushes. The final straw was when I discovered they had been brushing her teeth with her deceased roommate's toothbrush."*



UNC THE CECIL G. SHEPP CENTER FOR HEALTH SERVICES RESEARCH

Typical Nursing Home Resident Plaque and Gingivitis



UNC THE CECIL G. SHEPP CENTER FOR HEALTH SERVICES RESEARCH

Why Isn't Care Better?

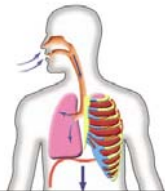
- Lack of knowledge and skill
 - Residents who resist care
 - Products and techniques
- Lack of time
- Fear of injury; distaste for task
- No oversight or accountability

Not Recognized as a Health Care Priority

UNC THE CECIL G. SHEPP CENTER FOR HEALTH SERVICES RESEARCH

Mouth Care and Pneumonia

- Poor oral health → bacterial pathogens
- Bacteria get inhaled → aspiration pneumonia
- Two-thirds of nursing home residents have bacterial pathogens in their dental plaque



UNC THE CECIL G. WOODS CENTER FOR HEALTH SERVICES RESEARCH

Mouth Care to Prevent Pneumonia

Pilot Studies


- Weekly dental hygienist → 42% reduction in pneumonia mortality
- Systematic mouth care after meals → 56% reduction in pneumonia

Up to 50% of pneumonias might be avoided by providing mouth care

UNC THE CECIL G. WOODS CENTER FOR HEALTH SERVICES RESEARCH

Mouth Care to Prevent Pneumonia


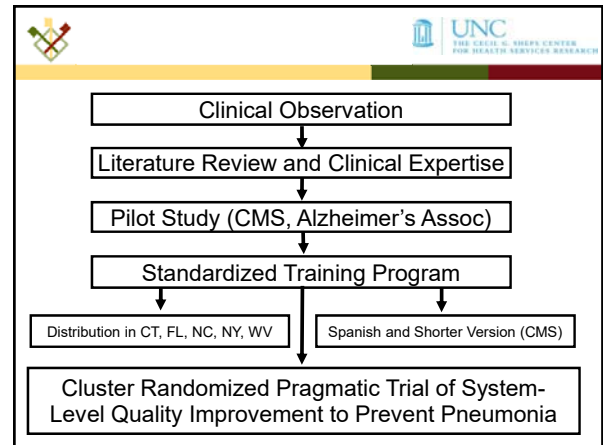
Pilot Studies



UNC THE CECIL G. WOODS CENTER FOR HEALTH SERVICES RESEARCH

Background

Overview of the University of North Carolina Mouth Care Without a Battle Program

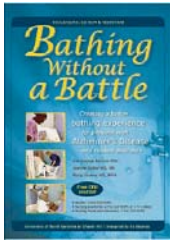



UNC THE CECIL G. WOODS CENTER FOR HEALTH SERVICES RESEARCH

<http://www.mouthcarewithoutabattle.org/page/dvd>

UNC THE CECIL G. WOODS CENTER FOR HEALTH SERVICES RESEARCH

Pragmatism: The Name Mouth Care “Without a Battle”




Bathing Without a Battle

- Distributed to all nursing homes in the country
- Recognized as an indicator of culture change by the Commonwealth Fund
- Recognized by CMS in their interpretive guidelines

1. Remove Plaque

Plaque removal reduces the risk of developing gingivitis and promotes gum health



Mechanical action -- *jiggle, sweep* -- is most important to remove plaque; clean between teeth

2. Treat Gingivitis


Inflammation of the gums largely due to bacteria-filled plaques on teeth



Brushing with antimicrobial agents can restore gum health

3. Prevent Tooth Decay

Tooth decay is associated with decreased oral intake and reduced quality of life



Daily fluoride use can reduce tooth decay

4. Clean Dentures and Gums


Scratched dentures harbor bacteria



Remove dentures; soft brushes and water resist scratches

5. Meet Behavioral Challenges

- Refusing to open mouth
- Biting tooth brush
- Refusing to let denture be removed/inserted
- Hitting, yelling, grabbing



