

## CURRICULUM VITAE

**Sue E. Gardner, PhD, FAAN**

6-15-59

PROFESSOR  
 COLLEGE OF NURSING  
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Adjunct Appointments  
 ADJUNCT ACADEMIC ASSOCIATE, THE UNIVERSITY OF IOWA HOSPITALS & CLINICS

**I. EDUCATION & PROFESSIONAL HISTORY****A. EDUCATION**

Dates Attended	Degree	Field of Study	Institution	Location
1977-1981	BSN	Nursing	University of Iowa	Iowa City, IA
1988-1990	MA	Nursing: Adult health; Administration	University of Iowa	Iowa City, IA
1993-1999	PhD	Nursing: Gerontology; Statistics/Design	University of Iowa	Iowa City, IA
2000-2002	Post-doc	Wound infection/Epidemiology	University of Iowa	Iowa City, IA

## Dissertation:

Gardner, S. E. (1999). The validity of the clinical signs and symptoms used to identify localized chronic wound infection. (Doctoral Dissertation, The University of Iowa College of Nursing, Iowa City, Iowa).

**B. LICENSURE/CERTIFICATION**

1981-	Nursing License, Iowa Board of Nursing (#065634)
1987-1994	Advanced Cardiac Life Support
1998-2008	Certified Wound Care Nurse (CWCN), Wound Ostomy and Continence Certification Board (#199822764)

**C. HONORS/AWARDS**

1988-1990	Graduate Nurse Traineeship
2000	Honorable Mention, Midwest Nursing Research Society Doctoral Student Poster Awards
2001	Nominee, D. C. Spriestersbach Dissertation Prize, The University of Iowa College of Nursing
2010-2011	CIC Academic Leadership Fellow
2013	Fellow, American Academy of Nursing
2015	Wound Healing Research Scholarship, Wound Healing Society and Symposium on Advanced Wound Care

2020	University of Iowa College of Nursing Distinguished Nurse Scholar
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## E. PROFESSIONAL EXPERIENCE

### 1. Teaching Experience

1992-1993	Instructor	Indiana University, Columbus, IN
2000-2002	Adjunct Assistant Professor	The University of Iowa College of Nursing, Iowa City, IA
2002-2008	Assistant Professor	University of Iowa, Iowa City, IA
2008-2015	Associate Professor	University of Iowa, Iowa City, IA
2015-	Professor	University of Iowa, Iowa City, IA

### 2. Clinical Experience

1981-1982	Staff Nurse	Knoxville Area Community Hospital Nursing Dept., Knoxville, IA	Med/Surg, Emergency Room, ICU
1988-1991	Staff Nurse	Knoxville Veterans Affairs Medical Center Nursing Services, Knoxville, IA	Nursing Home Care Unit
1991-1993	Staff Nurse	Richard L. Roudebush Veterans Affairs Medical Center Nursing Service, Indianapolis, IN	SICU
1993-2000	Staff Nurse	Iowa City Veterans Affairs Medical Center, Patient Care Services, Iowa City, IA	ICU/General Medicine

### 3. Administrative Experience

1981-1988	Supervisor	Knoxville Area Community Hospital Nursing Department, Knoxville, IA	Labor/Delivery, Postpartum/Newborn Nursery
1986-1987	Hospital Supervisor	Knoxville Area Community Hospital Nursing Department, Knoxville, IA	

### 4. Research Experience

1997-1999	Predoctoral Nurse Fellow	Department of Veterans Affairs, Office of Academic Affiliations
2000-2002	Postdoctoral Fellow	Department of Veterans Affairs, Office of Academic Affiliations
2003-2005	Research Health Science Specialist	Department of Veterans Affairs Medical Center, Iowa City, IA
2002-2008	Assistant Professor	University of Iowa, Iowa City, IA
2008-2015	Associate Professor	University of Iowa, Iowa City, IA
2015-	Professor	University of Iowa, Iowa City, IA

## II. SCHOLARSHIP

### A. Areas of Research Interest

Wound healing, chronic wound infection, infection-related complications, pressure ulcers, diabetic foot pathologies, wound pain, wound microbiome, multiple chronic conditions

