Critical Thinking, Evidence-Based Practice, Scientific Inquiry, and Ways of Knowing.

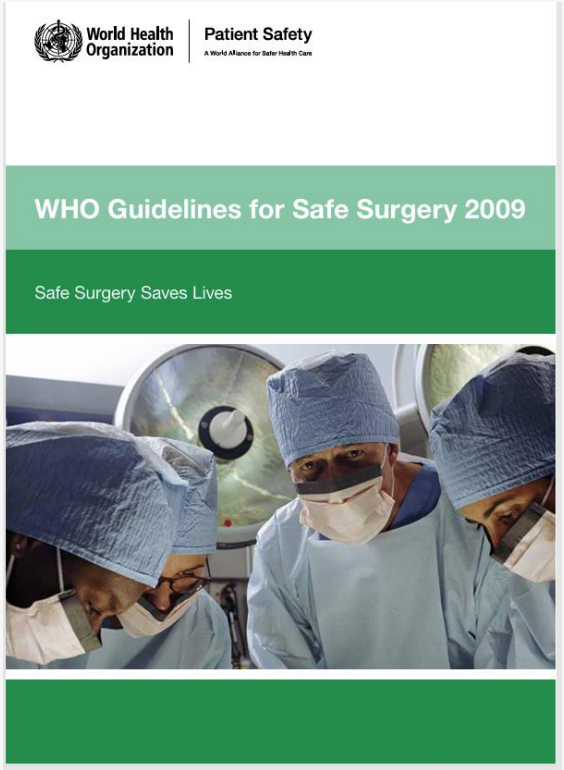
NAP 302: Evidence Based Practice: Appraising and Translating Evidence to Improve Anesthesia Practice

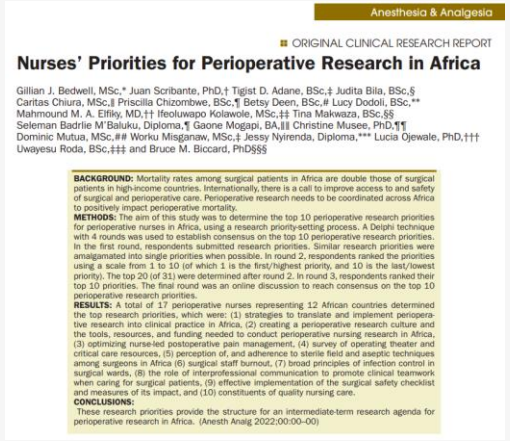
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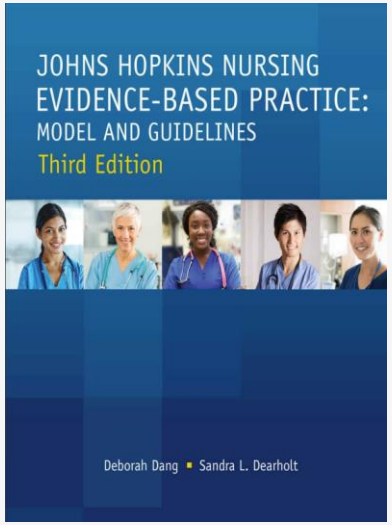
Chapter 2 | *Critical Thinking and Evidence Based Practice*

Exemplars

- *WHO Guidelines for Safe Surgery*
- *Nurses' Priorities for Perioperative Research in Africa*







