Building the Infrastructure for Evidence-Based Practice

Nancy Albert, PhD, RN,
CCNS, CHFN, CCRN, NE-BC, FAHA, FCCM, FHFSRA, FAAN
Associate CNO, Office of Nursing Research and Innovation
CNS, Kaufman Center for Heart Failure
Objectives

• Discuss rationale for building an infrastructure for evidence-based practice
• Discuss 3 Infrastructure elements
• Describe how evidence-based practices affect:
  – Nurses / nursing practice
  – Patient quality and safety
  – Healthcare setting/ administration

Disclosures

• None, related to this presentation
Juggling 3 Elements

Value Pricing
<table>
<thead>
<tr>
<th>Fee-for-service</th>
<th>PAYMENT</th>
<th>Bundled, shared savings; capitated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>FOCUS</td>
<td>Population</td>
</tr>
<tr>
<td>Treat</td>
<td>INCENTUVE</td>
<td>Prevent</td>
</tr>
</tbody>
</table>

**SHIFT FROM VOLUME TO VALUE**
Leveraging Healthcare

Cost vs. Value

Time to Improve
- High efficiency saves energy
Patients
Nurses
Hospital Admin.
In God We Trust,
Everyone Else Must Bring Data!
The State of Healthcare Quality, 2015

- There are up to 200,000 unintended patient deaths per year (more than auto accidents & breast cancer)
- Patient injuries happen to approximately 15 million individuals per year
- Patients only receive about 55% of the care that they should when entering the healthcare system
The Cost of Poor Quality Healthcare

• In 2008:
  • Poor quality healthcare cost the United States about 720 billion dollars
  • Wasteful healthcare spending costs the healthcare system 1.2 trillion dollars annually
  • The U.S. healthcare system could reduce its healthcare spending by 30% if patients receive evidence-based healthcare
Controlling Blood Pressure

National Committee for Quality Assurance
State of Healthcare Quality, 2015

Controlling Blood Pressure

National Committee for Quality Assurance
Blood Sugar Not Controlled

National Committee for Quality Assurance
State of Healthcare Quality, 2015

Blood Sugar *Not* Controlled

National Committee for Quality Assurance

[Graph showing the percentage of blood sugar not controlled over time for Commercial HMO and Medicare HMO.]
Root of the Problem
Paying for More Does Not Always Get You More!

The Cost of a Long Life

Life Expectancy vs. Per Capita Spending (International Dollars)
Root of the Problem
Poorly Coordinated Care

• 5% of US population accounts for nearly ½ of total spending
  – 20% accounts for 4/5 of all spending
  – Due to complex medical problems:
    – Difficult to manage chronic diseases:
      – Take more prescriptions
      – Undergo more tests/procedures
    – Hospitalized more often

Root of the Problem
Avoidable Hospital Re-admissions

• 1 in 5 elderly patients discharged from hospitals in the US is readmitted within 30 days
• Costs to Medicare alone is $17 billion/year
• Many could be prevented:
  – Need hospitals, doctors and community health programs to work together
  – Patients need clear instructions in self-care; follow-up appointments and must understand the value of adherence to Tx plan

Root of the Problem
High Prices

• US costs for office visits, lab tests, medical procedures, hospital stays and prescription drugs are higher than in other countries

• Average cost for 1 day hospital care:
  – USA: $4,287
  – France: $853

• Total price for normal birth:
  – USA: $10,000
  – United Kingdom: $2,541

Root of the Problem
Too Much Care

• The US spends 1/3 of its health care dollars on medical services that do not improve our health
  – And may be harmful
• Excess care is a by-product of poor care coordination
  – i.e., MRI in doctor’s building and again 2 weeks later in the hospital
• Excess care from quality & safety problems
  – i.e., Hospital acquired infection
  – i.e., Unnecessary surgery

