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)

P = Population
I = Intervention group/impact/issue
C = Control group
O = Outcome(s)
T = Timing (cross-sectional or over time)
S = Setting

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

Be careful when developing Inclusion and Exclusion criteria

FEASIBILITY
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
• 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
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
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
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
TRANSLATING RESEARCH

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!!
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