Improving Clinical Outcomes with EBP and RESEARCH

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Objectives

• Discuss steps bedside nurses should take to ensure EBPs and rigorous research
• Describe “tips” to assist nurse clinicians to advance EBP and research

Disclosures

• None, related to this presentation
Steps of EBP / Research

Step 0: Cultivate a spirit of inquiry & EBP culture
Step 1: Ask the PICO(TS) question
Step 2: Search for the best evidence
Step 3: Critically appraise the evidence
Step 4: Integrate the evidence with your clinical expertise and patient preferences to Make the best clinical decision / Develop a research project
Step 5: Evaluate the outcome(s) of the EBP practice change / research analyses
Step 6: Disseminate outcome(s)
WHY ENSURE EBP AND COMPLETE RESEARCH?

- We need creative approaches to old and new health problems
  - To make a difference in the health status of the patients we serve
  - To match or integrate the rapidly expanding evidence-based knowledge about biological, behavioral and environmental influences on health
What is (Nursing) Research?

RESEARCH IS A BLIND DATE WITH KNOWLEDGE

WILL ROGERS
Getting Started in EBP and Research: 1st Steps

- The EBP / research question is the most important piece!
- Always develop the question before discussing:
  - Project methods
  - Tools
  - Resources needed
Getting Started in EBP and Research: 1st Steps

• Make sure the principal investigator / project leader WANTS to carry out an EBP project or conduct research
  – Do not pick up someone else’s project
  – Do not carry out your bosses ideas
  **Unless excited by the idea**
SOURCES OF RESEARCHABLE IDEAS

• Clinical Issues
  ▪ Inspiration- Ideas pop into mind; working on particular problem for some time
  ▪ Serendipity- Look for 1 phenomenon but find another
  ▪ Everyday occurrences

• Literature
  ▪ Gap in current knowledge or unanswered question that interests you
  ▪ Journal clubs
  ▪ Think tank
  ▪ Systematic review

• Past Research
GETTING RESEARCH IDEAS
Generating Research Questions

- 4-hour retreats
  - Staff nurses
  - Nurse leadership
- Post-it note method (unit based)
- Individual queries
- NM sends RN to us
- Clinical director APR
- Students (MSN, DNP, PhD)
- Best practice/QI next steps
GETTING RESEARCH IDEAS

• Call national leader - ask for opinions
• National organizations
  – May have a call to action on one or more topics
  – Get an idea of what is trending in the literature
  – i.e., in heart failure:
    – Transition care
    – 30 day rehospitalization
    – Remote monitoring
WHAT IS YOUR REAL QUESTION?

Reduce your idea to a simple question

\[ P \ - \ I \ - \ C \ - \ O \ (T - S) \]

\[ \begin{align*}
P &= \text{Population} \\
I &= \text{Intervention group/impact/issue} \\
C &= \text{Control group} \\
O &= \text{Outcome(s)} \\
T &= \text{Timing (cross-sectional or over time)} \\
S &= \text{Setting}
\end{align*} \]

Once you develop your question:

- Complete a literature review
- PICO components may change once you understand the literature
• How soon after admission for heart failure is the best time to begin self-care home going instructions?
• In elders with stroke, will a post-discharge telephone intervention improve BP control?
PICO QUESTION

• In elders with stroke, will a post-discharge telephone intervention improve BP control?
  – P = elders post stroke
  – I = telephone intervention
  – C = (A) pre-hospital [single cohort] or (B) patients without the intervention
  – O = BP control [must be defined]
  – T = at 3 months
  – S = at home
Find Your Evidence

PubMed

PubMed comprises more than 21 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

Using PubMed
- PubMed Quick Start Guide
- Full Text Articles
- PubMed FAQs
- PubMed Tutorials
- New and Noteworthy

PubMed Tools
- PubMed Mobile
- Single Citation Matcher
- Batch Citation Matcher
- Clinical Queries
- Topic-Specific Queries

More Resources
- MeSH Database
- Journals in NCBI Databases
- Clinical Trials
- E-Utilities
- LinkOut

Cleveland Clinic
Find Your Evidence

PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

self-care AND stroke

Clinical Study Categories

Category: Therapy
Scope: Narrow

Systematic Reviews

Results: 5 of 250

Results: 5 of 121

Results: 5 of 14

Medical Genetics

Topic: All

Phone-based Intervention under Nurse Guidance after Stroke (PINGS): study protocol for a randomized controlled trial


Home-based Reach-to-Grasp training for people after stroke is feasible: A pilot randomised controlled trial


A randomized controlled trial on rehabilitation through caregiver-delivered nurse-organized service programs for disabled stroke patients in rural china (the RECOVER trial): design and rationales

This column displays citations for systematic reviews, meta-analyses.

