

Developing Nurse Scientists of the Future: A Unique Clinical-Academic Partnership

Jean Coffey PhD, APRN, FAAN
Elizabeth B. McGrath DNP, APRN



Dartmouth
GEISEL SCHOOL OF
MEDICINE



NH-INBRE

Nurse Scientists Wanted

- $< 1\%$ of approximately 3 million nurses in the U.S. have a research doctoral degree
- Average age nurses obtain PhD ~ 46 years old, 10 years older than other disciplines
- The Future of Nursing recommends BSN graduates matriculate into a graduate program within 5 years of graduation

What is INBRE/SURF?

INBRE

- **IDeA Networks of Biomedical Research Excellence**
- Nationally 24 programs are funded by an Institutional Development Award (IDeA) from the National Institutes of Health

SURF/INBRE

INBRE Program Goal:

Promote the development, coordination and sharing of research resources and expertise that will expand the research opportunities and increase the number of competitive investigators in the IDeA-eligible states where there is a *scarcity* of NIH funding

SURF/INBRE

SURF

- Summer **U**ndergraduate **R**esearch **F**ellowship
- Provides an opportunity to engage in a summer research fellowship
- Affords “hands on” research exposure and fosters interest in biomedical or healthcare related careers and advanced education

SURF/INBRE

- New Hampshire hosts the *only* nursing INBRE/SURF program in the country
- Created in 2011 from a partnership with the Geisel Medical School at Dartmouth College, Dartmouth Hitchcock Health and select Schools of Nursing in New Hampshire

SURF/INBRE

Goals of the nursing fellowship:

- Engage the fellows in the research process
- Encourage interprofessional collaboration with bench scientists
- Increase research self-efficacy
- Foster the production and dissemination of scholarly work
- Promote the value of graduate school

SURF/INBRE Fellowship

Fall

- Sophomores and juniors from select NH nursing schools invited to apply

Winter

- Competitive review process by a team of nurse scientists:
 - Written application and cover letter
 - GPA requirement
 - Phone interview

Summer

- Four to five students arrive for the paid 10- week residential immersion experience

SURF/INBRE Fellowship

Three pillars support the nursing fellowship

Program

People

Place



Pillars

Program

- Objectives aligned with the INBRE/SURF program and “Future of Nursing” report
(RWJF, 2010)
- Students work fulltime alongside their nurse scientist mentor
- Involvement in both conduct and application of research, clinical trials, and quality improvement

Pillars

Program

Participation in inter-professional learning activities

- CITI training
- Journal club with bench science fellows
- GRE preparation & testing
- Nursing research education roundtables
- Ethics committee meeting
- Committee on the Protection for Human Subjects

Pillars

Program

Culmination of the Summer Experience

- Podium presentation at the academic medical center
Nursing Grand Rounds
- Scholarly poster presented at the statewide INBRE meeting

Pillars

People

Program Coordinators from Medical School and Academic
Medical Center

- Dedicated to developing and organizing the program for bench scientists and nursing scientists
- Coordinators manage every detail
 - Assigning mentors
 - Coordinating housing
 - Weekend field trips

Pillars

Nursing Co-Leaders

- Responsible for selecting students/assigning mentors
- Arrange activities with college coordinators
- Facilitate journal clubs focused on nursing research
- Weekly huddles
- Scheduled Weekly Roundtable Discussions

People

Clinical Subject Matter Experts

- Provide shadow experiences
- Present Weekly Roundtable Discussions
 - Critical appraisal of the evidence
 - IRB
 - Ethics Committee Meeting
 - Clinical Trials

Pillars

Nurse Scientists

- Guide nursing students through summer program
- Practicing clinicians
- Employed by AMC
- Co-authored peer reviewed publications and presentations

Pillars

Nurse Scientists

- Mentoring
- Role Modeling
- Connecting
- Imprinting

Pillars

Place

- Rural college town in northeast
- AMC/ Medical School
- Resources
 - Medical library with nursing librarian assigned to the students
 - Access to core research support: bioinformatics, statistical support, data science
 - On campus housing, free transportation, meal allowance

Pillars

Goals of the program

- Engage fellows in the research process
- Increase research self-efficacy
- Produce and disseminate scholarly work
- Promote value of graduate school

SURF/INBRE Research Study

Hypothesis:

- Increased nursing research self-efficacy after participation in the summer research fellowship

SURF/INBRE Study

Research Questions:

- Do BSN undergraduate nursing students participating in a 10 week summer research internship (SURF) increase their nursing research self efficacy ?
- Do the INBRE/SURF program participants continue to engage in scholarly activity at the completion of the program?
- Do participants of the program go on to pursue a graduate degree?

The Study Overview

- Quasi Experimental
- Convenience Sample
- Instrument: Nursing Research Self Efficacy Scale (NURSES) by Swenson-Britt (2013)
- Confidential Pre-Post administration of the scale using Redcap survey platform
- Committee on the Protection of Human Subjects study approval

Sample

Research Self Efficacy

- 8 students (2016-2017) participated in NURSES survey

Scholarly Contribution and Graduate Degrees

- 27 total participants since the inception of the program in 2011 were followed for graduate school attendance and scholarly activity

Instrument

NURSES

- Instrument Nursing Research Self Efficacy Scale (NURSES) by Swenson-Britt (2013)
- Used 34 out of the 38 items
- 1-5 scale (very little to quite a lot)
- Subject to psychometric testing
- Specific to nurses

Select NURSES Measures

- Obtaining science-based knowledge resources
- Critically evaluating qualitative and quantitative research literature
- Understanding and applying theory

SURF INBRE Analysis

- Due to the small sample size, effect sizes were calculated and randomization tests were used to test statistical significance. (Good 2005)
- Descriptive Statistics were used to convey scholarly activity and graduate school attendance
- Dartmouth College statisticians collaborated on the statistical analysis

SURF/INBRE Results

- Students showed improvements in all aspects of research self-efficacy
- Greatest gain was in understanding and applying research theory
 - Increase in mean scores 2.65 to 4.40 ($p < .001$; d effect size = 2.18)
- Confidence for obtaining resources
 - Increase in mean scores 3.63 to 4.42 ($p < .05$; d effect size = 1.13)

SURF/INBRE Results Results

- Ability to critically evaluate
 - Quantitative research 2.65 to 4.04, ($p < .01$; $d=.94$)
 - Qualitative research 2.57 to 3.86, ($p < .05$; $d=1.22$)
- All effect sizes are large indicating that overall the program was successful in increasing research self-efficacy

SURF INBRE Outcomes

2016-2017 Surf nursing students

- 100% podium presentation at AMC Nursing Grand Rounds
- 100% presented at INBRE statewide meeting
- 75% contributed to a formal report or peer reviewed publication
 - Compared to 8% bench scientists in the same time period

Outcomes for All Participants

Scholarly Activity

- 47% have presented a poster at a regional professional conference and 19% at a national conference
- 5 student/mentor pairs garnered awards at the national level
- 19% co-authored and published a paper
- 3 students received grant funding to continue their work

Outcomes for All Participants

Graduate Education

- 21% of nursing student participants who have graduated since 2011 (n=19) have a graduate degree or are in a graduate nursing program
- This exceeds the Future of Nursing recommendation of 10%

Discussion

Questions for the Audience

What elements of the program do you believe contributed to the increase in research self efficacy ?

What aspects of the program could be replicated in a summer internship? a semester long research class?

Do you believe the nurse scientist had an impact on improved research self efficacy? on continued engagement in scholarly activity? on pursuit of a graduate degree?



Thank You!