Clinical Research Nursing and Nursing Science: A Perfect Partnership

Gwenyth R. Wallen, RN, PhD Chief Nurse Officer (Acting) Deputy Chief of Research and Practice Development Chief Nursing Research and Translational Science National Institutes of Health Clinical Center Bethesda, MD The Beatrice Renfield Lectureship in Research Nursing March 7, 2017

I have no conflicts of interest to disclose



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Objectives

- To explore the roles of clinical research nurses and nurse scientists and the synergy that exists between the two roles
- To provide exemplars of collaborations throughout the translational continuum from bench to bedside and back.
- To introduce a process model, INSPIRE, to encourage innovation and discovery in nursing practice.
- To describe the essential role that mentorship plays in the development of clinical research nurses and nurse scientists.



Defining the Roles





Defining the Roles





Translational Science Continuum



Mitchell, S., Fisher, C., Hastings, C., Silverman, L., Wallen, G.R. (2010). A thematic analysis of theoretical models for translational science in nursing: Mapping the field. *Nursing Outlook*, 58, 287-300.

WHERE DOES NURSING INNOVATION START?



BENCH

National Institutes of Health



BEDSIDE



COMMUNITY

Exemplar 1: Bedside to Bench

- We have poor and/or inconsistent mouth care in the ICU. Why?
- Does systematic oral care improve outcomes (e.g. ventilator associated pneumonia) in critically ill patients?
- Are there changes in the oral microbiome of critically ill patients?



The Human Microbiome—Distinct Sites



http://www.forbes.com/sites/matthewherper/2012/06/13/govern ment-unveils-first-map-of-all-the-germs-in-the-humanbody/#587b4e40efd9

Role of the Oral Microbiome in VAP

- 500-700 bacterial species estimated
- ~ 200 species in each person
- Fifty percent of oral bacteria are uncultivable
- Next-generation sequencing
- Culture-independent methods are required



Kolenbrander, et al., (2002). Microbiol Mol Bio Review



Pulmonary Critical Care



EFFECTS OF SYSTEMATIC ORAL CARE IN CRITICALLY ILL PATIENTS:

A MULTICENTER STUDY

By Nancy J. Ames, RN, PhD, CCRN, Pawel Sulima, PhD, Jan M. Yates, RN, PhD, Linda McCullagh, RN, MPH, Sherri L. Gollins, RDH, BSDH, Karen Soeken, PhD, and Gwenyth R. Wallen, RN, PhD



Notice to CE enrollees:

A closed-book, multiple-choice examination following this article tests your understanding of the following objectives:

- Describe the purpose of this study and the measurements used to determine the results.
 Identify the limitations of evidence-based
- guidelines for specific oral care procedures and their impact on various outcome measures.
- Discuss the nursing considerations associated with assessment of oral health in critically-ill patients and the related implications for provision of appropriate oral care for these patients.

To read this article and take the CE test online, visit www.ajcconline.org and click "CE Articles in This Issue." No CE test fee for AACN members.

©2011 American Association of Critical-Care Nurses doi: http://dx.doi.org/10.4037/ajcc2011359 **Background** No standard oral assessment tools are available for determining frequency of oral care in critical care patients, and the method of providing oral care is controversial. <u>Objectives</u> To examine the effects of a systematic program of oral care on oral assessment scores in critically ill intubated and nonintubated, patients.

Methods Clinical data were collected 3 times during critical care admissions before and after institution of a systematic program of oral care in 3 different medical centers. The oral care education program consisted of instruction from a dentist or dental hygienist and a clear procedure outlining systematic oral care. The Beck Oral Assessment Scale and the mucosalplaque score were used to assess the oral cavity. Data were analyzed by using linear mixed modeling with controls for severity of illness.

Results Scores on the Beck Scale differed significantly (F= 4.79, P=.01) in the pattern of scores across the 3 days and between the control group (before oral education) and the systematic oral care group. Unlike the control group, the treatment group had decreasing scores on the Beck Scale from day 1 to day 5. The mucosal-plaque score and the Beck Scale scores had strong correlations throughout the study; the highest correlation was on day 5 (r=0.798, P<.001, n=43). Conclusions Oral assessment scores improved after nurses implemented a protocol for systematic oral care. Use of the Beck Scale and the mucosal-plaque score could standardize oral assessment and guide nurses in providing oral interventions. (*American Journal of Critical Care*. 2011;20:e103-e114)

e103 AJCC AMERICAN JOURNAL OF CRITICAL CARE, September 2011, Volume 20, No. 5

www.ajcconline.org

Clinical Study: The Effect of a Systematic Oral Care Program on Reducing Exposure to Oropharyngeal Pathogens in Critically III Patients

Group	Day 1	Day 3	Day 5	Overall
Beck Oral Assessment Scale				
Control Treatment Overall	10.9 (0.39) 9.5 (0.35) 10.2 (0.26)	11.9 (0.38) 9.2 (0.36) 10.5 (0.26)	11.0 (0.51) 7.7 (0.58) 9.4 (0.38)	11.3 (0.33) 8.8 (0.32)
Mucosal-Plaque Score				
Control Treatment Overall	4.1 (0.19) 3.8 (0.16) 4.0 (0.12)	4.3 (0.16) 3.3 (0.16) 3.8 (0.11)	4.0 (0.25) 2.6 (0.28) 3.2 (0.19)	4.2 (0.16) 3.3 (0.15)

The difference in BOAS scores was statistically significant over time, day 1, 3, or 5 (F = 5.1; P = .009), and between groups, treatment or control, (F = 29.05; P < .001)

Ames N, Sulima P, Yates J, McCullagh L, Gollins S, Soeken K, Wallen GR. (2011). Effects of systematic oral care in critically ill patients: A multicenter study. American Journal of Critical Care.; 20 (5): e103-e114.