Cleveland Clinic

www.pubmed.gov
Setting up a Research Project

Quantitative Research designs
- Retrospective chart review
- Prospective chart review
- Descriptive (observational)
- Correlational
- Comparative
- Quasi-experimental
- Experimental

- Must match the research question
- Must be doable

Association ≠ Causality
PICO QUESTION

• In elders with stroke, will a post-discharge telephone intervention improve BP control?
  —I = telephone intervention
  —C = (A) pre hospital/ 3 months post hospital (B) patients without the intervention

• Type of design: Prospective, comparative
Before Finalizing the Research Questions:

• Review the literature
  – You may learn new information about your research topic...may lead to:
    – Change of research theme based on lessons learned
    – Replication study
    – Sample size needed... (feasibility)
    – Inclusion and exclusion criteria
    – Data collection issues
Literature Review

• Literature review can be taxing to novices
  – Don’t know how to tell a good article from junk
  – Don’t know how to interpret results
    – Get support
    – Find a mentor

• Use the literature to find data collection tools
  – Don’t design your own survey unless you know how to do so!!
    – Not publishable if not valid or reliable
This is NOT Research:

1. Fact-finding mission
2. Literature search
3. Product evaluation
4. QA/QI/PI
5. Data collection
This is Research:

1. Describe the characteristics of...
2. Examine the relationship between...
3. Compare groups...
4. Identify predictors of...
5. Determine the effect of...
Replication Studies
Replication Studies
REPLICATION STUDIES

Different:
- Age
- Patient type
- Setting
- Physiological conditions
- Interventions
Project/ Research Question Criteria

0 = not present, 2 = highly/fully present

• Important to clinical practice?
• Area of interest?
• Have a high degree of expertise?
• Large number of patients available/eligible?
• Measurement tools available?
• Data collection fits with practice routines?
• No political landmines?
• Reasonable in scale and simple?
• Fun to do?!
TIPS To Get to Better Outcomes
Writing a Proposal

• Writing a EBP or research proposal is like writing a business plan…it’s a systematic process
  – It can be learned
  – Lots of unknowns the 1st time around
  – Consider patient fatigue
  – Consider data collection burden
• We created templates to ease the burden
  – Qualitative template
  – Quantitative template
Developing a Proposal/Project

• Headers and Sub-headers
  – Specific Aims
  – Background
    – Purpose / research questions
  – Methods
    – Setting and sample
    – Intervention (if applicable)
    – Outcome(s) and measurement
    – Data collection
    – Data analysis plan
Developing a Proposal/Project

• Headers and Sub-headers
  – Feasibility
  – Human subjects protection
    – Protection of data – database/paper
  – Timeline
  – References
  – Appendices
Choosing the right sample size is NOT a matter of preference.

It is a **crucial element** of the research process.
FEASIBILITY

The trial was so exclusive that no one was ever randomized.

Be careful when developing Inclusion and Exclusion criteria.
Outcomes

5 examples:
1) Memory loss
2) Anxiety and stress
3) Diet adherence
4) Beliefs about exercising at home
5) Improved drug adherence

• Each require clear definitions before developing the proposal
• Ensure specificity; i.e., anxiety & hypertension
Outcome Variables (Feasibility)

PREVENT: The Christmas Tree Effect!
Data Collection: Choices are Important

• *What* data you collect
• *How* you collect data
  – Will influence your results and how generalizable study findings are

Poor planning up front may lead to results that are:
  • Boring
  • Inclusive
  • Non-valid
  • Unreliable