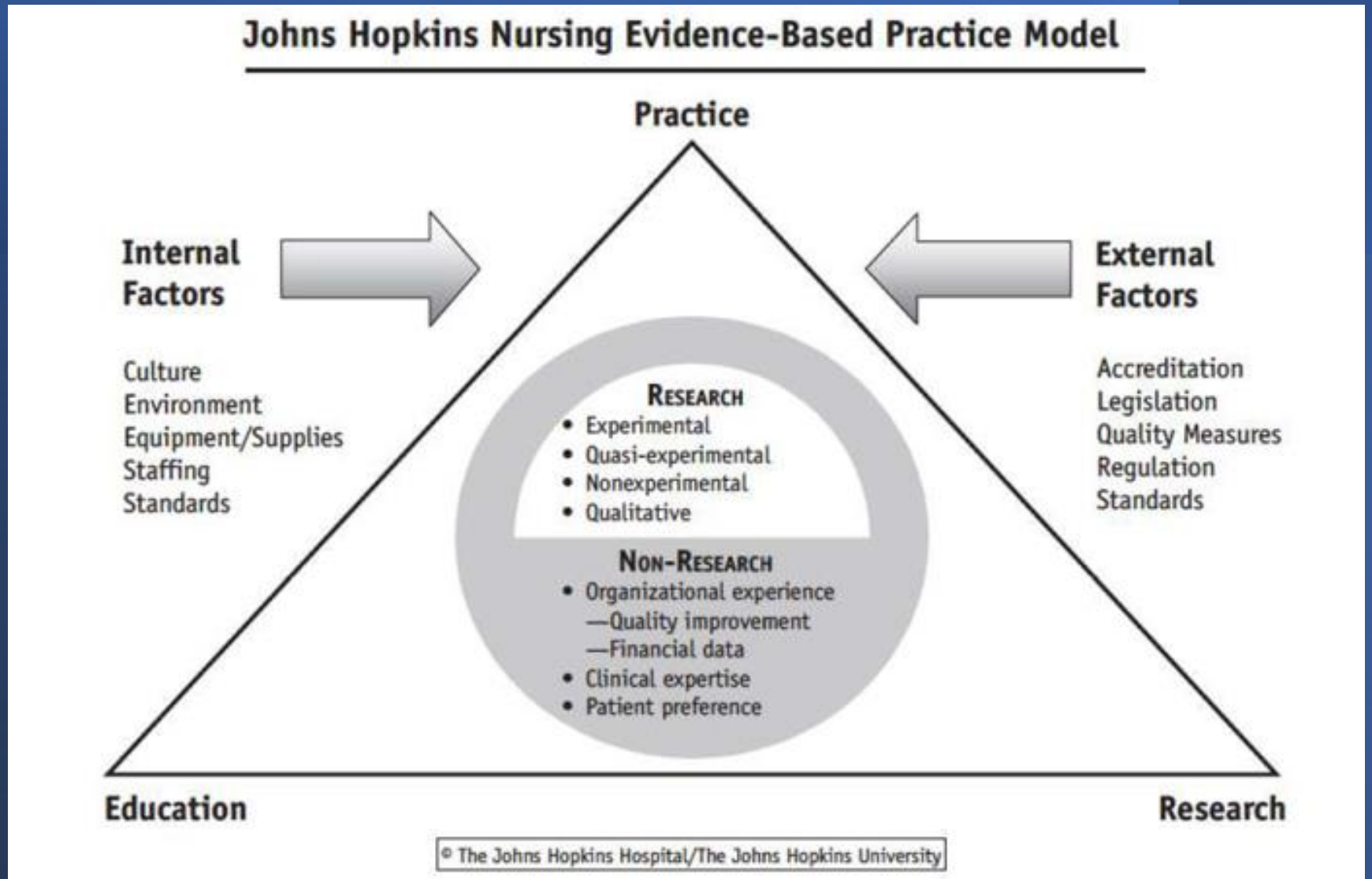


Figure 1.1: The Johns Hopkins Nursing EBP Model

Table 2.1 Alignment of Critical Thinking with the Nursing Process and EBP

Nursing process	Assessment	Diagnosis	Planning, Implementing
Critical thinking	Seek information, and synthesize it	Draw conclusions from available information	Translate knowledge into a plan of action
Evidence-based practice	Pose answerable questions	Search for and appraise relevant evidence	Translate evidence into patient care, and evaluate the outcome

Definition

- Critical thinking in nursing is an essential component of professional accountability and quality nursing care.
- Critical thinkers in nursing exhibit these habits of mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open mindedness, perseverance, and reflection.
- Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, predicting and transforming knowledge.