5 MACRA Principles
Medicare Access & CHIP Reauthorization Act of 2015

1. Well-organized primary care team for each patient
2. Measurement for each unit of accountability
3. Core set of measures to facilitate comparisons
4. Measurement to aid fast improvement, accountability
5. Useful, assessable results

MACRA creates a new framework for rewarding providers for better, lower-cost, patient-centered care

National Committee for Quality Assurance
A Highly Reliable Healthcare Organization

- Provides safe care
- Minimizes errors
- Achieves exceptional performance in quality and safety
- Near perfect performance on quality of care, patient safety and efficiency

EBP is a KEY STRATEGY in creating a high reliability organization
WHEN DO BEDSIDE NURSES ASSESS & USE EBPs?

- A. A parent/loved one gets ill and they need to “look up” data on the topic
- B. Time is given to do it
- C. It’s time to show clinical ladder experiences
- D. The goal is optimal patient care
- E. Need evidence for “Magnet” designation

NONE OF THE ABOVE
Building an Infrastructure for EBP

• EVIDENCE: a collection of facts that ground’s one’s belief that something is true
  – EXTERNAL evidence:
    – From rigorous research
  – INTERNAL evidence:
    – From outcomes management
    – From practice-based evidence
      – Based on rigorous research, applied in a real–world setting
Evidence-Based Practice

• Evidence-based practice (EBP) is:
  – A problem solving approach to clinical practice
  – That integrates the conscientious use of
    1. Best evidence +
    2. Clinician’s expertise +
    3. Patient preferences and values
  – to make decisions about the type of care that is provided

• Resources must be considered in the decision-making process as well

Evidence-Based Practice

Internal Factors
- Culture
- Environment
- Equip/Supplies
- Staffing
- Standards

Practice

External Factors
- Accreditation
- Legislation
- Quality measures
- Regulation
- Standards

Research
- Experimental
- Quasi-experimental
- Non experimental
- Qualitative

Non-Research
- Organizat. Experience
- QI; financial data
- Clinical experience
- Pt preference

Education

Research
3 Essential Elements to Evidence-Based Nursing Practices

1. Understanding what EBP means to patient care
2. Encouraging EBPs
3. Mentoring & supporting nurses in EBP
EVIDENCE-BASED PRACTICE

• Half of what you are taught in medical school will be proved to be wrong in 10 years, and the trouble is, none of your teachers know which half.

  S. Burwell, Harvard Medical School

• We double our medical information every 3-5 years

  Do we change nursing practices every 3-5 years to match medical knowledge?
Sacred Cows

“Someone or something that has been accepted or respected for a long time and that people are afraid or unwilling to criticize or question”

Merriman-Webster dictionary
Examples: Sacred Cows

• < 2000 mg Na+ diet in patients with stable heart failure
• Milking chest tubes
• Trendelenburg position to stabilize cardiovascular hemodynamics in hypotension
• NaCl in endotubes to liquefy secretions
• Restricting visitation
• Restricting observation during CPR/code
• Use of cell phones in critical care
• Daily changing of IV dressings
• Perineal shaves before child birth
• Mayonnaise for head lice
• Sugar paste for pressure ulcers
• Albuterol delivery with nebulizers
Should patients with heart failure have their daily sodium intake restricted to 2,000mg/per day?

Putting “Sacred Cows” Out to Pasture
February 2015
Presented by the Nursing Research & EBP Council on Main Campus
3 Essential Elements to Evidence-Based Nursing Practices

1. Understanding what EBP and research means to patient care
2. Encouraging EBPs
3. Mentoring & supporting nurses in EBP
Advancing Evidence-Based Practices

Make Time
Cultivate a spirit of inquiry
DEVELOP a FOUNDATION

Lay a strong foundation for evidence-based practices

Chief Nursing Officer & Other Leadership Support
Nursing Leadership

• Talk the talk
  – Ask for evidence when a manager or nurse states why something ought to be done the way it’s being suggested
  – Use evidence to guide practice
  – Rationale:
    – Helps leaders recognize the importance of literature review and ‘best evidence’
Nursing Leadership