Many affect ability to get published
When Planning Your Project

• Consider more than 1 data source to obtain data when:
  – There is a conflict among sources
    – Tool has different reliabilities in different populations
    – Tool has different outcomes from various studies
  – A valid, reliable tool is:
    – *Not* available
    – Brand new
    – Designed by you, even if content is valid
When Planning Your Project

• Set reasonable expectations for data collection
  – Behavioral research that uses surveys
    1. A minimum of 40% of available sample must participate to trust that results are not too biased
    2. A minimum sample of 30 participants are needed to have heterogeneity (diversity)
• Do not expect 75-100% involvement
  – 50% is a good participation; 25% is too low
When Planning Your Project

• Collect data from a wide audience whenever possible
  – Think about the individuals who might be altered based on study findings
  – Diversity
    – Increases publication potential
    – Increases chances that results are generalizable
    – Increases likelihood of translating into practice
When Planning Your Project

• Collect data that cannot be directly observed using a **qualitative methodology**
  – **Interview; focus groups**
  – Provides insight into what people are thinking
  – Better than just obtaining data on “perceptions” of what people say they are doing
When Planning Your Project

• Each variable should have a set of exhaustive, mutually-exclusive codes
  — i.e, Document yes and no, not just yes
  — Have not applicable or none-of-the-above categories if they are possible

• Codes should be thoroughly documented in a “codebook”

• Variable labels and value labels should clearly describe the information or question recorded in that variable
When Planning Your Project

• Mailbox surveys do not always work!
  – When your survey becomes just one more piece of junk mail, it will most often be ignored
  – One way to increase your returns is to:
    – Complete surveys electronically, through a web-based form
When Planning Your Project

• Be prepared to report back results
  — People are more willing to participate in data collection over time if they:
    — Know that results will be communicated back to them
    — Know that data they provide is meaningful to their team/hospital
    — Know that data may make a difference in future plans, policies, procedures, or systems
Outcomes Measurement Tools

• Must be valid and reliable
  – Do you have permission to use?
• Must be specific to your outcomes
• Consider length and subject fatigue
  – Nursing staff: no more than 10-12 minutes
• Consider:
  – Clear instructions
  – Literacy
    – Patients: no more than 2 syllable words
Conducting Your Study: Data Collection

• Thought this was the easy part of research...then learned that
  – Data collection dragged
  – Teams forgot the study
  – Many mistakes
  – Data collectors lost interest
  – Data collection + electronic data entry took too long

Poor planning once ready for data collection may slow research progress
Data Collection

Data collection takes time & attention to detail
• Momentum can be lost if team does not support
Data Collection Planning

• Engaging all stakeholders in data collection and monitoring processes
• Be careful of coercion
  – No chocolate bars if person agrees to participate… unless IRB approved
• Plan to provide updates on current status
  – Indirectly provides encouragement
• Provide plans for next steps so data collectors can see the big picture
Data Collection Planning

• Be realistic when planning time (and $$) to collect data

• Include time for:
  – Inclusion assessment
  – Travel
  – Office to pt. room
  – Patient scenarios: eating; bathroom; X-ray; physicians in room; ready for discharge
  – Negative responses

• Rule: multiple anticipated time by 3
Data Collection

• Timing is everything
  – Do not send out surveys to the same floor where 1 or more other studies are active (in data collection)
    – Nurses may pay less attention

• Make a personal appeal
  – Staff meeting presentation
    – Do NOT have NM make plea-
      – Undue influence to coercion
    – A name and face may increase a desire of others to participate
Data Collection

Pulling data from electronic medical records can save a lot of data collection time
Electronic Data Collection

• Eliminate data entry errors by entering data electronically while collecting it
  - Does your hospital have the proper support to use wireless technology?
• Survey Monkey
Data Collecting

- Document blanks whenever they are used as codes
- Use separate codes to distinguish cases where information was:
  - Not applicable from other types of missing data
    - Such as "don't know" or "refused to answer"
Data Collecting

• Do you have patient identifiers on the form?
  – Yes: must remember to protect patient identity
    – Cover page to hide form
  – Never leave data collection forms sitting on non-private table/desk
    – Turn off computer in-between cases
Data Collection

• If the dataset consists of two or more related files:
  – Variables that link the files (i.e., research number) should be included for each file
  – Include documentation that clearly explains the relationship among the files and the variables needed to link them
  – Do not assume everyone knows your linkage scheme
    – Put in writing
While Data Collecting…

• Check for:
  – Out-of-range codes /outliers
  – Codes that are inconsistent with skip patterns or internal consistency

• If the data include:
  – Transformed variables
  – Variables derived from other variables
    – Formulas or details should be provided that explain how the derived variables were computed
While Data Collecting...