- Scheffer and Rubenfeld (2000)

Table 2.3: Critical Thinking Skills for Nurse Leaders

Skill	Defining Characteristic	Application to EBP
Interpretation	• Understanding importance, value, and meaning	• Establishes priority for EBP and clarifies impact on people and systems
Analysis	• Identifying structured relationships among frameworks of thought and underlying assumptions	• Examines the basis for EBP questions and translation recommendations • Probes relationships between structure, process, and outcome of EBP
Inference	• Drawing reasonable conclusions from the analysis	• Creates or adopts a framework for EBP through a process of deduction

Improvement Science Questions

- This is the problem.
- This is why I want to study this problem.
- This is how I will study the problem – or – This is what I will implement.
- This is what I found.
- This is what the findings mean.
- This is what I would recommend based on the findings.

Box 2.1 Definitions of Critical Thinking, Reasoning, Reflection, and Judgment

Concept	Definition
Critical thinking	Ability to make inferences explicit, along with the assumptions or premises on which those inferences are based
Reasoning	Drawing conclusions or inferences from observations, facts, or hypotheses
Reflection	Ability to create and clarify the meaning of a particular experience
Judgment	Act of judging or deciding on the basis of reason, evidence, logic, and good sense

Four types of evidence to consider:

- **Empirical:** Based on scientific research
- **Ethical:** Based on the nurse's knowledge of and respect for the patient's values and preferences
- **Personal:** Based on the nurse's experience in caring for the individual patient
- **Aesthetic:** Based on the nurse's intuition, interpretation, understanding, and personal values