### B. Publications

#### 1. Data-based Peer Reviewed Papers

1. \*Frantz, R., **Gardner, S.**, Harvey, P., & Specht, J. (1991). The cost of treating pressure ulcers in a long- term care facility. Decubitus, 4(3), 37-45.
2. \*Frantz, R., **Gardner, S.**, Harvey, P., & Specht, J. (1992). Adoption of research-based practice for treatment of pressure ulcers in long-term care. Decubitus, 5(1), 44-54.
3. \*Richardson, G.M., **Gardner, S.**, & Frantz, R. A. (1998). Nursing assessment: Impact on type and cost of interventions to prevent pressure ulcers. Journal of Wound, Ostomy and Continence Nursing, 25, 273-280.
4. \***Gardner, S.E.**, Frantz, R.A., & Schmidt, F.L. (1999). Effect of electrical stimulation on chronic wound healing: A meta-analysis. Wound Repair and Regeneration, 7, 495-503.
5. \***Gardner, S.E.**, Frantz, R.A., Specht, J.K., Johnson-Mekota, J.L., Buresh, K.A., Wakefield, B.J., & Flanagan, J.R. (2001). How accurate are chronic wound assessments using interactive, video technology? Journal of Gerontological Nursing, 27(1), 15-20.
6. \*Johnson-Mekota, J., Maas, M., Buresh, K., **Gardner, S.E.**, Frantz, R., Specht, J., Wakefield, B., & Flanagan, J. (2001). A nursing application of telecommunications: Measurement of satisfaction for patients and providers. Journal of Gerontological Nursing, 27(1), 28-33.
7. \***Gardner, S.E.**, Frantz, R.A., Troia, C., Eastman, S., MacDonald, M., Buresh, K., & Healy, D. (2001). A tool to assess clinical signs and symptoms of localized chronic wound infection: Development and reliability. Ostomy/Wound Management, 47(1), 40-47.
8. \*Frantz, R. A., **Gardner, S.**, Specht, J. K., & McIntire, G. (2001). Integration of a pressure ulcer treatment protocol into practice: Clinical outcomes and care environment attributes. Outcomes Management for Nursing Practice, 5(3), 112-120.
9. \***Gardner, S.E.**, Frantz, R.A., & Doebbeling, B.N. (2001). The validity of the clinical signs and symptoms used to identify localized chronic wound infection. Wound Repair and Regeneration, 9, 178-186. Reprinted in French with permission of the publisher in: Le Journal des Plaies et Cicatrisations.
10. \***Gardner, S.E.**, Frantz, R.A., Saltzman, C.L., Dogdson, K. (2004). *Staphylococcus aureus* is associated with high microbial load in chronic wounds. Wounds: A Compendium of Clinical Research and Practice, 16(8), 219-225.
11. \***Gardner, S. E.**, Frantz, R. A., Bergquist, S., & Shin, C. D. (2005). A prospective study of the Pressure Ulcer Scale for Healing (PUSH). Journal of Gerontology: Medical Sciences, 60A(1), 93-97.
12. \***Gardner, S. E.**, Frantz, R. A., & Saltzman, C. L. (2005). Diabetes and inflammation in infected chronic wounds. Wounds: A Compendium of Clinical Research and Practice, 17(8), 203-205.
13. \***Gardner, S. E.**, Frantz, R. A., Saltzman, C. L. Hillis, S. L., Park, H., and Scherubel, M. (2006). Diagnostic validity of three swab techniques in identifying chronic wound infection. Wound Repair and Regeneration, 14(5), 548-557.
14. \***Gardner, S. E.**, Frantz, R. A., Park, H., & Scherubel, M. (2006). The inter-rater reliability of the Clinical Signs and Symptoms Checklist in diabetic foot ulcers. Ostomy/Wound Management, 53(1), 46-51.
15. \***Gardner, S. E.**, Frantz, R. A., Hillis, S. L., Park, H., & Scherubel, M. (2007). Diagnostic validity of semi-quantitative swab cultures. Wounds: A Compendium of Clinical Research and Practice, 19(2), 31-38.
16. \***Gardner, S. E.**, Hillis, S. L., and Frantz, R. A. (2009). Clinical Signs of infection in diabetic foot ulcers with high microbial load. Biological Research for Nursing, 11(2), 119-128.
17. \***Gardner, S. E.**, Hillis, S. L., & Frantz, R. A. (2011). A prospective study of the PUSH tool in diabetic foot ulcers. Journal of Wound, Ostomy, and Continence Nursing, 38(4), 385-393.
18. \***Gardner, S. E.**, Frantz, R. A., Hillis, S. L., Blodgett, T. J., Femino, L. M., & Lehman, S. M. (2012). Volume measures using a digital image analysis system are reliable in diabetic foot ulcers. Wounds: A Compendium of Clinical Research and Practice, 24(6), 146-151.

19. \***Gardner, S. E.**, Hillis, S. L., Heilmann, K., Segre, J. A., & Grice, E. A. (2013). The neuropathic diabetic foot ulcer microbiome is associated with clinical factors. *Diabetes*, 62(3), 923-930.
20. \***Gardner, S. E.**, Blodgett, N. P., Hillis, S. L., Borhart, E., Malloy, L., Abbott, L., Pezzella, P., Jensen, M., Sommer, T., Sluka, K. A., & Rakel, B. A. (2014). Most wound care procedures cause moderate to severe pain and Hi-TENS reduces this pain: A pilot study. *Biological Research for Nursing*, 16(3), 310-319. DOI: 10.1177/1099800413498639
21. \*Haleem, A., Schultz, J.S., Heilmann, K.P., Dorhn, C.L., Diekema, D.J., & **Gardner, S.E.** (2014). Concordance of nasal and diabetic foot ulcer staphylococcal colonization. *Diagnostic Microbiology and Infectious Disease*, 79(1), 85-89.
22. \***Gardner, S. E.**, Haleem, A., Jao, Y. L., Hillis, S. L., Femino, J. E., Phisitkul, P., Heilmann, K. P., Lehman, S. M., & Franciscus, C. L. (2014). Cultures of diabetic foot ulcers without clinical signs of infection do not predict outcomes. *Diabetes Care*, 37(10), 2693-2701.
23. \*Vu, B.G., Stach, C.S., Salgado-Pabón, W., Diekema, D.J., **Gardner, S.E.**, & Schlievert, P.M. (2014). Superantigens of *Staphylococcus aureus* from patients with diabetic foot ulcers. *Journal of Infectious Diseases*, 210(12), 1920-1927.
24. \*Blodgett, T.J., **Gardner, S.E.**, Blodgett, N.P., Peterson, L.V., & Pietraszak, M. (2015). A tool to assess the signs and symptoms of catheter-associated urinary tract infections: Development and reliability. *Clinical Nursing Research*, 24(4), 341-356. DOI: 10.1177/1054773814550506
25. Kalan, L., Loesche, M., Hodkinson, B.P., Heilmann, K., **Gardner, S.E.** & Grice, E. A. (2016). Redefining the chronic-wound microbiome: Fungal communities are prevalent, dynamic, and associated with delayed healing. *MBio*, 7(5). Doi 10.1128/mBio.01058-16. PMID:27601572
26. Kalan, L., **Gardner, S. E.**, & Grice, E. A. (2016). Reply to "Understanding the Role of Fungi in Chronic Wounds". *mBio*, 7(6), e02033-16.
27. Loesche, M., **Gardner, S. E.**, Kalan, L., Horwinski, J., Zheng, Q., Hodkinson, B. P., ... & Margolis, D. J. (2017). Temporal stability in chronic wound microbiota is associated with poor healing. *The Journal of investigative dermatology*, 137(1), 237.
28. Jao, Y. L., **Gardner, S. E.**, & Carr, L. J. (2017). Measuring weight-bearing activities in patients with previous diabetic foot ulcers. *Journal of Wound Ostomy & Continence Nursing*, 44(1), 34-40.
29. Burdsall, D. P., **Gardner, S. E.**, Cox, T., Schweizer, M., Culp, K. R., Steelman, V. M., & Herwaldt, L. A. (2017). Exploring inappropriate certified nursing assistant glove use in long-term care. *American Journal of Infection Control*, 45(9), 940-945.
30. Kalan, L.R., Meisel, J.S., Loesche, M.A., Horwinski, J., Soaita, I., Chen, X., Uberoi, A., **Gardner, S.E.** and Grice, E.A. (2019). Strain-and species-level variation in the microbiome of diabetic wounds is associated with clinical outcomes and therapeutic efficacy. *Cell host & microbe*, 25(5), 641-655.
31. Deussenbery, C.B., Kalan, L., Meisel, J.S., **Gardner, S.E.**, Grice, E.A. and Spiller, K.L. (2019). Human macrophage response to microbial supernatants from diabetic foot ulcers. *Wound Repair and Regeneration*. [DOI10.1111/wrr.12752]
32. Schumer, R.A., Guetschow, B.L., Ripoli, M.V., Phistkul, P., **Gardner, S.E.**, and Femino, J.E. (2020). Preliminary experience with conservative sharp wound debridement by nurses in the outpatient management of diabetic foot ulcers: Safety, efficacy, and economic analysis. *Iowa Orthopedic Journal*, 40 (1), 43-47.
33. **Gardner, S.E.**, Nakad, L., Bae, J., Ahmed, B.H., Wolf, J.S., Abbott, L.I., Hein, M., Hillis, S.L., Rakel, B.A. (submitted) Psychological distress and wound pain during dressing changes. *The Clinical Journal of Pain*.
34. **Gardner, S.E.**, Bae, J., Ahmed, B.H., Abbott, L.I., Wolf, J.S., Hein, M., Carter, C., Hillis, S.L., Tandy, L.M., and Rakel, B.A. (submitted). A clinical tool to predict severe pain during wound dressing changes. *Pain*.