Behavioral Symptom	Example Person-Centered Technique
Nonspecific	<ul style="list-style-type: none"> • Focus on the person rather than the task
Won't open mouth	<ul style="list-style-type: none"> • Sing with the person
Refuses mouth care	<ul style="list-style-type: none"> • Phase in mouth care (e.g., do front of teeth one day, back the next, interdental brush later)
Resists care by grabbing	<ul style="list-style-type: none"> • Hand the person the toothbrush and invite to brush
Bites toothbrush	<ul style="list-style-type: none"> • Insert a smaller brush to work around the toothbrush
Hits or fights	<ul style="list-style-type: none"> • Check for broken teeth, sore spots, or infection
Has trouble swallowing or cannot spit	<ul style="list-style-type: none"> • Use a small amount of antimicrobial rinse

6. Assess and Monitor Care

Oral Care Aide

Efficacy Evaluation

- Three nursing homes
- Two CNAs in each trained as oral care aides
- Total of 97 residents

Changing the Culture of Mouth Care: Mouth Care Without a Battle

Sheryl Zimmerman, PhD,^{1,2,3} Philip D. Skane, MD, MPH,^{1,2} Lauren W. Cohen, MA,¹ and Ann Louise Barick, PhD¹

DENTAL AND ORAL HEALTH

Effect of a Person-Centered Mouth Care Intervention on Care Processes and Outcomes in Three Nursing Homes

Philip D. Skane, MD, MPH,^{1,2} Sheryl Zimmerman, PhD,^{1,2,3} Xi Chen, DDS, PhD,⁴ Ann L. Barick, PhD,⁵ Patricia Poole, RDH, MS,⁷ David Reed, PhD,⁶ Madeline Mitchell, MURP,⁸ and Lauren W. Cohen, MA,¹

Results: Tooth Surface Cleaning

	Before training	After training
Upper teeth		
Outer surface	96%	97%
Inner surface	44%	95%
Lower teeth		
Outer surface	97%	98%
Inner surface	63%	93%

Results: Oral Hygiene

Indicator	Significance
Plaque Index	
8 weeks	p < .001
6 months	p < .001
Gingival Index	
8 weeks	p < .001
6 months	p = .008

Results: Interdental Cleaning

	Before training	After training
Upper teeth	0%	88%
Lower teeth	0%	91%



Results: Staff Attitudes

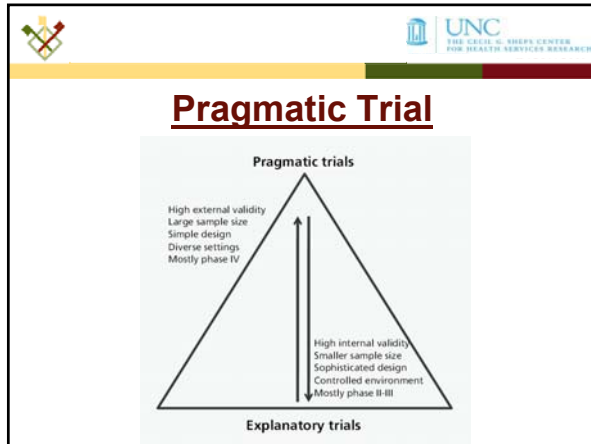
	Before Training	After Training
I have the necessary time to do the job	2.3	3.7
I have sufficient knowledge to do the job	2.7	3.8
I get residents to cooperate with mouth care	2.7	3.8

1 = Strongly disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree

The Goal of Research

Produce new knowledge or deepen understanding

... to improve well-being

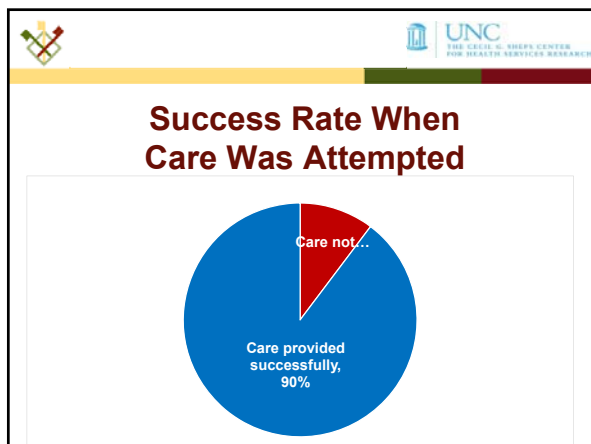
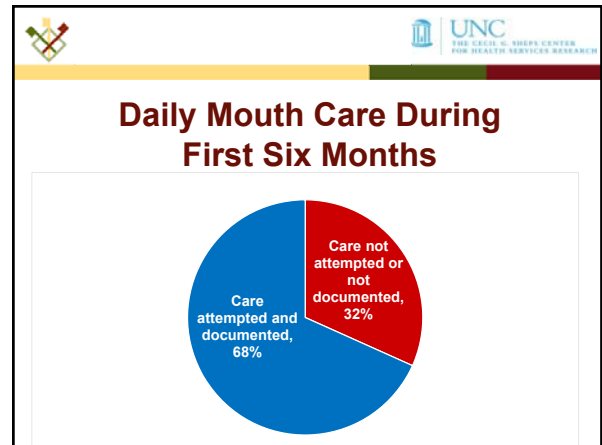