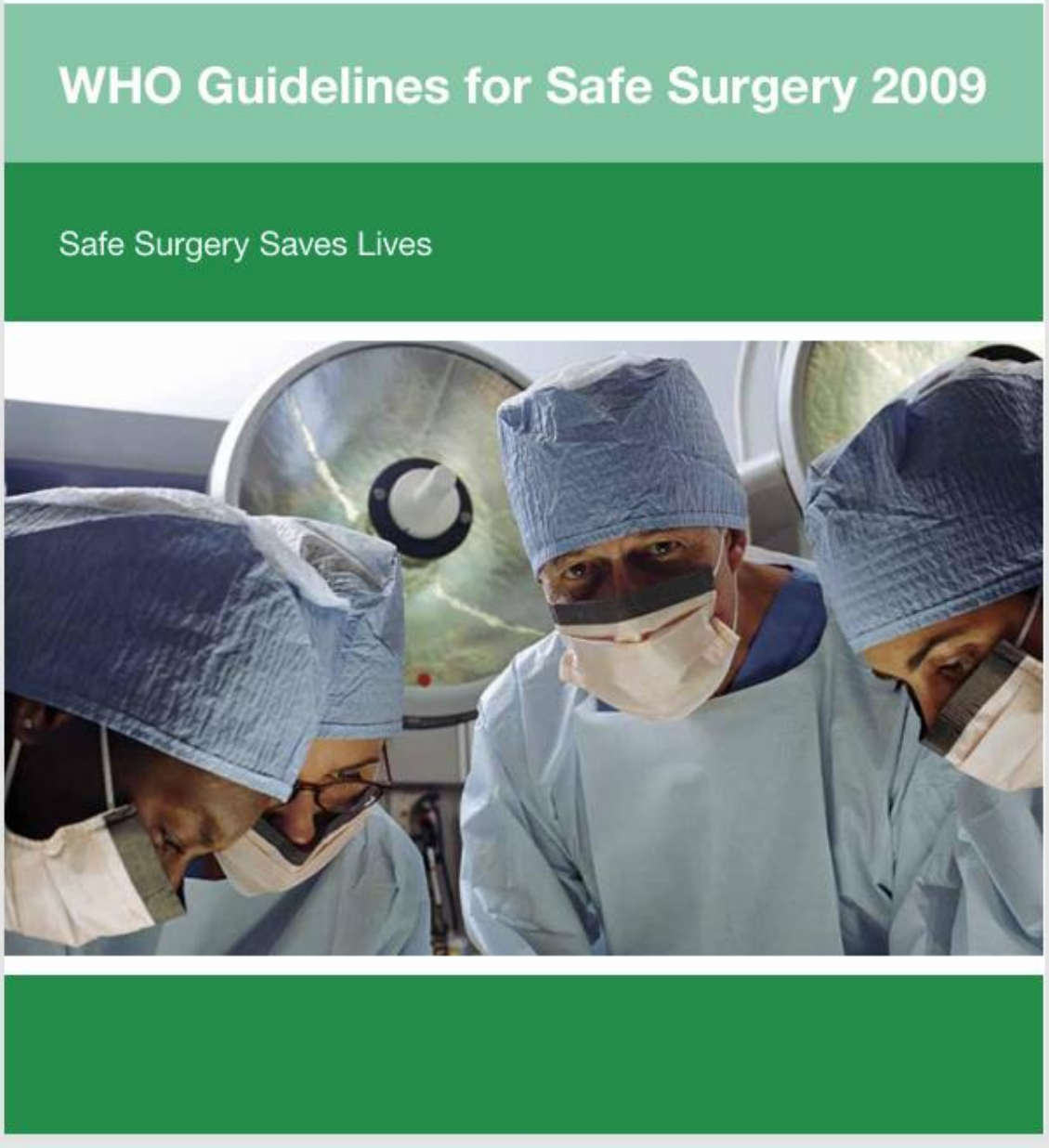


Critical Thinking requires reasoning, reflection and judgement.

Critical thinking is critical in:

- posing the practice problem,
- appraising the evidence,
- making inferences from the evidence
- translating the evidence to practice.

