Phebe Esther-Bacon College of Health Sciences

Nurse Anesthesia Program

NAP 302: Evidence-Based Practice: Appraising and Translating Evidence

Module 4 Study Guide

Topic: Priority Population Health Problems: The role of research, quality improvement, and evidence-based anesthesia practice.

Required Sources for Module 4

1. Chapter 3: *The Johns Hopkins Nursing Evidence-Based Practice Model and Process Overview* (Johns Hopkins Nursing Evidence-Based Practice, 3rd Edition)
2. Module 4 Lecture: *Priority Population Health Problems: The Role of Research, Quality Improvement and Evidence-Based Practice*
3. *Global Surgery 2030: Evidence and Solutions for Achieving Health, Welfare, and Economic Development* (Lancet Commission)
4. *An Assessment of Anesthesia Capacity in Liberia: Opportunities for Rebuilding Post-Ebola* (Odinkemelu et al., 2021)

Module 4 Purpose

This module reviews the **Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model** and demonstrates how evidence-based practice can be applied to major population health problems, including anesthesia capacity challenges in low-resource settings such as Liberia.

The module moves beyond understanding evidence and focuses on:

- Identifying healthcare problems
- Examining available evidence
- Translating evidence into practice
- Improving outcomes through implementation and evaluation

Learning Objectives

Upon completion of this module, students will be able to:

1. Describe the components of the Johns Hopkins Nursing Evidence-Based Practice Model.
2. Explain the PET Process.
3. Develop answerable clinical questions using PICO.
4. Discuss the relationship between inquiry, learning, and practice.
5. Differentiate research, quality improvement, and evidence-based practice.
6. Analyze anesthesia workforce and healthcare capacity challenges using an evidence-based framework.
7. Explain how evidence supports policy and population health initiatives.
8. Apply the PET process to anesthesia-related clinical questions.

Key Concepts

Evidence-Based Practice (EBP)

EBP is a structured method of clinical decision-making that combines:

- Best available evidence
- Clinical expertise
- Patient values and preferences

The goal is to improve:

- Safety
- Quality
- Efficiency
- Clinical outcomes

Research vs Quality Improvement vs Evidence-Based Practice

Research	Quality Improvement	Evidence-Based Practice
Generates new knowledge	Improves local processes	Uses best available evidence to guide practice

Answers what is not known	Fixes identified performance gaps	Translates evidence into patient care
Generalizable findings	Local application	Clinical decision-making

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The Johns Hopkins Nursing Evidence-Based Practice Model

The JHNEBP Model contains three essential components:

Inquiry

Practice

Learning

The model emphasizes continuous questioning of practice and ongoing learning.

The model is illustrated in the lecture as a cycle connecting inquiry, practice, and learning.

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1. Inquiry

Inquiry is:

- A focused effort to question
- Examine
- Investigate
- Collect information regarding a problem or concern

A culture of inquiry encourages clinicians to ask:

> Why do we do it this way?
>
> Is there better evidence available?
>
> How can outcomes be improved?

Anesthesia Examples

- How can postoperative nausea and vomiting be reduced?
- What is the best preoperative airway assessment strategy?
- Do ultrasound-guided blocks improve outcomes?

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2. Practice

Practice refers to the translation of knowledge into patient care.

Practice is guided by:

- Standards
- Guidelines
- Policies
- Procedures
- Protocols

Historically, many clinical practices were based on tradition.

Today, practice is expected to be evidence-based.

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3. Learning

Learning is:

- Continuous
- Lifelong
- Necessary for maintaining competency

Learning cultures encourage:

- Professional growth
- Clinical competence
- Adaptation to new evidence

The PET Process

The Johns Hopkins Model organizes EBP into three phases:

P = Practice Question

E = Evidence

T = Translation

Phase 1: Practice Question

The first phase includes six steps.

Step 1

Recruit Interprofessional Team

Step 2

Define the Problem

Step 3

Develop and Refine PICO Question

Step 4

Identify Stakeholders

Step 5

Determine Leadership

Step 6

Schedule Team Meetings

PICO Framework

The lecture and textbook both emphasize use of the PICO framework.

Element	Meaning
P	Patient, Population, Problem
I	Intervention
C	Comparison
O	Outcome

Example Relevant to Nurse Anesthesia

P: Adult surgical patients

I: Forced-air warming

C: Passive warming blankets

O: Reduced perioperative hypothermia

Question:

> In adult surgical patients, does forced-air warming compared with passive warming reduce perioperative hypothermia?