Outlier examples:

• Subject checks more than 1 response when the survey requests only 1 response

• Subjects are all adults but age on form says 3 years old
  – Is it a documentation error or an interpretation error?

• Whole page of data is missing
  – Is it a documentation error or missed because no hint to turn page to back side?
Data Collection

• Engage all stakeholders in data collection and monitoring processes
  – Orientation
    – Use handout
  – Provide updates on current status
    – Indirectly provides encouragement
  – Provide plans for next steps
• Be careful of undue influence/coercion
  – No chocolate bars if person agrees to participate; unless IRB approved
Data Collection

Don’t make assumptions that nurses know what you want them to do
- Be specific
- Encourage consistency
- Monitor quality
Data Collection: Handout for Novices

• How to deal with documentation errors
• Extraneous marks on data collection form
• Alternatives to placing patient identifiers on form
  – Master document for patient identifiers
• Where and how to store data collection forms when done for the day
• How to deal with missing data
  – Compute mean or median value or midpoint
    – June of the year or 15th day of month
Data Collection

• Consider a ‘data collection assessment period’ to make sure data collectors with different roles and the intervention team works well together; i.e., pet therapy study
• Provides quality assurance
Data Collection

• Just jump in
• May not be able to anticipate problems up front
• BUT, be sure to stop and assess progress after collecting data on 5 cases
Data Collectors in Research

• Must complete human subjects course:
  – If obtaining informed consent
  – If collecting non-usual care data
• May need to add nurses to IRB application
• Adding new data collectors:
  – Nursing college students needing clinical practicum research hours
    – Notify local college of your need
  – Network at meetings
  – ? Secretarial staff; volunteers; summer interim workers
    – Assess qualifications based on study needs
Re Data Collectors

• May be engaged BUT not knowledgeable
  – Teach
  – Show
  – Return demonstration
  – Ask questions
  – Have them read the proposal if new to the study team
DATA ENTRY TIPS

• Know tricks of your system
  – Decreases data collection time
  – Improves data collection accuracy
• If some items are reverse-scored, change values after data entry is complete
• Save your work OFTEN
• Save work to a file that can be retrieved if the system crashes
• After entering 5 cases, assess for issues in database development
Living by NUMBERS

Use BIG Data whenever possible:

• Hospital billing databases
• Registries
  – Society of Thoracic Surgery
  – CABG and valve surgery
  – Implantable cardioverter-defibrillator
  – Transplantation
• Hospital databases for:
  – Quality and infection control
• *Stay away* from HCAHPS data
Don’t assume your hospital registry on a specific procedure, patient population or quality theme looks or functions like another hospital’s registry; unless they use national criteria, definitions, data entry systems, etc.

Need to understand database setup, maintenance records, definitions, sources of data, quality assessments/review
Data Maintenance & Security

• Principal investigator is the custodian of data
• Only members of research team should be allowed direct access to research data
• For research registry, data manager should be part of the research team
• Keep records of all IRB correspondence
• Retain records for at least 6 years
Data Analysis

• Clean data before starting analysis
• Use biostatisticians
• Analysis may feel like a foreign language
  – Use mentors
  – Discuss findings as a team
Summary

- Change project and research are systematic processes
  - Follow the steps and you will have success!!
- Getting started is the hardest part
  - Pick a question you are really interested in!
- Use resources: people, written sources, devices/equipment, electronics
- You are not done until you:
  - Translate your research into practice
  - Publish your new knowledge
If we knew what it was we were doing, it would not be called research, would it?