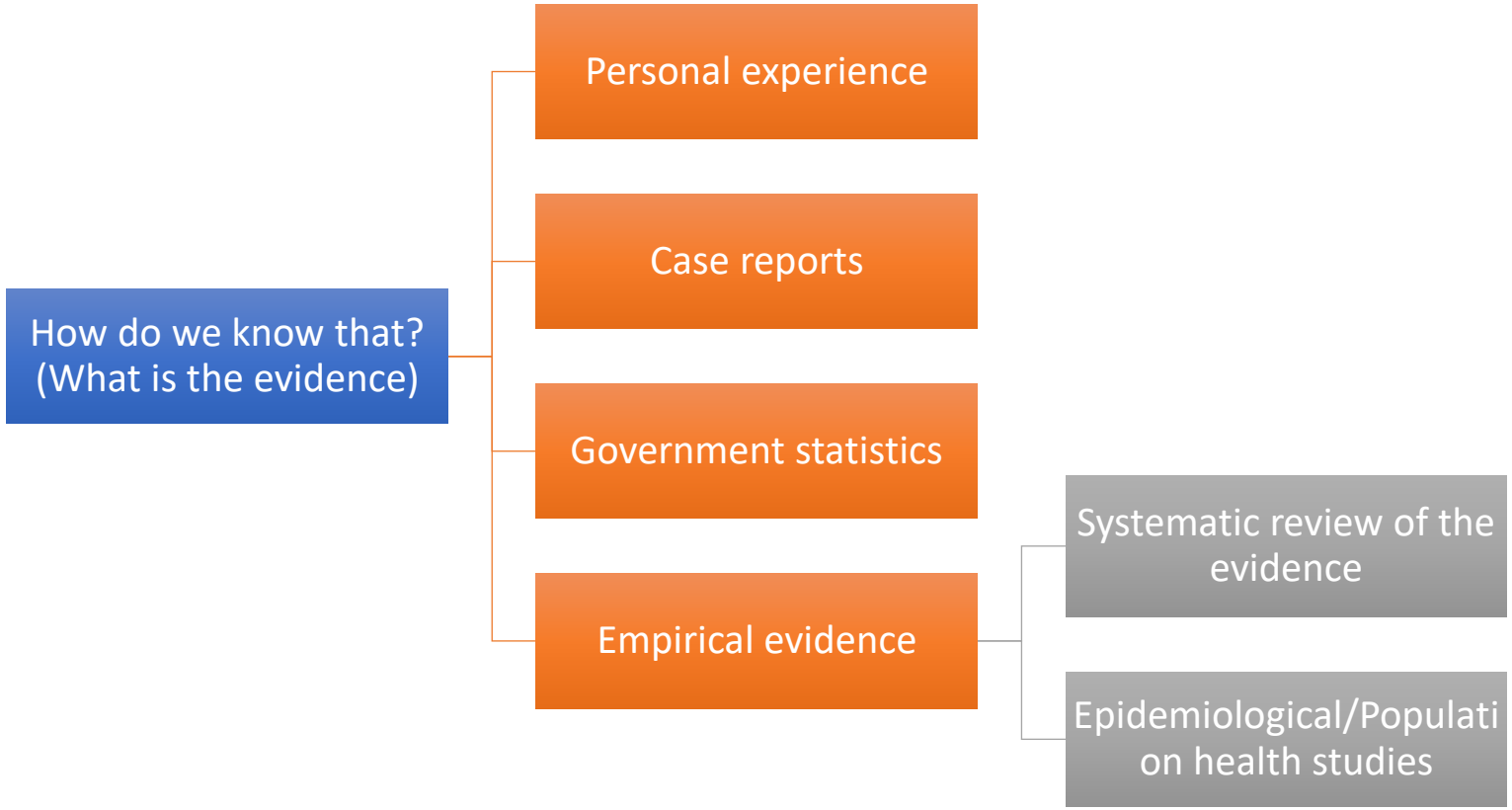
Practice Question Components	Critical Thinking Standards and Questions
What is the practice issue? What is the current practice?	*Clarity:* Is the issue clear? Can we give an example?
How was the practice issue identified?	*Accuracy:* Is it true because we believe it, we want to believe it, we have always believed it, or it is in our best interest to believe it?
Practice Question Components	Critical Thinking Standards and Questions
What are the PICO components? (patient/population/problem, intervention, comparison with other treatments if applicable, outcome)	*Precision:* Can we provide more detail on the issue? What is the issue? What interventions are we questioning? Do we want to compare this with another intervention? *Logic:* What is the desired outcome? Does it really make sense?
State the search question in narrow, manageable terms.	*Precision:* Can we be more specific?
What evidence must be gathered?	*Relevance:* How is this evidence connected to the question? Are we addressing the most significant factors related to the question?
State the search strategy, database, and keywords.	*Breadth:* Do we need to consider other points of view? Are there other ways to look at the question?



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The problem: complications of surgical care have become a major cause of death and disability worldwide



The safe surgery saves lives challenge: identifying solutions

- How do you identify solutions:

Surgical care is complex and involves dozens of steps which must be optimized for individual patients. In order to minimize unnecessary loss of life and serious complications, operating teams have 10 basic, essential objectives in any surgical case, which the WHO safe surgery guidelines support.

(1) The team will operate on the correct patient at the correct site.
(2) The team will use methods known to prevent harm from administration of anaesthetics, while protecting the patient from pain.
(3) The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function.
(4) The team will recognize and effectively prepare for risk of high blood loss.
(5) The team will avoid inducing an allergic or adverse drug reaction for which the patient is known to be at significant risk.
(6) The team will consistently use methods known to minimize the risk for surgical site infection.
(7) The team will prevent inadvertent retention of instruments and sponges in surgical wounds.
(8) The team will secure and accurately identify all surgical specimens.
(9) The team will effectively communicate and exchange critical information for the safe conduct of the operation.
(10) Hospitals and public health systems will establish routine surveillance of surgical capacity, volume and results.