• *Walk the walk*
  – Include EBP outcomes on annual performance reviews of directors and nurse managers
  – Review policies and procedures to assure that references are valid, current and highest level of evidence
  – Showcase clinical nurse excellence in EBP at leadership forums
    – Within nursing
    – With senior leadership/board of trustees
TRANSFORMING HEALTH CARE FROM THE INSIDE OUT
Encouraging EBPs

• Keep the words EBP in the forefront of activities
  – Nursing education / systems that assist nurses to understand the value of EBP
  – Best practice posters/presentations
  – Funding to compensate for “time”
  – Awards/recognition for EBP project completion
    – Disseminate EBPs
      – Peer-reviewed publication
      – Annual organization meetings
Encouraging EBP: Self study Modules x4

• Each have CE / Nursing leaders decided on mandatory vs. optional participation

1. Introduction – all CC nurses
2. Searching the literature – All NMs, CNSs, SG/Quality/P&P/Affinity/Pathway-Magnet councils/workgroups
3. Reviewing literature-Strength & quality – same as module 2
4. Synthesis and Beyond-Using evidence to make decisions- same as module 2
Encouraging EBP: NuRF-Literature Grant

• Grant award for literature review
  ─ $600 (allows about 15-16 hours time)
  ─ Grant awarded to person/team
    ─ Money goes to operating budget
1. Complete application
   ─ State a problem/issue and why important to nursing practice
2. Work with mentor to review literature
3. Develop a poster
4. Present locally to team
   ─ Encouraged to present at “Shared Gov. Day”
Encouraging EBP

- EBP *advanced workshop or internship*
  - Review literature on practice or problem/issue
  - Determine next steps
    - No need to do anything
    - Need policies/procedures to ensure EBP actions
  - Need novel interventions/practices to support current evidence – assess new evidence
    - Quality initiative
    - Research - single site
    - Research - multisite
Encouraging EBP

• EBP *advanced workshop or internship*
  – May be competitive
    – Apply and selected
  – May be short term or long
  – Depending on length, may involve mentored
    – *Rigorous* literature review with synthesis of findings and next steps needed
    – *Rigorous* QI, change or research project
  – May include:
    – Formal and 1:1/small group education
    – Training in leading journal club…
3 Essential Elements to Evidence-Based Nursing Practices

1. Understanding what EBP and research means to patient care
2. Encouraging EBPs
3. Mentoring & supporting nurses in EBP
DEVELOP a FOUNDATION

• Write it out on paper
• Determine resources up front
  – Personnel
  – Resources for team and nursing staff
    – Supplies, software, funding, informatics, long distance conferencing, space
    – Database
DEVELOP a FOUNDATION

Nurses trained in EBP and nurs research with:

- Publication history in peer-reviewed journals as 1st author
- Grant writing history
- Mentoring history
- Desire to be a coach, cheerleader, educator

Time:

- ~40% own research program
- ~40% coaching others
- ~20% meeting Office goals
  - Annual research conf.
  - Annual innovation summit
  - Education workshops
  - 1 hour edu. sessions
  - Grant/abstract reviews

Personnel

Chief Nursing Officer & Other Leadership Support
DEVELOP a FOUNDATION

Minimum Expectations – APR:

- 2 publications/year as 1st author in peer-reviewed journals
- Mentoring nurses in research dissemination
- Grant writing/submission/awards for self and protégées
- Abstract submission to CCF/national meetings
- Leadership within national organizations
- Interdisciplinary and/or multicenter collaborations

~ 9750 RNs/6.0 FTEs = 1625 RNs each
DEVELOP a FOUNDATION

Nurses trained in nursing research with:
- Publication history in peer-reviewed journals as 1st author
- Grant writing history
- Mentoring history
- Desire to be a coach, cheerleader, educator
- ~ 1600 nurses/mentor

Hardware (Server) and programmer to keep it current and allow for:
- Adding/revising projects on the site
- Organizing projects by themes
- Warehousing project documents in progress, after completed or when abandoned