## 2. Non-data-based Peer-reviewed Papers

1. Frantz, R.A., & **Gardner, S.** (1994). Elderly skin care: Principles of chronic wound care. Journal of Gerontological Nursing, 20(9), 35-44.
2. Frantz, R.A., & **Gardner, S.** (1994). Clinical concerns: Management of dry skin. Journal of Gerontological Nursing, 20(9), 15-18, 45.
3. **Gardner, S. E.**, & Frantz, R. A. (2004). Obtaining wound specimens: 3 techniques. Advances in Skin and Wound Care, 17(2), 64-65. [Reprinted from Gardner, S.E., & Frantz, R. A. (2003). Wound infection. In S. Baronoski & E. A. Ayello (Eds.), Wound care essentials: Practice principles. Springhouse, PA: Lippincott, Williams, & Wilkins.]
4. **Gardner, S. E.**, and Frantz, R. A. (2008). Wound bioburden and infection-related complications in diabetic foot ulcers. Biological Research for Nursing, 10(1), 44-53.
5. Mistic, A. M., **Gardner, S. E.**, and Grice, E. A. (2014). The wound microbiome: modern approaches to examining the role of microorganisms in impaired chronic wound healing. Advances in Wound Care, 3(7), 502-510. DOI:10.1089/wound.2012.0397.
6. Mulder, P. J., and **Gardner, S. E.** (2015). The healthy newborn hydration model for understanding newborn dehydration immediately after birth. Biological Research for Nursing, 17(1), 94-99. DOI:10.1177/1099800414529362.
7. Gould L, Abadir P, Brem H, Carter M, Conner-Kerr T, Davidson J, DiPietro L, Falanga V, Fife C, **Gardner S**, Grice E, Harmon J, Hazzard WR, High KP, Houghton P, Jacobson N, Kirsner RS, Kovacs EJ, Margolis D, McFarland Horne F, Reed MJ, Sullivan DH, Thom S, Tomic-Canic M, Walston J, Whitney JA, Williams J, Zieman S, Schmader K. (2015). Chronic wound repair and healing in older adults: current status and future research. Wound Repair and Regeneration 1, 1-13. Reprinted in Journal of the American Geriatrics Society, 63(3), 427-438.
8. **Gardner SE**, Abbott LI, Fiala CA, Rakel BA. (2017). Factors associated with high pain intensity during wound care procedures: A model. Wound Repair Regeneration Aug;25(4):558-563. doi: 10.1111/wrr.12553. Epub 2017 Aug 14.m PMID:28805960
9. Fiala, C.A., Abbott, L.I., Carter, C.D., Hillis, S.L., Wolf, J.S., Schuster, M., Dulski, R., Grice, E.A., Rakel, B.A. & **Gardner, S.E.** (2018). Severe pain during wound care procedures: A cross-sectional study protocol. Journal of Advanced Nursing, 74(8), 1964-1974. DOI: 10.1111/jan.13699
10. Tripp-Reimer, T., Williams, J.K **Gardner, S.**, Rakel, B., Herr, K., McCarthy, A.M., Hand, L., Gilbertson-White, S., & Cherwin, C. (2020) Integrated model of multimorbidity and symptom science, Nursing Outlook 68(4), 430-439.

## 3. Book Chapters

1. Buckwalter, K.C., & **Gardner, S.** (1998). Gerontological Care. In J. J. Fitzpatrick (Ed.), Encyclopedia of Nursing Research (pp.219-221). New York: Springer Publishing Company.
2. Frantz, R.A., & **Gardner, S.** (1999). Pressure ulcer care. In G. Bulechek & J. McCloskey (Eds.), Nursing interventions: Effective nursing treatments. W. B. Saunders.
3. **Gardner, S.E.** & Frantz, R. A. (2003). Wound bioburden. In S. Baronoski & E. A. Ayello (Eds.), Wound care essentials: Practice principles. Springhouse, PA: Lippincott, Williams, & Wilkins.
4. **Gardner, S.E.** & Frantz, R. A. (2007). Wound bioburden. In S. Baronoski & E. A. Ayello (Eds.), Wound care essentials: Practice principles (2<sup>nd</sup> ed.). Springhouse, PA: Lippincott, Williams, & Wilkins.
5. **Gardner, S.E.** & Frantz, R. A. (2011). Wound bioburden and infection. In S. Baronoski & E. A. Ayello (Eds.), Wound care essentials: Practice principles (3<sup>rd</sup> ed.). Springhouse, PA: Lippincott, Williams, & Wilkins.

## 4. Reviews/Commentary

1. Oelman, M., Brunsell, S., Rutherford, A., Erickson, D., **Gardner, S.**, Harp, J., Marshall, V., Mills, L., Minnick, K., Schlutte, M., Stephan, C., & Zahrt, L. (1990). [Review of Strategic

management of nurses: A policy-oriented approach]. Nursing Scan in Administration, 5(3), 21-22.

2. **Gardner, S.E.** (2010). Expert Commentary: Ten top tips for taking a wound swab by Rose Cooper. Wounds International, 1(3), www.woundsinternational.com.

