Thomas Edison as Nurse
Finding 10,000 Ways That Won’t Work

Session C938
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Program Description

Receiving unexpected results from research studies and quality improvement (QI) projects can contribute more knowledge than original goals.

Objectives:
• Analyze two examples of research and QI monitors that provided unexpected results.
• Gain insight from the examples to identify gaps in current process and predict human behavior in future studies or projects.

Perspective
• 1093 patents in 80 years
  — Not patients
The research process is comprised of phases that occur sequentially as well as form a feedback loop. Note that the process is also characterized by back-and-forth movement between adjacent phases.


**Steps in “Real” Research**

**Thinking Phase**
- Identify research question
- Specify research purpose
- Literature review
- Conceptual Framework

**Planning Phase**
- Determine research approach
- Determine research design
- Develop a sampling plan
- Develop and test pilot data-collection strategies
- Determine quality-control strategies
- Address ethical considerations
- Formulate plans for Data Analyses

**Implementing Phase**
- Recruit subjects
- Collect Data
- Establish reliability and validity
- Prepare data for Analysis

**Analyzing Phase**
- Analyze data
- Interpret research findings

**Informing Phase**
- Determine audience and dissemination strategies
- Apply findings in clinical practice

**Simplified: Tennant Research Process**

- Identify Problem and Purpose
- Literature Review
- Conceptual Framework
- Develop Research Design
- Develop a Data collection strategy
- Address Feasibility, Buy-in, and Ethical considerations
- Recruit/consent and collect data
- Pay statistician to analyze data
- Interpret research findings
- Apply findings in clinical practice
- Disseminate at conferences with nicest locations
“Failure” #1
Does Nursing School Cause Burnout?

• BNS Nursing Research Final Paper/project
• Literature review
  ✓ Gap in literature
  ✓ no research on burnout specific to experiences during nursing school
• Feasibility
  – Daily access to study population
  – Support of Facility and/or IRB

“Failure” #2
Changes in Modifiable Cardiovascular Risk Factors in Post Cardiac Surgery Patients After Cardiac Discharge Education Class

✓ Feasibility:
  ✓ Employed as educator for Cardiac Discharge classes at study location
✓ Buy-in:
  ✓ Leadership wished to prove value of Phase I Cardiac Rehab in which classes were taught

“Failure” #2 Aim and Assumptions
✓ Aim Statement: Is there a change in cardiovascular modifiable risk factors after post-cardiac surgery patients attend a cardiac discharge education class?

✓ Assumptions: Subjects
  ✓ will provide accurate self-reported information
  ✓ will answer the survey honestly
  ✓ are motivated to make lifestyle changes
Assumptions vs Demographics

- Subjects will provide accurate self-reported information
  - Typical patient (n=101): 64 yo married white male
    - high school education, median income >$55,000, hx: hypercholesterolemia, hypertension, no regular exercise

- Typical survey completer...

Assumptions vs Reality

- Subjects will answer the survey honestly
- Subjects are motivated to make lifestyle changes

Research Questions

- Is there a change in reported dietary habits
- Exercise habits
- Tobacco use
  - 3 months after patients attend a cardiac discharge class
- Literature review: 30 pages (condensed down from 60)
Methodology

✓ Quasiexperimental design with formal statistical analysis and descriptive statistical measures
✓ Survey before class
✓ Class content (40 minutes)
  ✓ Procedure (CABG), diet, exercise, tobacco cessation, discharge instructions
✓ Survey mailed to home 3 months post discharge
✓ No control group

Instrumentation & Data Analysis

✓ “Home-grown” 13-item multiple choice questionnaire
  ✓ Content validity established
  ✓ No reliability (first use of the tool)
  ✓ 47% of mailed surveys were returned
  ✓ Typical response for mailed surveys is 20-30%
✓ Data Analysis using SPSS
  ✓ Inferential statistics, paired t-test, frequency, percentage, group statistics
  ✓ Mental note: “Garbage in equals Garbage out”

Discussion and Conclusions

Results indicated:

✓ Increase in intake of fruits and vegetables (statistically insignificant)
✓ Decrease in intake of protein, fats and sugars (statistically significant)
✓ Increase in physical activity (statistically significant)
  • 51% reported Weight loss following surgery
  • 100% decrease in tobacco use
Recommendations

- Meet with a statistician before you create a data collection tool
- Conceptual frameworks make sense sometimes
  - Health Belief Model (Rosenstock, 1966) states:
    - The perceived threat of the illness directly influenced the likelihood of the patient taking the recommended preventive health action.