Albert Einstein
Does a Photo Diary Decrease Stress and Anxiety in Children Undergoing Magnetic Resonance Imaging? A Randomized, Controlled Study

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ABSTRACT: Using a randomized trial methodology with two groups, we surveyed 52 school-aged children and their parents to determine if photo-diary education pre-magnetic resonance imaging (MRI) scan decreased prescan stress and anxiety in children. We also examined anxiety and satisfaction with pre-MRI scan education in parents. At baseline, there were no differences in stress and anxiety total or subscale scores by group; total score \( p = .84 \) and \( .46 \), respectively. Posteducation, there were no differences in total stress or anxiety scores by group \( (p = .88 \) and \( .16 \), respectively); however, education group children had higher general anxiety \( (p = .04) \), that was reflected in greater likelihood to “worry about things,” \( p = .01 \). In parents in the education group, there was a trend for perceptions of greater satisfaction with education, less anxiety in their child, and more questions asked by their child \( (all \ p = .18) \); however, parent anxiety was similar between groups. We discuss results, especially the increase in anxiety and provide implications for nursing related to future research and clinical practice. (J Radiol Nurs 2009;28:122-128.)
• In adults, pre-procedure education that includes sensory expectations is associated with decreased anxiety/stress
• In children, it heightened general anxiety
Who is the nurse?
WHITE RULES!

In Adults
Impact of nurses’ uniforms on patient and family perceptions of nurse professionalism

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Abstract

**Background:** Patients and visitors may perceive nurses as professional based on uniform color and style. Nurse image may affect patient and visitor trust and satisfaction with nursing care. Fitted white dresses have been replaced by loose-fitting or scrub white, colored, or patterned pant sets.

**Objectives:** This study examines nurse professionalism by assessing the nurse image traits of eight pant uniforms as perceived by pediatric patients, adult patients, and adult visitors. We also examined if uniform preference is congruent with nurse image traits.

**Method:** A convenience sample of 499 patients and visitors were surveyed at a large Midwestern tertiary health care center. Subjects viewed photographs of the same registered nurse identically posed in eight uniforms and rated each by image traits. Kruskal–Wallis, Steel–Dwass multiple comparison method, and Wilcoxon signed-rank sum tests were used to test for differences in the Nurse Image Scale (NIS) score by uniform style and color and subject demographics.

**Results:** Subjects were 390 adult patients and visitors (78%) and 109 pediatric patients (21.4%). 66% were female, and 78% were Caucasian. In adults, NIS scores for white uniforms (two styles) were higher than NIS scores for uniforms with small print, bold print, or solid color (all $p < .001$). White uniform NIS score increased with subject age (all $z < .007$). In pediatric patients (7–17 years) and young adults (18–44 years), the highest uniform NIS scores did not differ significantly from the others. Uniform preference was different from NIS score in pediatric and adult subjects, reflecting noncongruence between the perception of nurse professionalism by uniform and uniform preference.

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**In adults:**

- Changed policy to all white, except behavioral medicine

**In pediatrics:**

- Conducted new research looking at emotional responses children had to different color uniforms
• Negative emotions NOT associated with nurse uniforms
• Positive emotions associated with bright colored uniforms, esp. pink and blue
• Children’s Hosp. policy changed to wearing any color
Tips: Teamwork

• Encourage nurses to work in teams, when possible
• Involve non-nursing experts
• Determine group rules early
  – Author status
  – Work expectations
  – Outcomes
BUILDING BRIDGES

• People
  – Internal and external

• Resources
  – If you do not have resources; find some-they are out there

• Show evidence of research findings
  – Research leads to more research
SHARE EVIDENCE & OUTCOMES

• Must publish!
• Posters on an Intranet website
• *Notable Nursing* – external publication
  – 2 articles/issue
• Local presentations
  – Leaders
  – Colleagues
To Aim for Success...Take A Risk
Don’t Be Intimidated

• If you have questions, ask a mentor for a critique/discussion
Try, Try, Again!
The Journey may feel like 1000 miles, but it all starts with a single step!!

Share the Journey with a Peer!
Your footsteps can set a new course for nursing practice.
“It does not matter how slowly you go as long as you do not stop.”

Confucius