### C. Grant Funding

#### 1. Training

Title:	GNRIC Predoctoral Fellowship
Role:	Fellow
Funding Source:	Gerontological Nursing Research Interventions Center (P30 NR03979)
Duration:	1994-1996
Amount:	

Title:	The University of Iowa Center on Aging Predoctoral Fellowship
Role:	Fellow
Funding Source:	Center on Aging
Duration:	1996-1997
Amount:	

Title:	Department of Veterans Affairs Office of Academic Affiliations Predoctoral Nurse Fellowship
Role:	Fellow
Funding Source:	Department of Veteran's Affairs
Duration:	1997-1999
Amount:	\$50,000
Title:	Department of Veterans Affairs Office of Academic Affiliations Postdoctoral Nurse Fellowship
Role:	Fellow
Funding Source:	Department of Veteran's Affairs
Duration:	2000-2002
Amount:	\$86,000

#### 2. Intramural

Title:	The University of Iowa Old Gold Summer Fellowship
Role:	<i>PI</i>
Funding Source:	
Duration:	2003
Amount:	\$6,000

Title:	The University of Iowa Old Gold Summer Fellowship
Role:	<i>PI</i>
Funding Source:	
Duration:	2004
Amount:	\$6,000

Title:	Comparison of Diabetic Ulcer Bioburden Using Traditional Cultures vs. Microbial DNA.
Role:	<i>Co-PI</i>
Funding Source:	The University of Iowa Foundation Huss Faculty Development Fund
Duration:	2010-2012

Amount:	\$4000
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Title:	TENs for Wound Pain
Role:	<i>Co-PI</i>
Funding Source:	The University of Iowa Foundation Development Fund
Duration:	2011-
Amount:	\$26,000

### 3. Extramural

Title:	"An Examination of the Validity and Reliability of Three Methods to Quantify Necrotic Tissue."
Role:	Principal Investigator
Funding Source:	Sigma Theta Tau Gamma Chapter Research Grant
Duration:	1997-98
Amount:	\$1,000

Title:	"The Relationship Between Clinical Inflammation and Bacterial Burden in Chronic Wounds."
Role:	Principal Investigator
Funding Source:	Knoll Pharmaceutical Company
Duration:	1997-98
Amount:	\$5,000

Title:	"Discriminatory Value of Risk Factors of Chronic Wound Infection."
Role:	Project Director
Funding Source:	Gerontological Nursing Interventions Research Center (P30 NR03979)
Duration:	1998
Amount:	\$10,000

Title:	"The Validity of the Clinical Signs and Symptoms Used to Identify Localized Chronic Wound Infection."
Role:	Principal Investigator
Funding Source:	National Pressure Ulcer Advisory Panel Research Award
Duration:	1999
Amount:	\$1,500

Title:	"Chronic Wound Infection."
Role:	Principal Investigator
Funding Source:	Department of Veterans Affairs Office of Academic Affiliations Postdoctoral Nurse Fellowship
Duration:	2000-02
Amount:	\$6,000

Title:	"The Diagnostic Validity of Three Quantitative Swab Techniques."
Role:	Principal Investigator
Funding Source:	Department of Veterans Affairs Health Services Research and Development Nursing Research Initiative
Duration:	2001-04

Amount:	\$278,000
Title:	"The Diagnostic Validity of Semi-quantitative Swab Cultures."
Role:	Principal Investigator
Funding Source:	Gerontological Nursing Interventions Research Center (P30 NR03979)
Duration:	2004-05
Amount:	\$14,680
Title:	"Center for Research in the Implementation of Innovative Strategies in Practice."
Role:	Core Investigator
Funding Source:	Department of Veterans Affairs Health Services Research and Development
Duration:	2004-09
Amount:	\$3,599,000
Title:	"Defining an Algorithm for Management of High Wound Bioburden in Diabetic Foot Ulcers."
Role:	Co-Principal Investigator
Funding Source:	3M
Duration:	2005-07
Amount:	\$149,000
Title:	"Bioburden Predictors of Diabetic Ulcer Complications."
Role:	Principal Investigator
Funding Source:	NIH/NINR 1RO1NR009448
Duration:	2007-2013 (NCE)
Amount:	\$3,000,000
Title:	"The Measurement of Weight-bearing Activity and Activity- associated Pain in Persons with Prior Diabetic Foot Ulcers"
Role:	Co- Investigator, Mentor (PI: YL Jao)
Funding Source:	Wound, Ostomy, Continenence Nursing Society, Molnlycke Health Care – WOCN® CCI Research Grant on Critically Colonized/Infected Chronic Wounds
Duration:	2012-2013
Amount:	\$10,000
Title:	"Severe pain during wound care procedures: Model and mechanisms"
Role:	PI
Funding Source:	NIH/NINR R01NR015642
Duration:	2015-2020
Amount:	\$2,341,753
Title:	"Decoding the microbial burden of diabetic foot ulcers: A metagenomic approach" (PI: Elizabeth Grice)
Role:	Co-investigator
Funding Source:	NIH/NINR
Duration:	2015-2023
Amount:	\$807,000
Title:	Pain and Associated Symptoms: Nurse Research Training (PI: Herr/McCarthy)
Role:	Core Faculty Member



Funding Source:	NIH/NINR <b>T32 NR011147</b>
Duration:	2009-2021
Amount:	

Title:	<i>Center for Advancing Multimorbidity Science: Profiling risk and symptom expression to develop customized therapies for adults with multiple chronic conditions (CAMS)</i>
Role:	MPI
Funding Source:	NIH/NINR <b>1 P20 NR018081-01</b>
Duration:	2018-2023
Amount:	\$1,900,000

Title:	Severe Pain During Wound Care Procedures: Model and Mechanisms
Role:	PI
Funding Source:	NIH/NINR <b>R01 NR015642-04S1</b>
Duration:	2018-2020
Amount:	\$218,000

Title:	Decoding the microbial burden of diabetic foot ulcers
Role:	Co-I and site PI
Funding Source:	NIH/NINR <b>R01 NR015639</b>
Duration:	2019-2024
Amount:	\$306,627

Title:	<i>Center for Advancing Multimorbidity Science: Profiling risk and symptom expression to develop customized therapies for adults with multiple chronic conditions (CAMS)</i>
Role:	PI
Funding Source:	NIH/NIA Alzheimer's supplement
Duration:	2020-2021
Amount:	\$249,000

#### D. Presentations

##### 1. International

##### **International: Invited**

None

##### **International Research**

\*May 2013, Haleem, A., Gardner, S. E., & Schultz, J., "Concordance of nasal and diabetic foot ulcer staphylococcal colonization", Wound Healing Society, Denver, CO.