One Good Clinical Question Leads to Another...



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Clinical Study: A Description of the Oral Microbiome of Patients with Severe Aplastic Anemia (SAA)

PI: Nancy Ames, RN, PhD

Aims:

- Compare oral microbiomes of SAA patients before treatment (baseline) and after treatment (3 months/engraftment)
- Compare the oral microbiome of SAA patients who are treated with immunosuppressive agents with those patients who receive an ASCT
- Compare the oral microbiome of SAA patients require intubation to SAA patients who do not develop this complication
- Identify potential respiratory pathogens in the oral microbiome and develop a database of bacterial organisms identified

Barb JJ, et al. (2016Development of an analysis pipeline characterizing multiple hypervariable regions of 16S rRNA using mock samples. *PLaS One.*,



Exemplar 2: Bedside to the Community and then Back to the Bench

- Our alcohol use disorder (AUD) patients say they have trouble sleeping but every time we go into their rooms they are asleep. Why?
- We want to deliver an evidence-based practice approach but we don't know the prevalence of sleep disturbance in our patient population.
- What is the prevalence of sleep disturbance in AUD patients seeking treatment?
- How does sleep disturbance change post -discharge



Alcohol Dependence and Sleep



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Nursing-led amendment to 05-AA-0121 (Screening / Treatment Protocol)

- Objective (actigraphy) and subjective (PROs) measures of sleep quantity & quality collected on 164 individuals undergoing alcohol detoxification
- High prevalence of sleep disturbance found in this sample: sleep quality improved by week four but continued to be altered
- Signals a target area for recovery management
- Sub-analyses demonstrated correlates of improved sleep across inpatient treatment (females, higher levels of dependence)

Wallen, G.R., et al., (2014). The prevalence of sleep disturbance in alcoholics admitted for treatment: a target for chronic disease management. *Family & Community Health, 37*(4): 288-297.

Todaro, A.,...& **Wallen, G.R.** (2012). Are you sleeping? Pilot comparison of self-reported and objective measures of sleep quality and duration in an inpatient alcoholism treatment program. *Substance Abuse: Research and Treatment, 6:* 135-139.





One Good Clinical Question Leads to Another...



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Clinical Study: Sleep disturbance and relapse in individuals with alcohol dependence: an exploratory mixed methods study (n=126) PI: Gwenyth R. Wallen

- Mixed-methods approach used to assess experiences with sleep throughout the process of alcohol rehabilitation pre- and postdischarge from inpatient facility
- Self-efficacy: important predictor of sleep quality
- Thematic analysis of participants' interview transcripts yield overarching themes of sleep-related beliefs, sleeping environments, and sleep-related behaviors
- Highlights need for behavioral sleep intervention efforts to improve outcomes



...And Yet Another...



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The Gut Microbiome

- About 99% of the microbiome located in the gut
 - Tens of trillions of bacteria
- Individuals possess unique microbiota fingerprints that change in response to diet, immune system changes
- "Gut-brain axis:" connection between anxiety, mood, depression and intestinal microflora
 - Emerging area of *psychomicrobiotics* for treatment of psychiatric disorders



http://www.fxmedicine.com.au/blog-post/state-mind-how-gut-health-affects-brain

Clinical Study : Longitudinal changes in the oral and gut microbiome of individuals with alcohol dependence

PI: Nancy Ames, RN, PhD

Aims:

- Characterize oral and gut microbiome in patients with severe alcohol use disorder throughout an inpatient detoxification treatment period
- Compare and contrast the gut and oral microbiomes
- Compare microbial flora of individuals undergoing inpatient detoxification to healthy volunteer data from the Human Microbiome Project
- Correlate changes to psychosocial measures



http://sayostudio.com/inside-the-body-health-disease-cancer

Exemplar 3: Bedside to the Community

- We have a new urban clinic serving Spanish speaking Hispanic and African American patients with rheumatic diseases. We think they are practicing a number of alternative therapies that may be contraindicated. How can we assess this?
- Are there evidence-based modalities that would be acceptable as adjunct therapies in these underserved populations?