Personnel

Research Database

Chief Nursing Officer & Other Leadership Support
DEVELOP a FOUNDATION

Nurses trained in nursing research with:
• Publication history in peer-reviewed journals as 1st author
• Grant writing history
• Mentoring history
• Desire to be a coach, cheerleader, educator
• ~ 1600 nurses/mentor

Hardware (Server) and programmer to keep it current and allow for:
• Adding/revising projects on the site
• Organizing projects by themes
• Warehousing project documents in progress, after completed or when abandoned

Resources at your fingertips; e.g.:
• Templates
• Inter- and Intranet sites
• Award applications
• Checklists/forms
• Completed research
• How to…Getting started
• +: SPSS; space; budget (statistician; tools…)

Personnel       Research Database       Research Website +

Chief Nursing Officer & Other Leadership Support
Nursing Research staff members mentor nurses as principal and co-investigators in conducting, translating and disseminating research that will increase nursing knowledge about clinical and administrative practices and facilitate evidence-based nursing practices that improve patient outcomes.

The results of nursing research are used to provide rationale for current practice or a change in policies, procedures and behaviors. In addition, results that expand knowledge are often used as the basis for innovative nursing systems and processes and patient interventions.

- **General Information**
  - EPIC Data Retrieval
  - General Templates
    - Journal Club toolkit
  - Checklists
  - Evidence Based Practice
  - Research vs. Quality vs. Product Evaluation
  - Contacts

- **Conducting Research**
  - Overview
  - Literature Review
  - Writing a Proposal
  - Resources
  - Valid, Reliable Tools

- **Disseminating and Translating Research and Evidence Based Practice**
  - Completed Research Posters
  - Presentations
  - Publications
  - Resources
  - Research Newsletter

- **Education, Policies, Grant Funding & Councils**
  - NURF and NURF Lit Awards
  - Research Education
  - Standards of Practice and Nursing Research Policies
Clinical Research Proposal Template

Clinical Research Proposal

Nursing Institute
Format and Content

Title / Investigators / Version number
Title should reflect the question (topic) you are addressing. Place on a separate page. Keep as short as possible.

Investigators: Include yourself and ALL other collaborators. First name listed is assumed to be the Principal Investigator (PI). Include your nursing research mentor as well (can place “mentor” in parenthesis, as desired)

Version number: Place the version of your proposal in a footnote. Generally, version 1 is the version that the IRB receives for approval. Anytime you make a change and submit an amendment to the IRB due to protocol revision, the version number is updated.

Abstract
For most proposals, the IRB requires a 250 word abstract that provides an overview of the problem, study methods, data collection methods, sample characteristics and sample size.
- Place the abstract on a separate page
Case Study Report Form Template

Aids a novice researcher in seeing:

- Use of spacing, color highlights, data collection variations (check box, fill in the blank)
- Use of words, fonts, font variation (italics, bold)
- Level of detail in instructions

Cardiovascular Status (continued)

☐ Valves replaced/repaired

(please specify): __________________________

☐ Other (please specify): __________________________

RHYTHM STATUS (check all that apply)

☐ Normal sinus

☐ Atrial flutter

☐ Sick sinus syndrome

☐ Sinus arrest

☐ Paroxysmal Atrial Fibrillation

☐ Persistent or Very Persistent Atrial Fibrillation

☐ Paroxysmal event(s)

☐ Other (please specify)

TRANSPANT MEDICAL STATUS

Is the heart patient on a transplant waiting list? ☐ Yes ☐ No

If YES, specify date placed on heart transplant list: ________________

Was this patient taken off the transplant list after receiving an InSync Sentry implant? ☐ Yes ☐ No
Content Validity Testing Template

- Uses Lynn methodology

### Content Validity Index for ([lace title of survey here] SURVEY)

**About yourself:** Are you a:  
- [ ] NM or ANM  
- [ ] CI or CNS  
- [ ] Staff nurse

How long have you worked on your present unit? ____________ years.

