



UNIVERSITY OF CENTRAL FLORIDA

Designing a Doctor of Nursing Practice Epidemiology Course Based on Centers for Disease Control and Prevention (CDC) Epidemiology Resources

National Organization of Nurse Practitioner Faculties

April 17, 2010

Washington, DC

Christopher W. Blackwell, Ph.D., ARNP, ANP-BC

Assistant Professor, College of Nursing

University of Central Florida

Orlando, Florida

DNP Essentials

- **Epidemiology is a very important component of the AACN *Essentials* (2006) for Doctor of Nursing Practice (DNP) programs**
- **Article VII: Clinical Prevention and Population Health for Improving the Nation's Health:**
 - “The DNP graduate has a foundation in clinical prevention and population health. This foundation will enable DNP graduates to analyze epidemiological, biostatistical, occupational, and environmental data in the development, implementation, and evaluation of clinical prevention and population health. Current concepts of public health, health promotion, evidence-based recommendations, determinants of health, environmental/occupational health, and cultural diversity and sensitivity guide the practice of DNP graduates. In addition emerging knowledge regarding infectious diseases, emergency/disaster preparedness, and intervention frame DNP graduates’ knowledge of clinical prevention and population health” (p. 15)

Epidemiology Defined

- **Study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems**
- **Epidemiology is data driven**
- **It is essential that the collection of this data remain systematic and unbiased**
- **Draws from the fields of biostatistics, economic, social, and behavioral sciences**
- **Applies the scientific method and use of probability, statistics, hypothesis testing, and causal reasoning**
- **Drives the evaluation of public health initiatives and is a major factor in the formulation and funding of health and social policies**
- **5 W's of epidemiology:**
 - **What: Dx or health event**
 - **Who: Person**
 - **Where: Place**
 - **When: Time**
 - **Why: Causes, risk factors, and modes of transmission**

Epidemiology Defined

- **Distribution of health events in a population defined by:**
 - Frequency: # of health events: population size
 - Pattern: Occurrence of health-related events by time, place, and person (descriptive epidemiology)
- **Determinants:**
 - Epidemiology attempts to define the causes and other factors that influence the occurrence of diseases and other health-related events
 - Illnesses do not occur randomly; occur when the right accumulation of risk factors or determinants exists within an individual
 - Epidemiologists must determine where groups with higher prevalence rates differ in demographics, genetic/immunologic makeup, behaviors, environmental exposures, or other risk factors
- **Health-related states:**
 - Epidemiologists study more than just communicable diseases; they study **anything** that affects the well-being of a population, known as health-related states.

The CDC as a Resource

- **The Centers for Disease Control and Prevention (CDC) serve as the major federal source of epidemiologic surveillance in the United States (National Center for Infectious Disease, 2008):**
- **Providers → County Health Dept → State Health Dept → CDC**
- **Because CDC is the major federal oversight body of epidemiologic surveillance and data collection in the US, it is a rich resource for designing an epidemiology course for DNP students.**

CDC Resources

- **There are many resources available through the CDC to design an epidemiology course:**
 - *Principles of Epidemiology (SS1000) Course (Dicker, Coronado, Koo, & Parrish, 2006)*
 - CDC Web Site <http://cdc.gov>:
 - *Most updated information about notifiable communicable diseases (CDC, 2007b)*
 - *Latest clinical recommendations and guidelines to prevent, screen, and treat communicable diseases (CDC, 2010a)*
 - *Latest up-to-date information about the current epidemiologic data for the US on Morbidity and Mortality Weekly Report (CDC, 2010b)*

Principles of Epidemiology (SS1000) Course

- **This course is designed for healthcare professionals, including registered nurses, advanced nurse practitioners, physician assistants, and physicians.**
- **Accredited by the American Nurses Credentialing Center (ANCC) Commission on Continuing Education**
- **Consists of 5 major units of instruction:**
 - Introduction to Epidemiology
 - Data Management
 - Measures of Risk
 - Public Health Surveillance
 - Investigation of an Outbreak

Principles of Epidemiology (SS1000) Course

- **Students can register for the course for free through the CDC Continuing Education Program Web Site:**
 - At the beginning of the semester, students create their own personal account through the CDC at:
<http://www2a.cdc.gov/TCEOnline/> (CDC, 2007c)
- **The textbook for the course is available for download for free through the CEU program; can also be purchased:**
 - Dicker, R., Coronado, F., Koo, D., & Parrish, R.G. (2006). *Principles of epidemiology in public health practice: An introduction to applied epidemiology and biostatistics* (3rd ed.). Atlanta, GA: United States Department of Health & Human Services, Centers for Disease Control and Prevention.

