Creative Pedagogy
A Practical Framework for Teaching Research Methods

Presented for:
NONPF
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Disclosure

The authors have no disclosures

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Objectives – The learner will be able to:

- State two reasons underscoring the importance of faculty and students in understanding research design
- Identify the steps in progression of introducing research design to a learner
- Articulate the usefulness of graphical depiction of the hierarchy of research designs, using examples from the presentation in application to learning, teaching, or practice; and
- Ultimately, generalize the information from this presentation to application in their own venue, whether a student, practitioner, or educator, or combination of roles.

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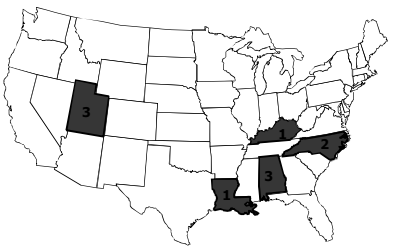
Context: The Team – 4 authors x 5 universities



- Experience in Teaching EBP, Research, Design & Methods, & Statistics
- 4 faculty, 5 large universities and have taught together in 3 institutions
- Taught 1000's of MSN, DNP, PhD students
- Average 9 years teaching topic (range 6-14)

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Background

- The use of evidence, therefore necessarily research, is the foundation of nursing practice, as established by Florence Nightingale. *(Dossey, 2010)*
- Educating nurses in the language and use of evidence is challenging…. The Arrow Framework was created specifically to organize information and make more user-friendly. *(Pearce, Christian, Smith, & Vance, 2014)*

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Why Do We Teach Evidence

- Hallmark of nursing professional
- Understanding the scientific underpinnings of nursing
- Major component of Essentials for BSN, MSN, DNP, and PhD
- Institute of Medicine recommends nurses to lead change in the quest for advancing healthcare and understanding evidence, and generating evidence upon which to practice.

(AACN 2001, 2006, 2011; IOM, 2010)

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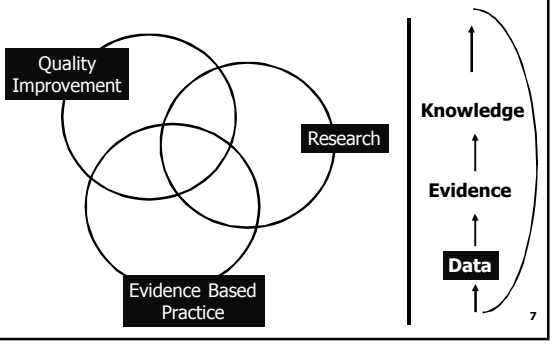
How We Approach Evidence Data and The Wording…



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EBP, QI, Research… Goal is Evidence of PERFECT Choreography

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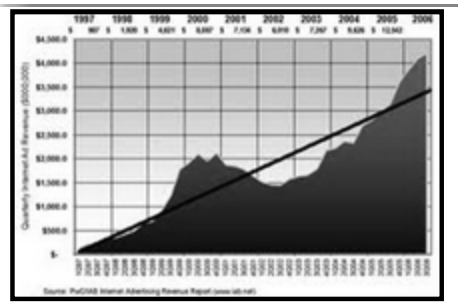
Commonalities… Data & Process & Outcomes Focus



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Evidence….all about Information

And it is…

BIG

10

And it's… COOL!

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Evidence…? Me…?

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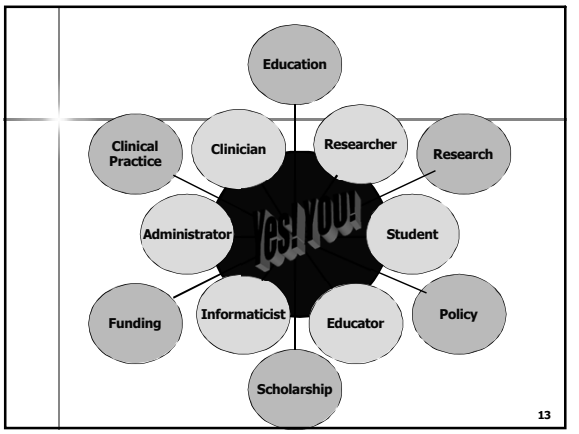

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Evidence Based Medicine...1980

- "evidence based medicine"
- McMaster Medical School in Canada
- 1980's
- To label clinical learning strategy, which people at McMaster had been developing for over a decade.

