Cardiovascular Nursing
Program of Scholarship for
Clinical Inquiry and Innovation
Application at the Bedside

Objectives

- Discuss why nursing clinical inquiry is important and valued among the health care team
- Describe our framework of clinical inquiry used here
- Describe key areas of focus in the cardiovascular program
- Describe methodologies to address clinical inquiry
- Provide examples of application at the bedside
Rationale for Clinical Inquiry and Scholarship

- Role of a nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or the recovery of health.
  - how do nurses identify "those activities contributing to health or the recovery of health"?
  - Also, as the patient population and environments change, how will nurses know what activities will be conducive to health care in the future when new challenges, unknown today, will arise?

The answer to these two questions are "clinical inquiry and scholarship"

Nursing Research

- Nursing research has been practiced for many years
- Florence Nightingale was one of the earliest nurse researchers
- Through systematic investigation and compilation of statistical evidence, she came to the conclusion that nursing actions dramatically reduced the death rate among wounded British soldiers during the Crimean War in the mid-1800s
- These results demonstrated that nursing practice was the reason that death rates declined
Clinical Inquiry and Scholarship

• Leads to the discovery of knowledge
• Necessary to inform practice
• Interventions to be used in patient care must be based on strong evidence
• Critical and continuous evaluation of one’s own practice using current evidence supports the best opportunity for improved patient outcomes

Clinical Inquiry Framework
Evidence-Based Practice (EBP)

- The integration of published or available literature to support the delivery of high quality and cost-effective patient care
- This first step of review and synthesis can serve to answer many types of clinical questions
- PICO statement guides the review
  - Patient/ Population/ Disease
  - Intervention
  - Comparison
  - Outcome

Evidence-Based Practice Example

Safety and Effectiveness of Sedation
For Pediatric Echocardiography:
A Systematic Review of Medications
used in the Ambulatory Setting

Conducted by Theresa Saia DNP, RN
Background of Problem

- Echocardiography is the primary non-invasive test for diagnosis and management of congenital heart disease
- Use of sedation is often necessary to assure successful and accurate test completion
- Evidence on the safety and effectiveness of sedation medications used in the ambulatory cardiology setting is scarce in the literature

Using PICO Guide

- **P – Population of interest**
  Infants and children with known or suspected Congenital heart disease
- **I – Intervention of interest**
  Chloral hydrate as a sedation intervention
- **C– Comparison of interest**
  Other sedation interventions reported in the literature – hypnotic, benzodiazepines, barbiturates
- **O- Outcomes of interest**
  Safety & Effectiveness
Evidence-Based Review

- First step is to develop a list of key words to be used for literature search
- Once the list has been developed these search terms are entered into the literature databases
- Other criteria to consider/include:
  - Dates of publication
  - Language of publication

Search Terms/Key Words

- congenital heart, congenital heart disease/defect child, children, neonate, infant
- sedation, conscious sedation, procedural sedation
- sedated echocardiogram, echocardiogram, echocardiography
- chloral hydrate, propofol - hypnotics
  midazolam -benzodiazepines
  pentobarbital -barbiturates
- adverse events, safety, efficacy, success, accuracy & completion
Evidence-Based Review

- Databases searched: 01/01/93-09/30/2009
  - CINAHL
  - Medline
  - Cochrane
  - Embase
  - PubMed

Results of Evidence-Based Review

- The total number of published articles found=156
- Articles were further excluded
  - Adult studies
  - IV or inhaled agents
  - The ECHO was performed in a inpatient setting.
- The final number of articles used for evaluation=11
Evidence-Based Review

- Among the 11 articles
  - 2 were randomized clinical trial
  - 9 were descriptive

- The number of participants in each study ranged from 15 to 9796
  - A total of 13,755 patients included in this review.
- Safety was judged by the number and type of adverse events.
- Effectiveness in most studies was defined as the ability to complete a high quality echocardiogram with minimal patient motion or artifact.
### Synthesis of Evidence

#### Drugs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloral hydrate</td>
<td>95.1 %</td>
</tr>
<tr>
<td>Midazolam</td>
<td>81.3 %</td>
</tr>
<tr>
<td>Pentobarbital</td>
<td>99 %</td>
</tr>
<tr>
<td>Thiopental</td>
<td>95.1 %</td>
</tr>
</tbody>
</table>

#### Minor Adverse Events

- Emesis
- Paradoxical reactions
- Ataxia
- Respiratory changes including minor upper airway obstruction & desaturation
- Failed sedation in young infants
- No major adverse events, including death, were reported
Conclusion

• This evidence based review validated our current practice of using chloral hydrate for sedation in pediatric patients requiring echocardiography in the outpatient area to be safe and effective