-
- ### System-Level Cluster Randomized Quality Improvement Trial
- 14 nursing homes involved for two years
 - In counties with proportionately high rehospitalization rates for pneumonia and long-term care residents
 - Matched by size and baseline pneumonia rate
 - Randomized to control or intervention
 - Provided standardized training and ongoing support to oral care aides and all aides
 - Monitored fidelity
 - Assessed oral hygiene, pneumonia, hospitalization, costs

Percent of Staff Who Attended Three Training Sessions

Staff Type	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Overall
CNAs	35%	48%	61%	39%	57%	42%	37%	46%
Nurses	35%	6%	72%	25%	62%	50%	31%	40%

Have since developed one integrated training session



24 Month Change in Oral Hygiene (N=219)

	Control (n=98)			Intervention (N=121)			p
	Baseline	24 Month	Δ	Baseline	24 Month	Δ	
Plaque (0-3)	1.60 (.34)	1.67 (.33)	+07	1.65 (.31)	1.26 (.36)	-.39	.032
Gingiva (0-4)	1.42 (.38)	1.73 (.52)	+31	1.54 (.33)	1.19 (.35)	-.35	.015
Denture plaque (0-4)	2.69 (1.00)	2.29 (1.23)	-.39	2.02 (.54)	1.34 (.41)	-.68	.038

Measures: Plaque Index for Long-Term Care, Gingival Index for Long-Term Care, Denture Plaque Index; higher scores indicate worse oral hygiene

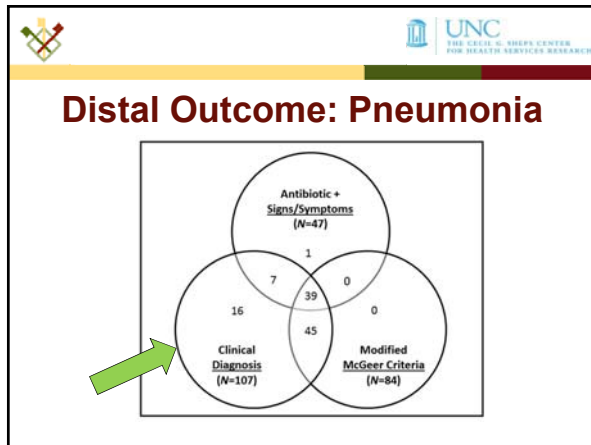
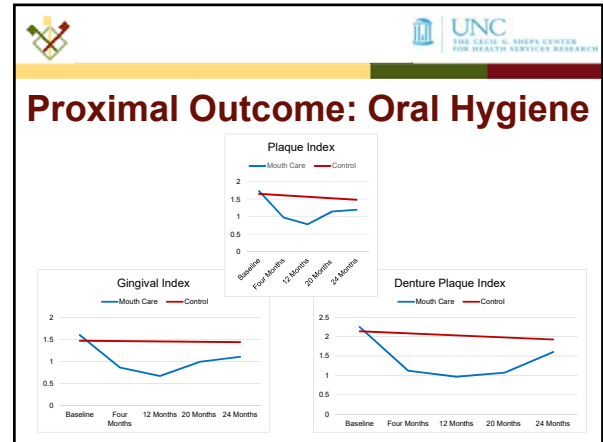
24 Month Change in Oral Hygiene (N=219)

JAMDA
journal homepage: www.jamda.com

Original Study
Improving Nursing Home Residents' Oral Hygiene: Results of a Cluster Randomized Intervention Trial