Ten essential objectives for safe surgery: review of the evidence and recommendations

Surgical care is complex and involves dozens of steps which must be optimized for individual patients. In order to minimize unnecessary loss of life and serious complications, operating teams have 10 basic, essential objectives in any surgical case, which the WHO safe surgery guidelines support.

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(10) Hospitals and public health systems will establish routine surveillance of surgical capacity, volume and results.

What strategies did the evidence support to reduce excess surgical morbidity and mortality worldwide ?

Table I.2 – The nature of the challenge: *Teamwork, safe anaesthesia and prevention of surgical site infection are fundamental to improving the safety of surgery and saving lives. Basic issues of infrastructure must be considered and of the ability to monitor and evaluate any instituted changes must be addressed.*

Surgical Resources and Environment: Trained personnel, clean water, consistent light source, consistent suction, supplemental oxygen, functioning surgical equipment and sterile instruments		
<u>Prevention of Surgical Site Infection</u> Hand washing Appropriate and judicious use of antibiotics Antiseptic skin preparation Atraumatic wound care Instrument decontamination and sterility	<u>Safe Anaesthesia</u> Presence of a trained anaesthetist Anaesthesia machine and medication safety check Pulse oximetry Heart rate monitoring Blood pressure monitoring Temperature monitoring	<u>Safe Surgical Teams</u> Improved communication Correct patient, site, and procedure Informed consent Availability of all team members Adequate team preparation and planning for the procedure Confirmation of patient allergies
Measurement of Surgical Services: quality assurance, peer review and monitoring of outcomes		

One evidence-based solution

The Surgical Safety Checklist



Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

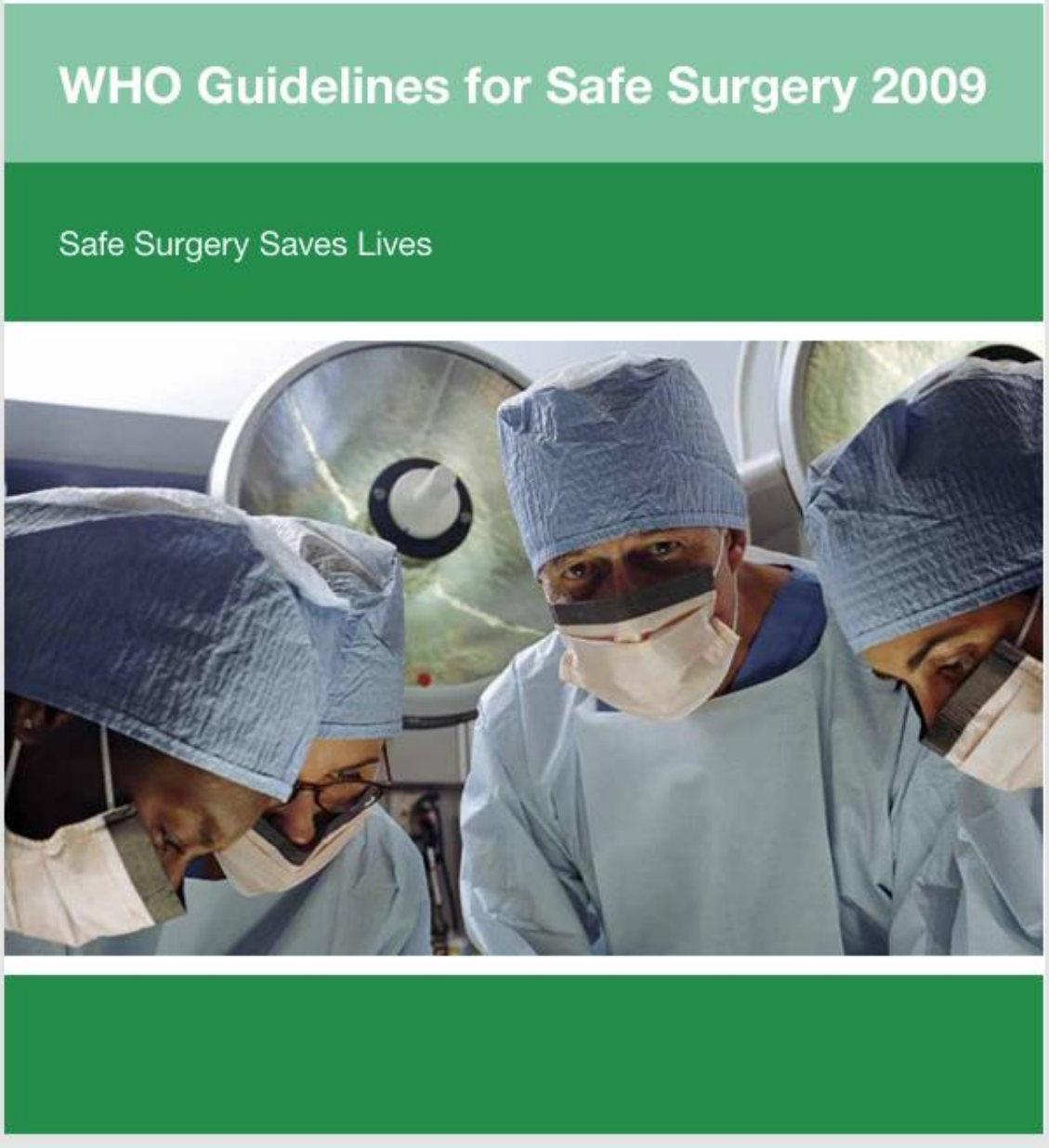
Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