<table>
<thead>
<tr>
<th>For each of the statements in the survey below, please assess content validity by providing information about: Item relevance (does the statement belong on a survey of assessment of [place theme of survey here]), clarity and importance</th>
<th>CONTENT RELEVANCE</th>
<th>ITEM CLARITY</th>
<th>ITEM IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Item is not relevant</td>
<td>1. Unclear</td>
<td>1. Not important; remove</td>
<td></td>
</tr>
<tr>
<td>2. Unable to assess relevance without item revision</td>
<td>2. Unclear without revision</td>
<td>2. Somewhat important; keep on survey if room</td>
<td></td>
</tr>
<tr>
<td>3. Relevant but needs minor alteration</td>
<td>3. Clear with minor alteration</td>
<td>3. Important; keep on survey</td>
<td></td>
</tr>
<tr>
<td>4. Item is very relevant and succinct.</td>
<td>4. Clear</td>
<td>4. Very important; do not remove from survey.</td>
<td></td>
</tr>
</tbody>
</table>

Choose a number for each statement:  

<table>
<thead>
<tr>
<th>Content Relevance score (1-4)</th>
<th>Item Clarity score (1-4)</th>
<th>Item Importance score (1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do some nurses need help getting started?
Intranet Site

Nursing Research and Innovation

- Templates
- NURF and NURF Lit Award
- IRB (Institutional Review Board) Information
- How to Get Started
  - EBP: Assessing and rating evidence in the literature
  - Contacts
  - Designing and Creating a Journal Club
  - Research Overview
  - Standards for Systematic Reviews (03-2011)
  - Trusting Content of Clinical Practice Guidelines (03-2011)
  - General Research Checkboxes, Forms and Templates from the CC Lerner Research Institute
- Nursing Research Newsletter
- Nursing Research References
- Presenting/Publishing Research
- Useful Links/Resources
- Research Education and Standards of Practice
- Main Campus Research & EBP (Evidence Based Practice) Council
- Nursing Institute Research Council
  - Posters to Educate Nurses about Research
Useful Links

- Am. Nurses Assoc. Research Toolkit
- Center for Clinical Research
- CITI Human Subject Course
- Current Research Projects
- EBP resources and web links
- Libraries, CCHS
- Library, Main Campus
- Library, Nursing: Virginia Henderson Int.
- Nursing Journals
- Nursing Organizations
- Nurse Author & Editor
- Office of Sponsored Research
- Random number generator

Sample Size Calculators

- Power and Sample Size calculator (Vanderbilt University)
- G*Power 3 (Heinrich-Heine-University)
- A-priori Sample Size Calculator for Multiple Regression (Dr. Daniel Soper)
- Sample size calculator (MaCarr Research)
CC Evidence Based Nursing Practice Model

Insufficient Body of Evidence
Development of new knowledge
1. Identify gaps or inconsistencies in evidence base
2. Design and conduct studies
3. Disseminate findings
4. Develop registry and database(s)

Sufficient Body of Evidence
Translate evidence to practice
1. Revise policies, procedures and standards of care
2. Implement quality improvement processes
3. Implement new innovative programs or services
4. Evaluate change and disseminated findings

Adapted from Albert NM, Siedlecki SL. JONA 2008; 38:90-96.
**CCF Created Images**

**Cleveland Clinic Nursing Institute: Strength (Levels) of Clinical Evidence Guide**

- Strength of clinical evidence is based on findings from a review of literature.
- "Literature" is generally defined as all pertinent publications on the topic; however, if the topic has a lot of information about it, select (a) more recent publications (e.g., within the last 5 years), and (b) publications with the highest level of evidence (see below).