Health Disparities in Chronic Disease Health Behaviors and Outcomes in Rheumatic Diseases

Community Based Participatory Research (CBPR)

- Engaged a community partnership to sustain research and improve practice in patients with rheumatic diseases
- Developed and validated a quantitative inventory to evaluate complementary and alternative practices in English and Spanish speaking arthritis patients

Interviews

Cognitive

Patient Reported Outcomes (PROs) Evaluated pain, depressive symptoms, functional status, social support and shared decision-making which supported the yoga feasibility and acceptability study

Intervention Study Community-based Yoga Pilot Study to test for feasibility and acceptability in Hispanic and African American Patients with Arthritis

NIH National Institutes of Health

Community Study: Health Beliefs and Health Behavior Practices, Including Complementary and Alternative Medicine Use, Among Minorities With Rheumatic Disease. PI: Gwenyth R. Wallen

 Trust, patient-provider relationships, and access to healthcare were identified as key issues to consider in moving forward with research in this predominately Hispanic and African American community.

Wallen, et al., Progress in Community Health Partnerships, 2012

• An *Inventory of Complementary and Alternative Medicine Practices (ICAMP)* was developed as a measure for CAM assessment in Spanish and English in a community setting.

Wallen, Middleton, et al., Arthritis, Research and Therapy, 2011

• Shared decision-making (SDM) played a significant role in whether patients used CAM and disclosed CAM use to their providers. We found that gender, ethnicity and SDM significantly (p=.001) predicted CAM disclosure.

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Wallen, et al., Integrative Medicine Insights, 2012

One Good Clinical Question Leads to Another...



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Community-Based Study: Pilot Study of Yoga Self-Care in Minority Communities

PI: Kimberly Middleton

- To further test the feasibility of yoga as a self-care strategy to reduce chronic pain, improve functional capacity and enhance sleep hygiene in arthritis patients.
- Pilot study was developed to examine the feasibility of yoga acceptability of providing yoga to an urban, minority population with arthritis.
- Arthritis patients attending a community clinic are amenable to enrolling in a study evaluating the feasibility and acceptability of yoga classes taught in English and Spanish as a self-care strategy.

Middleton, et al., (2013). Health and Quality of Life Outcomes,Middleton, et al., International Journal of Yoga Therapy,Middleton, et al. Complementary Therapies in Medicine.





Middleton and Andrade

INSPIRE Innovation for Nursing Sensitive Practice in a Research Environment



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Innovation for Nursing Sensitive Practice In a Research Environment

Staff

Observations

Stakeholder

Feedback

Ongoing

Performance

Monitoring

Ongoing

Review of

Clinical

Standarda

Methods

Consultation

Establish

Project Lead and Mentor

Evidence

Based

Practice®





Setting Priorities



QI/PI, EBP, or Research





Implementation



Committee Purpose

- Forum for initial dialogue on innovative ideas generated from clinical staff
- Way to engage clinical staff in building and sustaining a culture of EBP, QI/patient safety, and research by:
 - Providing resources and consultation re: best methods to approach improvement ideas
 - Facilitating consultation with experts in methods and/or other topics based on the scope of the initiative

Committee Purpose

- Coordinating INSPIRE Committee review process
- Tracking progress and communicating overall number of projects and topic areas via INSPIRE website and updates at CCND meetings (e.g., leadership, NPC)
- The goal is <u>not</u>
 - To track all department initiatives
 - > To be a gatekeeper

"INSPIRE-ation" Request

- Review idea with immediate supervisor who will seek support and agreement from the respective Service Chief
 - Goal is to facilitate communication to ensure success



Roles

- Leadership Point of Contact
 - Member of program leadership (facilitate the work of the project)
- Methods Expert/Consultant
 - Involved in at least one meeting
 - Engaged intermittently at the discretion of the requester over the course of the project (start up through dissemination)

Embracing a Culture of Innovation

- Engaging staff to bring innovative idea forward despite uncertainty. Set a culture that is open to early idea generation.
- Consider: quarterly 'open forum' innovative idea generation sessions
 - Staff who have ideas but aren't sure how to present to leadership or narrow down
 - Rapid fire ideas & brainstorming (e.g., 15 minutes of agenda time)
 - All leadership would be encouraged to attend (maybe based on agenda/topic)
 - > Brainstorming, no judgement; no pre-approval required

INSPIREd Projects

- Initiated by staff from both outpatient and inpatient areas
 - 8 QI
 - 4 EBP
 - 4 Research
 - 2 Unit-based Clinical Projects



Examples

• QI: Alaris Guardrails

> Alaris guardrail drug library usage on all inpatient units

• EBP: Distress Screening

Routine screening for distress in adult oncology clinics

• RESEARCH: Authorized Deception

Exploring participants attitudes and perceptions (OP4) enrolled on studies using authorized deception Practice Innovation and Good Science Requires Good Mentorship



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Personal Characteristics in a Research Mentor

- Enthusiasm
- Sensitivity
- Appreciating individual differences
- Respect
- Unselfishness
- Support for other than one's own
- Teaching and communication



Lee, Dennis, and Campbell. (2007). *Nature's Guide for Mentors.* Nature, 447: 791-797.

Growth Through Challenges



Lee, Dennis, and Campbell. (2007). *Nature's Guide for Mentors.* Nature, 447: 791-797.

NIH National Institutes of Health

"The delicate balance of mentoring someone is not creating them in your own image, but giving them the opportunity to create themselves." Steven Spielberg







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Acknowledgment

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