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Anesthesia & Analgesia

ORIGINAL CLINICAL RESEARCH REPORT

Nurses' Priorities for Perioperative Research in Africa

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BACKGROUND: Mortality rates among surgical patients in Africa are double those of surgical patients in high-income countries. Internationally, there is a call to improve access to and safety of surgical and perioperative care. Perioperative research needs to be coordinated across Africa to positively impact perioperative mortality.

METHODS: The aim of this study was to determine the top 10 perioperative research priorities for perioperative nurses in Africa, using a research priority-setting process. A Delphi technique with 4 rounds was used to establish consensus on the top 10 perioperative research priorities. In the first round, respondents submitted research priorities. Similar research priorities were amalgamated into single priorities when possible. In round 2, respondents ranked the priorities using a scale from 1 to 10 (of which 1 is the first/highest priority, and 10 is the last/lowest priority). The top 20 (of 31) were determined after round 2. In round 3, respondents ranked their top 10 priorities. The final round was an online discussion to reach consensus on the top 10 perioperative research priorities.

RESULTS: A total of 17 perioperative nurses representing 12 African countries determined the top research priorities, which were: (1) strategies to translate and implement perioperative research into clinical practice in Africa, (2) creating a perioperative research culture and the tools, resources, and funding needed to conduct perioperative nursing research in Africa, (3) optimizing nurse-led postoperative pain management, (4) survey of operating theater and critical care resources, (5) perception of, and adherence to sterile field and aseptic techniques among surgeons in Africa (6) surgical staff burnout, (7) broad principles of infection control in surgical wards, (8) the role of interprofessional communication to promote clinical teamwork when caring for surgical patients, (9) effective implementation of the surgical safety checklist and measures of its impact, and (10) constituents of quality nursing care.

CONCLUSIONS: These research priorities provide the structure for an intermediate-term research agenda for perioperative research in Africa. (Anesth Analg 2022;00:00–00)

Top 10 Priorities for Perioperative Nursing Research in Africa

1. Strategies to translate and implement perioperative research into clinical practice in Africa. Education and training

2. Creating a perioperative research culture and the tools, resources, and funding needed to conduct perioperative nursing research in Africa.