Phase 2: Evidence

Evidence Phase Steps:

Step 7

Search for evidence

Step 8

Appraise evidence quality

Step 9

Summarize evidence

Step 10

Synthesize findings

Step 11

Develop recommendations

Types of Evidence Sources

Students should identify and evaluate:

- Research studies
- Systematic reviews
- Clinical practice guidelines
- Community standards

- Expert opinion
- Quality improvement data

Interpreting Evidence

Evidence may be:

Strong and Compelling

Supports practice change

Good and Consistent

Supports pilot testing

Good but Conflicting

Requires additional review

Insufficient

Requires additional research

Phase 3: Translation

Translation changes evidence into practice.

Translation is where clinical improvement actually occurs.

Steps include:

1. Assess fit and feasibility
2. Create action plan
3. Secure resources
4. Implement change
5. Evaluate outcomes
6. Report findings
7. Identify next steps
8. Disseminate results

Applying the PET Process to Population Health Problems

The course lecture emphasizes that EBP is used not only for individual patient problems but also for population health problems.

Process:

1. Identify a population health problem.
2. Examine available evidence.
3. Describe contributing factors.
4. Identify evidence-based interventions.
5. Translate best practices into clinical care and policy.

Global Surgery 2030: Why Evidence Matters

The Lancet Commission identified major worldwide deficits in access to surgical and anesthesia care.

Key findings include:

5 Billion People Lack Access

Approximately 5 billion people worldwide do not have access to safe, affordable surgical and anesthesia care when needed.

143 Million Additional Procedures Needed

Low- and middle-income countries require approximately 143 million additional surgical procedures annually to prevent death and disability.

Financial Catastrophe

Approximately 33 million people annually experience catastrophic expenditure due to surgery and anesthesia costs.

Surgery Is Essential Health Care

Surgery and anesthesia are described as:

> "an indivisible, indispensable part of health care."

Applying EBP to Liberia: Anesthesia Capacity Assessment

The Liberia anesthesia capacity study is an excellent example of using evidence to identify population health problems requiring intervention.

Study Purpose

Researchers used the World Federation of Societies of Anaesthesiologists Anaesthesia Facility Assessment Tool (WFSA-AFAT) to evaluate anesthesia resources throughout Liberia.

Major Findings

Workforce Shortages

Liberia had:

- 72 nurse anesthetists
- 1 anesthesiologist

Provider density:

- Nurse anesthetists: 1.56 per 100,000 population
- Anesthesiologists: 0.02 per 100,000 population

Infrastructure Challenges

Many hospitals lacked:

- Reliable oxygen
- Running water
- Electricity

Over half lacked consistent oxygen access.

Critical Care Resources

Approximately half of hospitals had:

- PACU services
- ICU services

Only one ICU had mechanical ventilation capability.

Medication Availability

Ketamine and lidocaine were widely available.

IV morphine was consistently available in only a small proportion of hospitals.

Why This Article Matters for NAP 302

This study demonstrates every phase of PET:

Practice Question

What is the current anesthesia capacity in Liberia?

Evidence

Researchers systematically collected infrastructure, workforce, equipment, and medication data.

Translation

Results were used to inform Liberia's National Surgical, Obstetric, and Anesthesia Plan (NSOAP).

Connection Between the Two Articles

The Lancet Commission identified global deficiencies in surgical and anesthesia capacity.

The Liberia study provides a real-world example of using evidence to assess those deficiencies and develop policy solutions.

Together, these readings demonstrate how evidence-based practice extends beyond bedside patient care to:

- Population health
- Workforce planning
- Health systems strengthening

- National policy development

Examination Focus Areas

Students should be able to:

Define

- Inquiry
- Evidence-Based Practice
- PET Process
- PICO

Describe

- Three components of JHNEBP
- Three phases of PET
- Differences between research, QI, and EBP

Apply

- Develop a PICO question
- Analyze a population health problem using PET
- Explain how evidence informs healthcare policy

Discuss

- Global anesthesia workforce shortages
- Barriers to safe surgical and anesthesia care in Liberia
- The role of EBP in improving patient outcomes

Key Take-Home Messages

✅ Inquiry drives evidence-based practice.

✅ The JHNEBP Model consists of Inquiry, Practice, and Learning.

✅ PET stands for Practice Question, Evidence, and Translation.

✅ PICO provides structure for clinical questions.

✅ Global anesthesia shortages can be examined and addressed through evidence-based approaches.

✅ The Liberia anesthesia capacity study demonstrates PET applied to a national healthcare problem.

✅ Translation is the ultimate goal because evidence only improves care when implemented.