**Level I**

- Randomized controlled trial (RCT)
- Meta-analysis of an outcome related to area or research question of interest

**Level II**

- Systematic review of an outcome related to an area or research question of interest
- All other quantitative or qualitative research; can be single center or multicenter studies; can be medical record review (retrospective) or prospective studies; can be descriptive, comparative, or correlational studies
- Order of strength: Systematic review, Comparative studies, Descriptive, observational studies, Case control studies, Cohort studies, Descriptive correlational studies, Medical records, Research, Qualitative research

**Level III**

- Consensus Guidelines created by national organization / national experts without conflicts of interest (funding)
- Note: Consensus guidelines generally include multiple recommendations that may be derived from evidence that includes R1, R2, and N1 (non-research expert opinion) knowledge.
- Strength of evidence is higher when most recommendations are from to randomized controlled trials and lower when based on R2 and N1 evidence.

**Level IV**

- Non-research references include: Review manuscript, Case study, Expert opinion, Quality report, Hospital policies, Hospital "data", Editorials

**Research Publications, 1st Tier (R1) - Highest Strength**

- Consensus Guidelines created by national organization / national experts without conflicts of interest (funding)
- Note: Consensus guidelines generally include multiple recommendations that may be derived from evidence that includes R1, R2, and N1 (non-research expert opinion) knowledge.
- Strength of evidence is higher when most recommendations are from to randomized controlled trials and lower when based on R2 and N1 evidence.

**Research Publications, 2nd Tier (R2), Moderate Strength**

- Systematic review of an outcome related to an area or research question of interest
- All other quantitative or qualitative research; can be single center or multicenter studies; can be medical record review (retrospective) or prospective studies; can be descriptive, comparative, or correlational studies
- Order of strength: Systematic review, Comparative studies, Descriptive, observational studies, Case control studies, Cohort studies, Descriptive correlational studies, Medical records, Research, Qualitative research

**Cleveland Clinic Nursing Institute: Quality of Evidence Guide**

**High Quality Evidence**

- Well defined search methods (review manuscript)
- Predominantly recent and primary references
- Appropriate sample size and justification for inclusion and exclusion
- Precision in findings (narrow confidence intervals around the mean)
- Systematic review or meta-analysis contains predominantly controlled trials / comparative research designs, when available
- Data collection and analysis are appropriate for research design (research manuscript)
- Power analysis completed
- Random assignment
- Blinding of subjects to interventions
- Appropriate length of collection of data on outcomes
- Multicenter study
- Diagram of those enrolled and excluded
- Valid, reliable scales
- Effect size stated
- Expertise of corresponding or senior author is evident
- Results primarily consistent
- Some discussion, implications and/or conclusions clearly follow from data analysis (research manuscript) or review of literature (review manuscript)

**Good Quality Evidence**

- General description of search methods (review manuscript)
- Some recent and primary references
- Sample size appears adequate but not justified
- Systematic review or meta-analysis contains mostly "comparative" research designs, when available
- Questionable fit between research design (and research questions) and data collection, data analysis, and/or implications / conclusion (research manuscript)
- Expertise of corresponding or senior author not evident
- Results primarily consistent
- Some discussion, implications and/or conclusions addressed appropriately

**Low Quality Evidence**

- Insufficient description of search methods
- Insufficient use of recent and primary references
- Inadequate sample size
- Systematic review or meta-analysis contains many non-"comparative" research designs (unless more available)
- Lack of fit between research design (and research questions) and data collection, data analysis, and/or implications / conclusion (research manuscript)
- Questionable expertise of corresponding or senior author
- Inconsistent results
- Inconsistent or non-appropriate discussion, implications and/or conclusion (does not match research results or the review of literature findings)

Content applies to research and review manuscripts except where stated.
Select Manuscript to Critique

Identify Strength and Quality of Evidence

Consider applicability to your practice – What problem will it address?

Do the manuscript findings have clinical significance? What difference will findings make for patient outcomes?

Is it feasible to implement the evidence into my practice?