Questions?
Quality Improvement Science

- Quality improvement (QI) science is a flexible approach for improving the quality of health care delivery within daily clinical practice.
- This approach has become a frequent evaluation tool to assess patient level outcomes such as mortality, morbidity, length of hospital stay, cost of care.
- There is a regular/frequent assessment of evaluation for the improvement strategy.
- Based on the result of the assessment modifications can be made to the intervention and then re-assessed again.
Quality Improvement Science Examples

- **Nightingale Metrics (2006)** - Nurse led initiative to improve nursing care.
  - Dr. Martha Curley PhD, RN, FAAN
  - Dr. Patricia Hickey PhD, MBA, RN, FAAN
- **Red Zone Medication Safety Initiative**
  - Jeanne Ahern BSN, MHA, RN, CCRN
  - Jean Connor DNSc, RN, CPNP
  - Alana Arnold Pharm-D
  - Patty Hickey PhD, MBA, RN, FAAN

Red Zone Initiative Framework

**AIM:**
In 12 months, to reduce occurrence of medication errors, develop an implement a measureable and sustainable hospital wide practice of medication safety

**Key Drivers**
- Reengage the team of current medication safety practices currently implemented
- Recognize the barriers of practicing in a logistically different unit or acute care floor
- Reclaim the nursing practice of medication administration

**Outcome**

**Change Strategies**
- Develop core presentation of reclaiming our priorities as nurses - delivering safe care - basic understanding will give medications correctly
- Identify unit members for each patient care area who will serve as ambassadors of medication safety
- Unit based initiative will be implemented focusing on averting medication errors
Red Zone Outcome/Aim

- In 12 months, to reduce the occurrence of medication errors, develop and implement a measurable and sustainable hospital wide practice of medication safety

Red Zone Key Drivers

- The key drivers are the main domains of focus to be addressed to achieve the outcome
- In the Red Zone Initiative our three domains include:
  - Re-engage staff on current medication safety practices already in place
  - Recognize the barriers to practicing medication safety
  - Reclaim the practice of medication safety by overcoming the barriers
Change Strategies

- The change strategies are the specific ideas or interventions to be implemented to address the key drivers and achieve the outcome or aim.
- Some examples of change strategies from the Red Zone include:
  - Develop a core presentation reviewing medication safety
  - Identify staff who will lead unit area medication safety focus
  - Develop unit specific interventions

Red Zone Outcome

- To date we have implemented the Red Zone Initiative in three areas
- The Cardiac Intensive Care Unit was the first area
- In six months we have seen a significant decrease of medication events
Questions?

Clinical Inquiry Framework

- Hold potential for:
  - Improved Outcomes
  - Presentation
  - Publications

- Evidence-Based Research
- Quality Improvement Science
- Research
Research

• The thorough, organized inquiry to confirm and refine existing knowledge as well as generate new knowledge
  • Quantitative
  • Qualitative

Quantitative Research

• Research based on traditional scientific methods, which generates numerical data and usually seeks to establish causal relationships between two or more variables, using statistical methods to test the strength and significance of the relationships
Qualitative Research

- Research that seeks to provide understanding of human experience, perceptions, motivations, intentions, and behaviors based on description and observation. Findings are interpretative with the use of text, not numbers.

Research Methods

<table>
<thead>
<tr>
<th></th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Survey, Experiment</td>
<td>Observation, Interview</td>
</tr>
<tr>
<td>Question</td>
<td>How many Xs?</td>
<td>What is X?</td>
</tr>
<tr>
<td>Fundamentally concerned</td>
<td>Causal predictions</td>
<td>Understanding, meaning, and interpretation</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sampling</td>
<td>Statistical</td>
<td>Saturation</td>
</tr>
</tbody>
</table>
Quantitative Research Example

• *Nursing and Unit Characteristics of Pediatric Cardiovascular Intensive Care in Children’s Hospitals*

  • Patricia A. Hickey, PhD, MBA, RN, NEA-BC, FAAN
  • Kimberlee Gauvreau, Sc.D
  • Elizabeth Tong, MS, RN, CPNP, FAHA, FAAN
  • Nichole Schiffer, BS
  • Jean A. Connor, DNSc, RN CPNP

Research Question

• What are the nursing and unit characteristics of children’s hospitals caring for children undergoing congenital heart surgery?