\*May 2013, Gardner, S. E., Hillis, S. L., Heilmann, K., & Grice, E. A., "The microbiota colonizing diabetic foot ulcers is associated with glycemic control, ulcer depth, and duration," International Investigative Dermatology Conference, Edinburgh, Scotland.

\*May 2015, S. E. Gardner<sup>2\*</sup>, M. Loesche<sup>1\*</sup>, B. P. Hodkinson<sup>1</sup>, A. S. Tyldsley<sup>1</sup>, J. Horwinski<sup>1</sup>, S. Boudhar<sup>3</sup>, D. Margolis<sup>1,3</sup>, E. A. Grice<sup>1</sup> CULTURE-INDEPENDENT MEASURES OF THE DIABETIC FOOT ULCER MICROBIOME PREDICT CLINICAL OUTCOMES, Wound Healing Society, San Antonio, TX.

\*April 2016, <sup>1</sup>Lindsay Kalan, <sup>1</sup>Michael Loesche, <sup>2</sup>Sue E. Gardner, <sup>1</sup>Joseph Horwinski, <sup>1</sup>Brendan Hodkinson, and <sup>1</sup>Elizabeth Grice. The fungal communities of diabetic foot ulcers, Wound Healing Society, Atlanta, GA. Oral presentation

\*September, 2018, Nakad, L., Wolf, J.S., Fiala, C.A., Abbott, L.I., Carter, C.D., Hein, M.L., Hillis, S.L., Rakel, B.A. & Gardner, S.E. *Psychological distress and wound pain during dressing changes*. Poster session presented at the International Association for the Study of Pain, World Congress on Pain, Boston, MA. Poster presentation.

## 2. National/Regional

### **National/Regional Invited**

September 2002, Gardner, S. E., & Frantz, R. A. "Detecting Wound Infections," 17<sup>th</sup> Annual Clinical Symposium on Advances in Skin and Wound Care, Dallas, TX., Invited Oral presentation.

October 2003, "Wound Infection," Clinical Symposium on Advances in Skin and Wound Care, Chicago, IL., Invited Oral presentation.

July, 2004, Gardner, S. E., Dolter, K., "Chemistry in Nursing Curricula, 18<sup>th</sup> Biennial Conference on Chemistry Education, Ames, IA , Invited Oral presentation.

April 2010, Gardner, S. E., Dowd, S., & Schultz, G., "Wound Diagnostics: The Future is Near", 23<sup>rd</sup> Annual Symposium on Advanced Wound Care, Orlando, FL, Invited Oral presentation

September 2010, Gardner, S. E., Dowd, S., & Schultz, G., "Wound Diagnostics: The Future is Near", 23<sup>rd</sup> Annual Symposium on Advanced Wound Care, Anaheim, CA, Invited Oral presentation

May, 2015, Gardner, S. E., & Grice, E. A., "Obtaining a Wound Culture: Getting the Right Drug to the Bug," Annual Symposium on the Advanced Wound Care, San Antonio, TX, Invited Oral presentation

### **National/Regional Research**

\*October 1991, Gardner, S. E., & Frantz, R. A. "The Characteristics and Costs of Pressure Ulcer Treatment in Long Term Care," The Fourth National Conference of Nursing Administration Research, The University of Iowa College of Nursing, Iowa City, Iowa, Oral presentation.

\*November 1992, Gardner, S. E., & Frantz, R. A. "The Characteristics and Costs of Pressure Ulcer Treatment in Long Term Care," 19th Annual Nursing Research Conference, Indiana University School of Nursing, Indianapolis, Indiana, Oral presentation

\*February 1995, Gardner, S. E., & Frantz, R. A. "Measurement of Partial and Full-thickness Ulcers: Critical Parameters of Healing," The 4<sup>th</sup> National Conference of the National Pressure Ulcer Advisory Panel, Washington, DC. , Poster

\*April 1997, Gardner, S. E., Frantz, R. A. & Richardson, "The Cost-effectiveness of an Intensive Pressure Ulcer Prevention Protocol in Long-term Care," 21st Annual Research Conference, Midwest Nursing Research Society, Minneapolis, MN, Oral presentation

\*September 1997, Gardner, S. E., Frantz, R. A., & Schmidt, F. "Electrical Stimulation and Wound Healing," Clarkson Center for Wound Healing, 1st Annual Wound Care Symposium, Omaha, NE, Invited, Oral presentation

