

Enhancing Nursing Science and Improving Patient Care through Big Data: PhD-DNP

University of Florida Examples
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Setting & Context: University

- Designated a preeminent state university by the Florida legislature in 2013
 - Funds to hire world class researchers
 - Areas include health, agriculture, computing, and education
 - College of Nursing (CON) preeminence hire
 - Dr. Gail Keenan: biomedical informatics
 - Capture, storage & use interoperable nursing data
 - Analyze using “big data” methodologies

Setting & Context: Health Center

- Comprehensive health center
 - 2 hospitals (Gainesville, Jacksonville)
 - Physician practices, colleges, centers, institutes, programs and services across northeast and north-central Florida
 - > 22,000 employees
- 9 interdisciplinary institutes & CTSI
 - CON has meaningful affiliations with each

Setting & Context: CON

- Comprehensive public, land-grant institution
- Celebrating 60th anniversary
- One of the first two colleges at UF's J. Hillis Miller Health Science Center
- Today, one of six health science colleges located within the campus of UF

CON Faculty

- 51 faculty
 - 22 TT; 26 CT; 3 research rank
- 4 endowed chairs
 - 2 recruited with preeminence funds
- 7 faculty hold the DNP
- Majority of CT hold PhD or other doctoral degree

CON Programs

- Tri-partite mission
 - Teaching, research and service
- Nurse-managed rural clinic in Archer, FL
- Degree programs
 - BSN/ABSN/RN-to-BSN (~350)
 - BSN to DNP and PM DNP to prepare APRNs(~300)
 - BSN to PhD and PM PhD (~30)

Informatics Infrastructure

- Big data capacity housed within CTSI
 - Integrated Data Repository (ID)
 - Large-scale secure, clinical data warehouse
 - Support by CTSI and Shands HealthCare
 - Information from across clinical, administrative, & research enterprises.
 - Epic electronic medical record system.
 - > 46 million observational facts
 - ~371,000 patients
 - Demographics, diagnoses, procedures, laboratory results, pain scores, inpatient and outpatient encounter characteristics, Biorepository specimen availability, Personalized Medicine Program data, Consent2Share, others

IDR Access

- Access using i2b2 tools
 - Approved by IRB
- Uses
 - Identify potential cohorts for research
 - Clinical trials and secondary data analyses.
 - Class projects

Class Project Example

- NGR 7003: Advanced Diagnostic Reasoning
 - DNP students complete large dataset Analysis
 - Utilize clinical expertise to develop focused clinical question
 - Use health system IDR and i2b2 tools
 - Develop appropriate queries to answer the question
 - Interpret results to determine need for change(s) in practice
 - Illustrate potential practice change recommendations/next steps study & cost considerations
 - PowerPoint presentation of the team's work

Clinical Research Infrastructure

- OneFlorida Clinical Research Consortium
 - Dr. Betsy Shenkman PI (Gator Nurse Alumna)
 - PCORNet site
 - Research infrastructure serving entire state
 - Partners: FL Medicaid, 3 Academic practice networks, 2 statewide primary care networks, 4 statewide hospital systems & affiliated practices
 - Shared governance (CON representation), Cooperative IRB, Community engagement
 - IT resources (collaborative portal; ResearchACTS software; data collection & point-of-care risk assessments; data analytics warehouse; statewide biorepository)

OneFlorida Project Sampler

- Examples providing PhD / DNP collaboration potential
 - Hepatitis Early Identification and Linkage to Care for Persons with Chronic HBV
 - Adolescent Health Risk Assessments
 - HPV Vaccine Initiation

Additional Big Data Resources

- Gator Vault for PHI
- HyperGator II supercomputer
- Data Science Research (DSR) Lab
 - Large-scale data management, data mining and data analysis
 - Developing / applying technologies
 - Database management Systems, Statistical Machine Learning, & Information Visualization

PhD & DNP Faculty Research/Scholarship 1

- PhD informatics faculty (Lucero) and DNP-prepared FNP (Hayes)
 - Early stage collaboration
 - Family caregiving - information and communication
 - Diverse big data sources
 - Patient portals and health records, social media, and wearable devices

PhD & DNP Faculty Research/Scholarship 2

- 2 DNP students, 2 clinical track faculty (Hartjes and Curry), & pressure ulcer team at hospital
 - Facilitated by CT faculty (Duckworth)
 - .5 FTE at the health system as Director of Clinical Research
- Examine factors associated with pressure ulcers
 - Started with paper medical records & EPIC EMR
 - Expanded to access 10 years data via IDR & i2b2
- Senior faculty (Stechmiller), member Board of Directors of the National Pressure Ulcer Advisory Panel is consultant

PhD & DNP Faculty Research/Scholarship 3

- Preeminent informatics faculty member (Keenan)
 - Multi-disciplinary team: faculty, PhD students, post doctoral fellows, & DNP students across two universities (UF, UIC)
- EHR as source of practice based nursing evidence for palliative care
 - Predictive models of patient outcomes
 - Deploy HANDS within UF
 - DNP student projects: change management, implementation, and evaluation; structured nursing data and standardized languages

Strategies to Support PhD-DNP Collaboration

- Organizational commitment
 - Interdisciplinary collaborative environment; preeminence
- Informatics infrastructure
- Practice partnerships
 - Joint Academic/Health System appointments
 - DNP projects
- “Community of scholars”
 - All faculty valued as contributing to practice-transforming scholarship