“Failure” #3

- Geriatric Education for Registered Nurses to improve care and outcomes for Older Adults
  - HRSA Grant 2009-2012

“Failure” #3 Geriatric Education

- Aim: Geriatric-specific nursing education improves older adult outcomes
- Measurement tool?
  - Aim statement did not have a measurable outcome
  - Only data requested by HRSA
    - Number of attendees at classes
**“Failure” #4**  
**ChG wipes for CAUTI prevention**

- **Research question:** Chlorhexidine kills everything else so why not CAUTIs?  
  *(Catheter Associated Urinary Tract Infections)*

- **Crossover Design in 2 similar ICUs**
  - ICU A uses ChG for cath care for 3 months while ICU B uses “standard care” for 3 months
  - Switch and compare to pre-intervention data

**The debate begins**

- **QI vs Research debate**
  - Settled by the Literature Review
- **“Expedited review by IRB”**
  - Manufacturer and FDA involved
- **Protection of Human Subjects**
  - Consenting intubated/sedated patients

**Study Design: Crossover?**

- **New Products, New Process and the Rumor Mill**
  - “Standard care” requirements
    - Soap, basin, water, washcloths, compliant, sedated, or paralyzed patient with low BMI
  - Interventional product requirements
    - Disposable, warm, disposable, chlorhexidine gluconate-impregnated, disposable cloth, already stocked in ICUs.
Assumption vs Null Hypothesis

• Assumption: Research participants will comply with study design
  — Increased documentation and performance of catheter care
  — Decreased CAUTI rates during intervention period

• Null hypothesis: there is no relationship between use of CHG cloths and CAUTI reduction

• Results of data analysis
  — “There was no statistically significant difference between the CHG group and the standard care group”

Question the Outcome

• There were not enough data points (CAUTI infections) to show a significant difference in the two protocols.

SHOW ME THE DATA
“FAILURE” #5  SURGICAL SITE INFECTIONS

Let me tell you a joke:

A Product Rep walks into the door and says a famous surgeon at your hospital wants to try their post-op dressing to reduce surgical site infections. . . .

**KNOW WHEN TO STOP**

- Individually train every perioperative employee, every ICU and third floor nurse, every patient and family member on the dressing (some multiple times)
- Follow up and reassess every single dressing used in the study within first 6 hours post-op and then again in 24 and 72 hours

SSI rates doubled within first 45 days of the study
LESSONS LEARNED

• If no one has ever done it before it may be research.

• If a “data point” is anything that causes patient harm you may want to do Quality Improvement.

Either way, don’t forget why you asked the question in the first place.

AND KEEP YOUR SENSE OF HUMOR!

Thank you to the “Research Supportている”

Ly (Ms), Mark (Ms), Cindy (Ms), Chris (Ms), Lucy (Ms), Monica (Ms), and Daddy (Ms) and Luke (Ms).

EMORY
SAINT JOSEPH’S HOSPITAL

Thank you for your time and attention

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REFERENCES


MUNRO, B.H. (2005) STATISTICAL METHODS FOR HEALTH CARE RESEARCH (5TH ED.) PHILADELPHIA: LIPPINCOTT.


ADDITIONAL REFERENCES AND ANYTHING I HAVE THAT MAY ASSIST YOU IN YOUR RESEARCH OR QUALITY IMPROVEMENT ENDEAVORS ARE AVAILABLE UPON REQUEST.