- \*March 1998, Gardner, S. E., Frantz, R. A., & Schmidt, F. "The Effect of Electrical Stimulation on Chronic Wound Healing: A Meta-analysis," 22nd Annual Research Conference, Midwest Nursing Research Society, Columbus, OH, Poster
- \*February 1999, Gardner, S. E., Frantz, R. A., & Schmidt, F. "The Effect of Electrical Stimulation on Chronic Wound Healing: A Meta-analysis," 6TH National NPUAP Consensus Conference, Orlando, Florida., Poster
- \*February 1999, Gardner, S. E., Frantz, R. A., & Schmidt, F. "The Effect of Electrical Stimulation on Chronic Wound Healing: A Meta-analysis," 17<sup>th</sup> Annual Meeting of HSR&D, Washington, DC., Poster
- \*April 1999, Gardner, S.E., Frantz, R.A., Specht, J.K., Johnson-Mekota, J.L., Buresh, K.A., Wakefield, B.J., & Flanagan, J.R. "Accuracy of Chronic Wound Assessments Using Interactive, Video Technology," 23<sup>rd</sup> Annual Research Conference, Midwest Nursing Research Society, Indianapolis, IN, Oral presentation
- \*March 2000, Gardner, S. E. "A Nurse Managed Chronic Wound Telehealth Clinic," 18<sup>th</sup> Annual HSR&D Service Meeting, Washington, DC., Poster
- \*April 2000, Gardner, S.E., Frantz, R. A., & Doebbeling, B. "The Validity of the Clinical Signs and Symptoms Used to Identify Localized Chronic Wound Infection," 24th Annual Research Conference, Midwest Nursing Research Society, Dearborn, MI., Poster
- \*October 2000, Gardner, S.E., Frantz, R. A., & Doebbeling, B. "The Validity of the Clinical Signs and Symptoms Used to Identify Localized Chronic Wound Infection," 15<sup>th</sup> Annual Clinical Symposium on Advances in Skin and Wound Management. Nashville, TN, Oral presentation
- \*August 2001, Thompson, E., Gardner, S. E., "Cardiopulmonary Arrests in Non-critical Care Areas of the Hospital: A 2-year analysis of outcome," 68<sup>th</sup> Annual Meeting of The American Association of Nurse Anesthetists, San Francisco, CA., Poster
- \*October 2003, Frantz, R. A., Gardner, S. E., & Squires, "Reliability of Acetate Tracings, Alginate Molds, and Computer Imaging for Measuring Wound Healing," Clinical Symposium on Advances in Skin and Wound Care, Chicago, IL, Poster
- \*October 2003, Gardner, S. E., Frantz, R. A., & Saltzman, C. "Relationship Between *Staphylococcus aureus* and Wound Bacterial Burden," Clinical Symposium on Advances in Skin and Wound Care, Chicago, IL., Poster
- \*February 2004, Gardner, S. E., Frantz, R. A., Hillis, S., Park, H., & Scherubel, M. "Diagnostic Validity of Three Quantitative Swab Techniques," 2004 Annual Midwest Nursing Research Conference. St. Louis, MO., Poster
- \*February 2004, Gardner, S. E., Frantz, R. A., Saltzman, C., & Park, H. "Association of *Staphylococcus aureus* with Localized Chronic Wound Infection," 2004 Annual Midwest Nursing Research Conference. St. Louis, MO, Oral presentation
- \*October 2005, Gardner, S. E., Frantz, R. A., Hillis, S., & Park, H. "Diagnostic Validity of Three Quantitative Swab Techniques for Identifying Chronic Wound Infection," 2005 20<sup>th</sup> Anniversary Clinical Symposium on Advances in Skin and Wound Care. LasVegas, NV.

\*April 2006, Gardner, S. E., Frantz, R. A., Hillis, S., & Park, H. "Diagnostic Validity of Three Quantitative Swab Techniques for Identifying Chronic Wound Infection," 30<sup>th</sup> Annual MNRS Research Conference, Milwaukee, WI, Oral presentation

\*March 2007, Gardner, S. E., Frantz, R. A., & Hillis, S., "Diagnostic Validity of Semi-quantitative Swab Cultures," 31<sup>st</sup> Annual MNRS Research Conference, Omaha NE, Oral presentation

\*April 2010, Jao, Y., Gardner, S.E., Brown, T.M., & Thedens, J.T., "Total Contact Casts in Diabetic Foot Ulcers, Midwest Nursing Research Society, Kansas City, MO, poster.

\*April 2010, Gardner, S. E., Hillis, S. L., & Frantz, R. A., "A Prospective Study of the PUSH Tool in Diabetic Foot Ulcers," 23<sup>rd</sup> Annual Symposium on Advanced Wound Care, Orlando, FL, poster.

\*October 2011, Gardner, S. E., Grice, E. A., & Hillis, S. L., "Sequencing 16S Ribosomal RNA is a More Robust Measure of Diabetic Foot Ulcer Bioburden, NINR 25<sup>th</sup> Anniversary Celebration, Washington, D.C., poster

March 2012, Gardner, S.E., Grice, E. A., & Hillis, S. L., "Sequencing 16S Ribosomal RNA is a More Robust Measure of Diabetic Foot Ulcer Bioburden, Leveraging Resources for an Eastern Consortium on Microbiome Research, Drexel University, Philadelphia, PA, poster

\*April 2012, Gardner, S.E., Grice, E. A., & Hillis, S. L., "Sequencing 16S Ribosomal RNA is a More Robust Measure of Diabetic Foot Ulcer Bioburden", Midwest Nursing Research Society, Dearborn, MI, oral presentation

\*April 2012, \***Gardner, S. E.**, Frantz, R. A., Hillis, S. L., Blodgett, T. J., Femino, L. M., & Lehman, S. M. (2012). Volume measures using VeVMD are reliable in diabetic foot ulcers. Midwest Nursing Research Society, Dearborn, MI, oral presentation

\*April 2012, Jao, YL, Gardner, S.E., Femino, J. E., Phisitkul, P., Yack, J. H., & Teran-Yengle, P.C., "Risk Factors of Diabetic Foot Ulcer Recurrence", Midwest Nursing Research Society, Dearborn, MI, PhD student poster.

\*May 2012, Malloy, L., Borhart, E., Gardner, S. E., Blodgett, N., Abbott, L., Pezzella, P., Jensen, M., & Rakel, B., "High intensity TENS reduces pain during dressing changes on open wounds. A proof of concept study", American Pain Society, Honolulu, HI, student poster

\*April 2013, Schultz, J., Haleem, A., & Gardner, S. E., "Concordance of nasal and diabetic foot ulcer staphylococcal colonization", Great Plains Emerging Infectious Diseases, Iowa City, Iowa, student poster.

\*May 2013, Vu, B. G., Stach, C. S., Salgado-Pabon, W., Diekema, D. J., Gardner, S. E., & Schlievert, P. M., Superantigen profiles of Staphylococcus aureus isolates from diabetic foot ulcers," American Society of Microbiology Meeting, Denver, CO, oral presentation.

\*March 2014, Gardner, S.E. Jao, Y. L, Haleem, A., Hillis, S. L., Femino, J. E., Phisitkul, P. Prognostic Efficacy of Wound Bioburden in Predicting Healing Outcomes for People with Diabetic Foot Ulcers. Midwest Nursing Research Society Annual Conference, St. Louis, MO, oral presentation

\*March 2014, Jao, Y.L., Gardner, S.E., Carr, L. J., Haedtke, C, Liang, I. C., Pruitt, L., Laheta, L. The validity of ActiPAL and ActiGRAPH in measuring weight-bearing activities in persons with

prior diabetic foot ulcers. Midwest Nursing Research Society Annual Conference, St. Louis, MO, student oral presentation

\*May 2016, Bohr, N., Rakel, B. A., Kolker, S. J., Sluka, K., & Gardner, S. E. Cytokine expression in wound fluid: A pilot study. American Pain Society 35<sup>th</sup> Annual Scientific Meeting, Austin, TX, poster.