Jane A. Weintraub DDS, MPH^{a,b,*}, Sheryl Zimmerman PhD^{c,d}, Kimberly Ward BA^e, Christopher J. Wretman PhD^f, Philip D. Sloane MD, MPH^{g,h}, Sally C. Stearns PhD^{b,c}, Patricia Poole RDH, MSⁱ, John S. Preisser PhD^j

^aSchool of Dentistry, University of North Carolina at Chapel Hill, Chapel Hill, NC
^bCollege of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC
^cThe Cecil G. Stearns Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC
^dSchool of Social Work, University of North Carolina at Chapel Hill, Chapel Hill, NC
^eDepartment of Family Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC



Pragmatic Considerations: Recruitment

Concept	Investigator Rating	
	Pragmatism	Comments
Eligibility: Extent to which residents are similar to those receiving usual care	High	<ul style="list-style-type: none"> No exclusionary criteria No need for consent No measurement burden
Setting: Extent of difference of trial setting from usual care setting	High	<ul style="list-style-type: none"> Nursing homes are largely similar
Recruitment: Extent of extra effort to recruit residents compared to what would be typical in usual care	High	<ul style="list-style-type: none"> No need to recruit residents in cluster randomized trial

Pragmatic Considerations: Intervention Delivery

Concept	Investigator Rating	
	Pragmatism	Comments
Flexibility in Care: Extent to which flexibility of care delivery is similar to that anticipated in usual care	High	<ul style="list-style-type: none"> Staff were provided tools and encouraged to individualize care
Flexibility in Delivery: Extent to which flexibility in encouraging and monitoring adherence is similar to that anticipated in usual care	High/Moderate	<ul style="list-style-type: none"> Nurses did not promote or monitor adherence Quality improvement requires monitoring
Organization: Extent to which resources, provider expertise, and organization of care delivery are similar to those in usual care	Low	<ul style="list-style-type: none"> Role of oral care aide is considered critical; provided her salary and mouth care supplies

Pragmatic Considerations: Intervention Delivery

Concept	Investigator Rating	
	Pragmatism	Comments
Flexibility in Care: Extent to which flexibility of care delivery is similar to that anticipated in usual care	High	<ul style="list-style-type: none"> Staff were provided tools and encouraged to individualize care
Flexibility in Delivery: Extent to which flexibility in encouraging and monitoring adherence is similar to that anticipated in usual care	High/Moderate	<ul style="list-style-type: none"> Nurses did not promote or monitor adherence Quality improvement requires monitoring
Organization: Extent to which resources, provider expertise, and organization of care delivery are similar to those in usual care	Moderate/High	<p><i>Should we conduct a trial in the current health care environment, or in a context representing the future?</i></p>

**Oral Care Aides:
Critical for System-Level Change**

Arguments in Favor	Arguments Against
<ul style="list-style-type: none"> Mouth care of people who are impaired is complex and specialized Results are better Nothing else has worked People receiving care and their families notice the difference Serves as a career ladder for motivated staff Mouth care aide can train and support other staff 	<ul style="list-style-type: none"> Counter to the universal worker philosophy Supervisory nurses will pull them to fill staff shortages Cost

**Pragmatic Considerations:
Follow-Up**

Concept	Investigator Rating	
	Pragmatism	Comments
Follow-Up: Extent to which intensity of measurement and follow-up is similar to that in usual care	Low High	<ul style="list-style-type: none"> Proximal measure of oral hygiene not standard Distal measure of pneumonia highly standard and unobtrusive

**Pragmatic Considerations:
Determination/Analysis of Outcomes**

Concept	Investigator Rating	
	Pragmatism	Comments
Primary Outcome: Extent to which primary outcome is directly relevant to participants	High	<ul style="list-style-type: none"> Pneumonia is serious and life-threatening
Primary Analysis: Extent to which all data were included in the analysis of the primary outcome	High	<ul style="list-style-type: none"> Intention-to-treat Little missing data re: pneumonia diagnosis

Pragmatic-Explanatory Continuum

**Mouth Care Without a Battle:
Summary of a Pragmatic Trial**

- Addresses an important and recognized concern
- Links basic and applied clinical science; clear mechanism of change
- Improves health outcomes
- Developed and able to be conducted in nursing homes
- Model of person-centered quality improvement
- Applicable across settings of care and for all residents; benefits caregivers
- Standardized, easy to disseminate
- Requires buy-in or mandate for implementation*

Mouth Care Without a Battle

www.mouthcarewithoutabattle.org