Education and training

3. Optimizing nurse-led postoperative pain management. Postoperative

4. Survey of operating theater and critical care resources. Equipment and systems

5. Perception of and adherence to sterile field and aseptic techniques among surgeons in Africa. Intraoperative

6. Surgical staff burnout. Staff collaboration

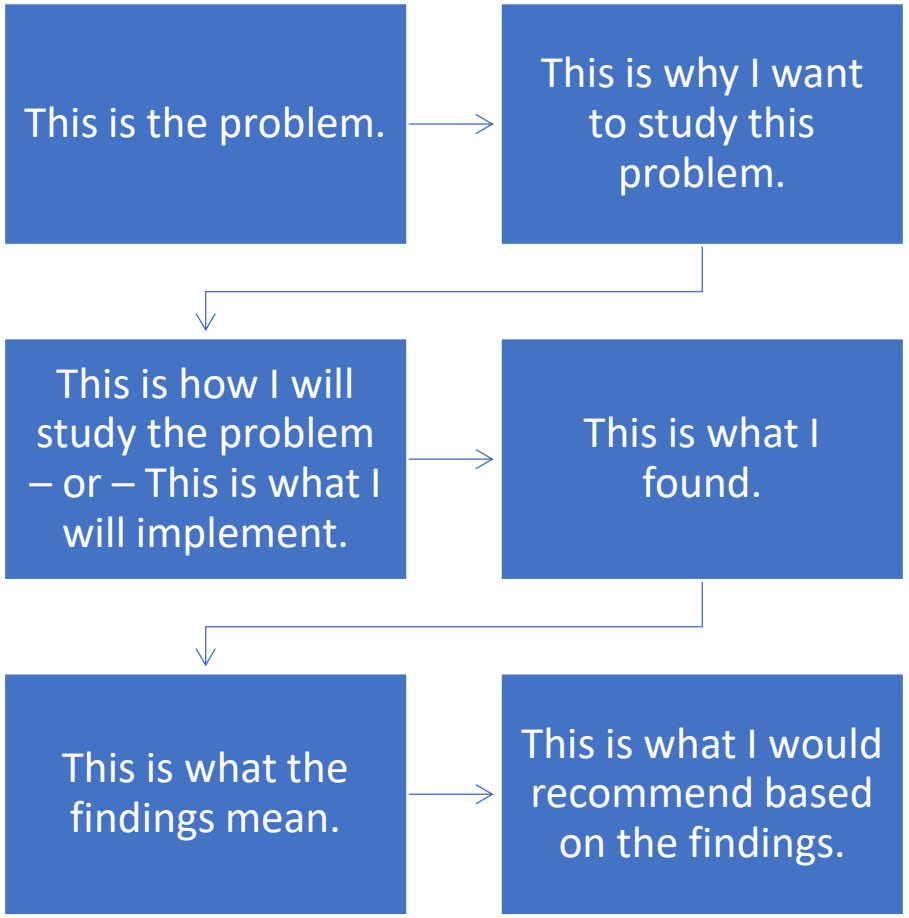
7. Broad principles of infection control in the surgical ward. Postoperative

8. The role of interprofessional communication to promote clinical teamwork when caring for surgical patients. Staff collaboration

9. Effective implementation of the surgical safety checklists and measures of its impact. Intraoperative

10. Constituents of quality nursing care. Quality of care

Applying critical thinking to the EBP course paper.



- Identify a problem
- Talk to colleagues to gather consensus that this is a problem
- Review the literature that provides evidence about the problem (research, non-research, guidelines, expert opinion)
  - Description, prevalence, factors associated with the problem, systems considerations (Scoping Review)
- Exploratory PICO
- Systematic review of the evidence that shows what strategies mitigate the problem.
- Synthesize the evidence
- Make inferences/recommendations based on the results.