Principles of Epidemiology (SS1000) Course

- **The summative evaluation for the course can at least be partially based on the completion of SS1000 (CDC, 2004):**
 - Competency is measured by completion of a comprehensive 50-question multiple choice exam written by the textbook authors (70%, 2 attempts).
 - Completion of the SS100 course awards the student a CDC Certificate of Completion and 17 continuing education units (CEUs).

Principles of Epidemiology (SS1000) Course

- **The 5 major units of instruction can be used as the basis for an introductory epidemiology course at the DNP level**
- **The course at UCF based on this course includes the 5 major units of instruction and an additional unit on “Case Management in Epidemiology” which is the major summative research assignment for the course**
- **The course meets in a 15-week semester and is taught “Mixed Mode” with students coming to class every other Friday**
- **See attached course syllabus**

CDC Web Site

- **The CDC Web Site is an AMAZING Site!!!**
- **There are a plethora of data that can be obtained through CDC's Web Site:**
 - Surveillance Data (updated surveillance data on a plethora of diseases and conditions; *MMWR* also helpful for surveillance data)
 - Data on disease outbreaks, prevention methods for communication, and treatment options (CDC, 2010a)
 - 2090 "Hits" with the search "Surveillance Data" (CDC, 2008)
 - Example: HIV/AIDS (CDC, 2009a):
 - Provides most recent information on:
 - Infection rates (CDC, 2009a)
 - Statistical analysis of modes of transmission (CDC, 2009a)
 - Regional variance in infection rates and characterizations (CDC, 2009a)
 - Public health strategies to prevent the spread of transmission (CDC, 2007a)
 - Treatment guidelines: For example, when to institute HAART in children (CDC, 2009b) and the use of PEPT to prevent seroconversion (CDC, 2009c)

- **Current (March) issue includes the article:**
 - Presumptive Abortive Human Rabies– Texas, 2009 (CDC, 2010c):
 - Provides background and epidemiology of abortive (“cured”) rabies
 - Describes a case study of a 17 year-old female who contracted rabies:
 - Clinical presentation and physical examination findings;
 - Diagnostic testing, results, and interpretation
 - Treatment course, including medical management
 - Sequelae of infection; treatment follow-up
 - Editorial response:
 - Public health considerations
 - Clinician clinical recommendations
 - Implications for disease surveillance and the role of the CDC

Summary and Conclusion

- **Epidemiology is an essential component of a Doctor of Nursing Practice (DNP) curriculum**
- **Epidemiology goes beyond its traditional definition in public health**
- **The CDC SS1000 content and textbook can serve as a *GREAT* basis for an introductory graduate course in Epidemiology for DNP students:**
 - **Competency can be effectively measured by:**
 - **Successful performance on the comprehensive final exam**
 - **Certificate of Completion**
 - **17 CEUs**

Summary and Conclusion

- **Remember, epidemiologic science is forever changing and a course in epidemiology should reflect current disease data and clinical guidelines:**
 - The CDC Web Site should be used regularly throughout the course to:
 - Design case studies
 - Allow students to comprehend how the information they are learning is being used to prevent, assess, and treat regional, state, national, and international health problems
 - Access the Continuing Education Programs offered by the CDC, including SS1000
 - View the latest *MMWR* to:
 - Stay abreast of the most recent data collected by epidemiologists in disease surveillance
 - Understand the significance of the interconnected relationships of healthcare providers, facilities, local and state health departments, and the CDC to improve health outcomes for the United States