\*July 20, 2016. Schurmer, R., Guetschow, B., Ripoli, M., Tennant, J, Gardner, S. E., Phisitkul, P., & Femino, J. Conservative Sharp Wound Debridement by Nurses in the Outpatient Management of Diabetic Foot ulcers: Safety Efficiency and Economic Analysis. American Orthopedic Foot and Ankle Society Annual Meeting, Toronto Canada. Oral

\*April 7, 2016. Cate Fiala, Meghan Schuster, Sue E. Gardner, Cheryl Carter, Jessica Wolf, and Linda Abbott. Data Collection Challenges in an Academic Medical Center: Tales from the Bedside. Symposium for Advancement of Wound Care Meeting, San Diego, CA. poster.

March, 2019. Gardner, S.E. and Rakel, B.A. Integrated Model of Multimorbidity and Symptom Science. Midwest Nursing Research Society, Kansas City, KS. Oral presentation

### 3. Local

#### **Local Invited**

1998, Gardner, S. E., "The Validity of Clinical Signs and Symptoms Used to Identify Localized Chronic Wound Infection: A Proposal. Brown Bag Luncheon, Research Week, Iowa City VAMC, Iowa City, IA., Invited.

April 1998, Gardner, S. E. "Statistics and Measurement," 5th Annual Multidisciplinary Research Utilization Conference, University of Iowa Hospitals and Clinics, Iowa City, IA., Invited

#### **Local Research**

\*August 1996, Gardner, S. E., Frantz, R. A, & Schmidt, F "The Effect of Electrical Stimulation on Chronic Wound Healing: A Meta-analysis," Gerontological Nursing Interventions Research Conference, The University of Iowa Gerontological Nursing Research Interventions Research Center, Iowa City, IA.

\*April 1997, Gardner, S. E., Frantz, R. A, & Schmidt, F "The Effect of Electrical Stimulation on Chronic Wound Healing: A Meta-analysis," Association of Graduate Nursing Students Research Day, The University of Iowa College of Nursing, Iowa City, IA., Poster

*\*databased, peer-reviewed presentations*

## III. SERVICE

### A. Professional Service

#### 1. Professional Organization Membership

American Nurses' Association  
Iowa Nurses' Association  
Midwest Nursing Research Society  
Sigma Theta Tau International  
Wound, Ostomy, Continence Nurses Society  
Wound Healing Society  
American Academy of Nursing

#### 2. Professional Organization Service

2010-	Chair, Physiological Phenomena Research Section, Midwest Nursing Research
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2011	Society
2011	Member, Abstract Review Subcommittee, Wound Healing Society
2011	Member, Membership Committee, Wound Healing Society
2012-2015	Co-Chair, Membership Committee, Wound Healing Society
2018-20	Co-Chair, Program Committee, Annual Wound Healing Society Meeting

### 3. Advisory Boards/Task Forces/Expert Panels

2002-05	VA Nursing Research Advisory Group, Department of Veterans Affairs, Washington, DC
2003	Consensus panel on wound infection criteria, Buckinghamshire Chilterns University College, United Kingdom
2007	National Pressure Ulcer Advisory Panel-European Pressure Ulcer Advisory Panel: Committee to develop guidelines on the assessment and treatment of infection. Chair: Catherine Ratliff, PhD, RN
2009	Expert Panel on Future Approaches to Health Promotion and Disease Prevention, NINR, Bethesda, Maryland
2009	Faculty for Gerontological Nursing Research Summer Scholars Seminar, John A. Hartford Centers for Geriatric Nursing Excellence, Little Rock, Arkansas
2013-2014	Association of Specialty Professors (ASP) Workshop on Wound Repair and Healing in Older Adults (U13 to set NIH research agenda on this topic).

### 4. Journal Reviewer

2003-present	<u>Journal of Wound, Ostomy, Continence Nursing</u>
2005	<u>Annals of Behavioral Medicine</u>
2006	The University of Iowa College of Nursing Research Translation and Dissemination Core: EBP Guidelines
2009	<u>Clinical Infectious Diseases</u>
2010-2011	Physical Therapy Journal
2012-	Biological Research for Nursing
2012	Journal of American Medical Directors Association
2012-	<u>Research in Nursing and Health (review panel)</u>
2012	Journal of the European Academy of Dermatology and Venereology
2012	International Journal of Diabetes in Developing Countries
2013	British Journal of Dermatology
2014-	Advances in Wound Care
2014-	Clinical Microbiology and Infection
2014-	Wound Repair and Regeneration
2015-	Nursing Research

### 5. Editorial Boards

2013-2018	Biological Research for Nursing

### 6. Editorships

2013-2014	Guest Editor, Advances in Wound Care, Issue on Microbiome and wounds

### 7. Grant Review Panels

2002	Biological Sciences Funding Program, The University of Iowa Office of the Vice President for Research
2005	Dutch Technology Foundation STW

2007	American Diabetes Research Funding Program
2010	University of Iowa Institute for Clinical and Translational Science, Clinical Research Unit
2013	Dermatology, Rheumatology and Inflammation [ZRG1 MOSS T12] Small Business Applications/National Institutes of Health
2018	Special Emphasis Panel [ <b>2018/10 ZDK1 GRB-1 (O2) 1</b> ] RFA DK-17-014, Diabetic Foot Consortium - Clinical Research Units (U01)/NIDDK/ National Institutes of Health
2018	Special Emphasis Panel/Scientific Review Group <b>2019/01 ZRG1 MOSS-C (12) B</b> , Small Business Applications/National Institutes of Health
2020	Special Emphasis Panel/Scientific Review Group <b>2019/01 ZRG1 MOSS-C (12) B</b> , Small Business Applications/National Institutes of Health

### 8. Consultations

2003	Liberty Country Living, North Liberty, IA
2006	3M Company, Minneapolis, MN
2008	McGraw Hill
2007	ECI Biotech, Inc. Worcester, MA