• Survey developed and sent to 43 programs across the United States.
Example of Survey Content

- The survey content was developed using available literature and expert opinion
- Examples of the content for questions included:
  - Nursing staff education
  - Nursing experience in number of years
  - Number of nursing staff
  - Number of beds in intensive care unit

Data Collection

- A database was built to enter all data received from each institution
- Each hospital was assigned a study number
- Once data was entered and verified analysis was performed
Data Analysis

- Data is then analyzed using a statistical program
  - For the continuous variables such as number of nurses the data was summarized using minimum, median, maximum numbers
  - The categorical or yes/no responses were summarized by percents
- The findings are now under review by a journal for publication

Qualitative Research Example

- *Coping While Caring for the Dying Child: Nurses’ Experiences in an Acute Care Setting*
  Katherine Cook, MSN, RN, CPNP; Sandra Mott, PhD, CPN, RN-BC; Patricia Lawrence, MS, RN, CPNP-AC; Julie Jablonski, RN, BSN; Mary Rose Grady, RN, BSN, MEd; Denise Norton, RN, BS; Kim Liner, MSN, RN, CPNP; Jennifer Cioffi, RN, BSN; Patricia Hickey, PhD, RN, MBA, FAAN; Suzanne Reidy, MS, RN, NE-BC; Jean Connor, DNSc, RN, CPNP
Research Question

• What are the coping and behaviors of nurses caring for dying children with cardiac disease?

Recruitment

• Nurses working on the unit who had cared for a child who had died in the last year on the unit were invited to participate
• All participants signed a consent giving permission to use their responses for publication
Focus Group

• A number of questions were used to guide each of the focus group sessions
• These were developed from the available literature and an expert panel of clinicians

Guiding Questions

Questions Script
Recall a case where a child with a chronic illness died and with whom you were involved during the chronic illness and at or near the time of death.

Questions:
• Tell me about your experiences with a dying child. What coping strategies have you found most helpful in these situations?
  o PROBES:
    o Describe how you maintain a professional boundary with a patient and/or their family who is here for an extended period of time and after the patient has died?
    o Were you ever taught how to keep a professional boundary and if so, how?
    o Describe your coping mechanisms professionally (i.e. during work) and personally (i.e. outside of work) a) late in the chronic phase b) at the terminal phase/end of life c) after death
    o Describe the relationship between both you and the child, and you and the family a) late in the chronic phase of patient’s illness b) at the terminal phase of patient’s illness/end of life c) after death of the patient
  o PROBE
  o What role do your colleagues play?
  o Describe your interactions/relationship with your work colleagues (i.e.: other nurses, social workers, doctors, NPs, child life specialists) a) late in the chronic phase b) at the terminal phase/end of life c) after death
• Describe how the work environment helps or hinders your ability to cope with stressful situations and for caring for chronically ill patients.
  o PROBES:
    o What role do your colleagues play?
  o Describe your interactions/relationship with your work colleagues (i.e.: other nurses, social workers, doctors, NPs, child life specialists) a) late in the chronic phase b) at the terminal phase/end of life c) after death
• What about the work environment helps or hinders your experience when caring for a dying child?
  o PROBE
  o What changes would help you to create a healthier work environment and to improve your ability to cope with caring for chronically ill children?
  o PROBE
  o Do you know of any coping tools or services that are currently offered?
• Is there anything else during this focus group that you feel is important to mention or discuss further with the research team?
Focus Groups

- Four focus groups were held
- Each session was led by a nurse scientist trained to conduct focus groups
- Each session lasted 45-60 minutes
- All sessions were recorded using a voice recorder
- All information from voice recorder transcribed into a written document for review

Results

- Results of data collected by focus group were summarized using themes or similarities of nurses statements regarding their experience
- Findings of study are now under final review of a journal for publication
Data Analysis

- Data was analyzed by the group of nurses
- Common themes in each transcript were identified with a quote/ or quotes supporting the researchers theme
- The group then came to agreement on all the themes identified
- Summary of themes and interpretation was confirmed by participants

**Boundaries**
Walking the professional and personal line between family and staff

“It’s a different line with different patients and families… it’s not stationary and you tiptoe around it.”

**Memories**
The moments one holds onto and reflects on; recalling previous experiences with patient and family

“Every time I was caring for her… I would look at the picture and think ‘this is the little girl who is here,’… it really helped to have a focal point of who she really is.”

**Disconnecting**
The act of distancing one’s self and their emotions related to patients and families

“Shifting gears… you have to change faces from one patient room to the next.”

**Labeling**
The use of words and/or phrases to describe a nursing experience to protect those around you. A common phrase used was “bad day”

“Adjusting to handling the situations you realize a mental break is needed… only certain people can relate to these situations… but your family usually can’t… instead, it’s easier to say ‘I had a bad day.’”
Conclusion

• There are a number of approaches to consider in clinical inquiry
• The question and available evidence guide what approach or approaches used
• All approaches are important and have the potential to improve patient outcomes and be disseminated

Conclusion (cont.)

• Hopefully this presentation has piqued your interest and you will begin seek answers to your nursing questions and initiate steps towards clinical inquiry.
Questions for Consideration

- To get you started I would like to pose three questions:
  - Is there a nursing task that you currently perform and are not sure why or if it the best practice? This could be an evidence based practice question.
  - Is there a patient safety concern that you may have a potential solution for? This could lead to a quality improvement science project.
  - Do you want to understand the experience of nurses when a patient dies? This could be a qualitative research question.

Discussion/Questions?
Thank you