How will I know when I have made a difference?
Nursing Professional Practice Model

Shared Vision

Cleveland Clinic
Tips to Advance Evidence-Based Nursing Practice
• EBP and nursing research require a review of the literature as part of the process
  → Learn what your resources are
  → Learn short cuts
Literature Reviews

- Learn tricks of finding papers
- Learn tricks of reviewing papers
- Learn how to:
  - read tables
  - read graphs
  - read figures
  - read statistics (basics)
Collaboration

• At least 2 nurse authors on one project
• Include a CNS/nurse scientist (local or external consultant) to assist
• Include experts on the topic
  —Interdisciplinary support
• National Organizations
• Company support (be aware of bias)
• Systematic reviews or meta-analyses on topic
Acting on Evidence-Translation

Strength of evidence + Quality of evidence = Confidence to Act
Be Innovative when Planning Interventions
NEGATIVE RESULTS ARE STILL POSITIVE-- Publish!
Describe How New Knowledge Intersects with EBP
Big Data

• Learning Healthcare Systems
Evidence-Based Practices to Advance Quality and Safety
Does an Insulin Double-Checking Procedure Improve Patient Safety?

Mary Beth Modic, DNP, RN
Nancy M. Albert, PhD, RN
Zhiyuan Sun, MS
James F. Bena, MS
Christina Yager, BS
Theresa Cary, MSN, RN

Amanda Comiello, MSN, RN
Nancy Kaser, MSN, RN
Julie Simon, MSN, RN
Catherine Skowronska, MSN, RN
Brian Kissinger, BSN, RN

OBJECTIVE: The aim of this study was to examine the effectiveness of a subcutaneous insulin double-checking preparation intervention on insulin administration errors.

BACKGROUND: Insulin accounts for 3.5% of medication-related errors. The Joint Commission and Institute for Safe Medication Practices recommend a 2-nurse double-checking procedure when preparing insulin.

METHODS: This study used a randomized, controlled, nonblinded, intent-to-treat methodology.

RESULTS: In total, 266 patients were enrolled, and over 4 weeks of data collection, there were 5238 opportunities for insulin administration. Overall, 3151 insulin administration opportunities had no errors; the double-checking group had more no-error periods than usual care. Of error types, wrong time was predominant, but less prevalent in the double-checking group. Omission errors were uncommon and occurred less in the double-checking group.

Insulin alone accounted for 3.5% of medication-related errors in the largest adverse drug event database in the United States. When 2057 insulin errors were assessed over an 18-month period among Pennsylvania healthcare facilities, nearly one-fourth of errors were due to omission, 14% were due to the wrong drugs, and 13% were due to the wrong dose or overdosage.

Of reported errors, 53% involved elderly patients, and more than 78% of events were those that could contribute to patient harm, specifically labile glucose values.

After the US Pharmacopeia MEDMARX program identified insulin as 1 of the top 5 high-alert medications, the Institute for Safe Medication Practices listed subcutaneous and intravenous insulin as a high-alert medication and recommended inde-
After controlling for the same nurses administering insulin over time, “double checking” did NOT reduce insulin errors, except, it ↓ the risk of “omission” errors by 70% - OR (95% CI): 0.305 (0.168, 0.552), p < .001
Value-Based Purchasing: ECG Lead Wires- Disposable vs. Reusable??

- Which system will reduce hospital-acquired infections?
  - Disposable, more $$$; unknown if ↑ value

No Differences in Infection Rate

Paired RR, 1.35 (0.99, 1.83); P = 0.058

Disposable, 4056 cases; reusable, 3184 cases
Infection Rates: BSI + VAP + SSI*

No Differences in Infection Rate

Raw RR:

- CTICU*: 1.47 (0.51, 4.23)
- MICU: 1.31 (0.62, 2.74)
- SICU: 1.40 (0.52, 3.54)
- NICU: 1.19 (0.45, 3.14)

Final Thoughts

• EBP
  + collaboration
  + new knowledge, clinical experiences
    – Generates new research questions
    – Generates new nursing actions/ interventions that lead to:
      – Science advances
      – Discovery of new knowledge
      – Clinical applications