## B. Collegiate and University Service

### 1. College of Nursing

1998-00	Member, Iowa-VA Nursing Research Consortium
2003-06	Scholarship Subcommittee, Academic Council, College of Nursing
2004-08	Member, Faculty Council
2006-07	Faculty Workload Subcommittee, Faculty Council, College of Nursing
2006	Search Committee: Director PhD Program, College of Nursing
2007	Search Committee: Systems and Practice Secretary
2008-10	Chair, Faculty Council
2008-10	Chair, Promotion and Tenure Task Force, Faculty Council
2008-10	Space Committee
2009	BSN Curriculum Task Force
2009-11	PhD Admissions and Progression Committee
2010-11	Academic Council
2010	BSN NCLEX Review Committee
2011-12	Member, By-laws Revisions Task Force
2012-	Faculty Coordinator, BSN Young Scientist Program
2012-15	Co-Chair, Council on Curriculum
2012-14	Chair, Promotion and Tenure Subcommittee of Council on Faculty
2012-15	Member, Research Advisory Group
2012-13	Member, Nominations Subcommittee of Council on Faculty
2013-2016	Faculty Advisor, Early Admission Undergraduates (Class of 2016)
2013-2017	Member, Promotion and Tenure Subcommittee of Council on Faculty
2015-2018	Chair, PhD Admissions and Progression Subcommittee of Council on Student Affairs
2016-2018	Chair, Council Chairs and Co-Chairs

2016-2018	Chair, College of Nursing Faculty Organization
2018-2019	Co-Chair, College of Nursing Faculty Organization
2020-	Member, Promotion and Tenure Subcommittee
2020-	Co-Chair, Council on Faculty
2020-	Member, Graduate Council
2021-2022	Chair, Decanal Review Committee (Dean Zerwic)

## 2. University of Iowa

2002	Reviewer, Biological Sciences Funding Program, Office of the Vice President for Research, The University of Iowa
2002-05	Research and Development Committee, Veterans Affairs Medical Center, Iowa City, IA
2009-14	University of Iowa Faculty Senate
2010-11	Fellow, CIC Academic Leadership Program
2011-14	University of Iowa Faculty Council
2013	Member, Michael Brody Service Award Selection Committee
2013-15	Member, Committee on Committees
2016	Member, OVPR: Research Misconduct Case
2014-2019	Member, Committee on the Selection of Central Administration
2018	Member, Committee to Review Vice Presidents Office of External Relations

## C. Community Service

1995	Wound Healing and Treatment, Washington Community Hospital, Washington, IA
2003	Pressure Ulcer Scale for Healing (PUSH) (CEU Offering), VA Central Health Care System, Knoxville, IA (January 15-16).
2003	Skin and Wound Care in the Elderly, Liberty Country Living (Dementia-specific Residential Care Facility), North Liberty, IA (May 20)

## IV. TEACHING

### A. Course Instruction

Semester	University	Assigned Courses	Brief Description
Fall 2002, 2003, 2004, 2005, 2006, 2007, 2008 Spring 2007, 2008, 2010	University of Iowa	96:114 Pathophysiology: Organ Systems	3 s.h. Physiology and Pathology didactic course on organ systems for pre-licensure programs (BSN and MNHP). 70 – 150 students
Spring 2003, 2004, 2005, 2006	University of Iowa	96:115 Pathophysiology: Cellular, Immune, Neuro	3 s.h. Physiology and Pathophysiology didactic course on cellular processes, immune function, and neurology for pre-licensure programs (BSN and MNHP). 70 – 150 students.
Spring 2004,	University of	96:185 Internship in Care	14 s.h. Clinical internship course for



2005, 2006	Iowa	Management	MNHP students. Includes seminar and oversight of clinical preceptorship. (MNHP)-Precepted Clinical. 15 students
Fall 2004, 2005	University of Iowa	96:213 Physiology for Advanced Nursing Practice	3 s.h., Physiology course for masters-level nursing students (MSN)-Didactic. 30 students
Fall 2002, 2008, 2010, 2011	University of Iowa	96:410 Nursing Research of Biological Phenomena and Interventions for the Elderly	3 s.h. Biology of aging for doctoral students with focus on gerontological nursing. Physiological measurement included (PhD)-didactic. 6-10 students
Fall 2012	University of Iowa	96:308 DNP Capstone	Varied s.h. DNP Project Coordination for 50 students. Co
Fall 2014,	University of Iowa	96:117 Pathology	3 s.h. for RN-BSN students. Online course. 39 students
Fall 2014, Spring 2015, Spring 2016, Fall 2016, Spring 2017	University of Iowa	96:133: Professional Roles II: Research	3 s.h. for RN-BSN students. Online course. 19 students
Spring 2019	University of Iowa	NURS: 7404 Biological Markers in Health Research	3 s.h. for PhD students. Face to face. 4 students.

## B. Continuing Education

## C. Students Mentored

### 1. PhD Student Advisor

2004-2013	Tom Blodgett	
2010-2016	Deb Burdsall	
2017-	Bootan Husain	
2018-2019	Jemmie Hoang	
2019-	Jaewon, Bae	

### 2. PhD Dissertations

2011	Kari Lane	Member
2013	Tom Blodgett	Chair
2014	Ying-Ling Jao	Member
2014	Charlene Aarons	Member
2016	Deborah Burdsall	Chair
2018	Catherine Fiala	Member

### 3. PhD Comprehensive Exams

2009	Tom Blodgett	Chair
2010	Charlene Aarons	Member
2010	Kari Lane	Member
2011	Shalome Tonelli	Member
2012	Ying-Ling Jao	Member
2012	Deb Burdsall	Chair

2013	Catherine Fiala	Member
2014	Deb Shibley	Member
2014	Chris Haedtke	Member

#### 4. DNP Projects-

2011	Sharon Coji	Member
2012	Stephanie Eason	Member
2013	Theresa Jennings	Member
2013	Amanda Peacock	Member
2013	Catherine Odum	Member

#### 5. MSN Theses/Projects

2006	Cheryl Bombei	Portfolio Committee Member	
2006	Jacqueline DePooter	Project Committee Member	
2006	Marge Jensen	Project Committee Member	
2006	Tom Woods	Project Committee Member	
2006	Tom Blodgett	Project Chair	

#### 6. BSN Honors Projects

2008	Laurie Bailey
2008	Haley Bell
2008	Teri Byl
2009	Taylor Brown
2010	Kelly Metcalf
2011	Lanae Van Sloten, Shannon Metge
2013	Lisa Pruitt
2015	Marissa Ripoli
2016	Mercedes Stahl
2017	Meghan Schuster

#### 7. BSN Young Scientist Mentor

2011-2012	Lynna Malloy
2015-	Meghan Schuster

#### 8. BSN Independent Study

2013	Jennifer Laheta
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