Rosenberg & Donald, 1995
Sackett et al., 1995
Dicenso et al., 2000

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Now "Evidence Based Practice"...1992

- "…the integration of best research evidence with clinical expertise and client values" *(Sackett, Strauss, Richardson, Rosenberg, & Haynes, 2000)*
- Use of High Quality Research Evidence in Clinical Decisions *(Goode, 2000)*
- Best Clinical Evidence for Making Patient Care Decisions
- Explicit Integration of Clinical Research Evidence with Diagnostic Reasoning, Clinical Experience, and Client Preferences *(Hallas & Melnyk, 2003)*

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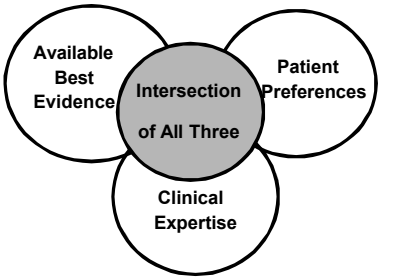
Evidence-Based Practice



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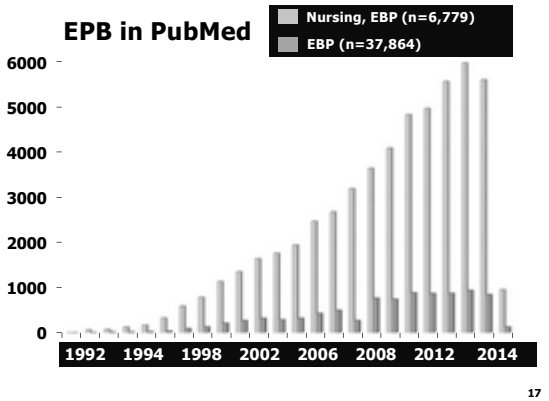
EPB in PubMed



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Critical Factors

- Critical factor to <u>understanding science</u> is understanding an encompassing perspective of evidence, which includes the <u>language of research</u>, <u>research methods</u>, and the <u>use of data</u>
- Research, and Arrow Framework, can be leveled to ALL programs, regardless of emphasis

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Clinically-Focused Programs

- To prepare APRNs as highly skilled clinicians who are able to discuss evidence adeptly, to function fully in the rapidly changing healthcare arena.
- MSN, DNP, APRNs must be able to critically appraise and critique published reports that include evidence and translate that evidence into practice [AACN 2006, 2011]
- For APRNs, understanding evidence is critical in understanding of practice outcomes and productivity.

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Arrow Framework

- Organizing framework
- Teaching research methods
- Logical and practical organization of interrelationships –concepts, content, context of research methods, as well as practical application in practice
- Understanding hierarchy of design and levels of evidence is critical

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Evidence = Data

It is insufficient to just "care" about and for patients…

there must be EVIDENCE to support care decisions

Author Unknown[21]

Why Do Nurses Need to Understand Evidence

Core Competency: Evidence-Based Practice is the Foundation for Core Nursing Competencies, at ALL levels of Educational Preparation and ALL areas of Practice

- **Use** Research Findings/Outcomes in Practice
- **Evaluate** Outcomes of Clinical Practice
- **Conduct/Participate** in Clinical Evidence Initiatives
- **Provide Context** for Practice
- **Understand, Explain, Predict** Care Parameters

Hickey et al., 2000

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Evidence Cascade & Information Dependency

Whatever the issue you question…there is the core problem

Identify the core problem

Expand to understand problem requires measurement

Measurement requires tools

Tools must be usable

Usable helps move from data to knowledge

To result in understanding

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The First Clue… Information

Nursing Process

… is ALL about Evidence

Assessment… Planning… Intervention… Evaluation…

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We Do Data!

- Data are considered to be evidence and nurses use these data, evidence, in every patient encounter… they just don't recognize as data.
- Data, Example… The First Link

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Test	Result		Unit	Reference Range
WBC	5.2		Thous/cu mm	3.9-11.1
RBC	3.51	L	Mil/ cu mm	4.20-5.70
HDBN	14.5		g/dL	13.2-16.9
HCT	41.2		Percent	38.5-49.0
MCV	117	H	fl	80-97
MCH	41.4	H	pg	27.5-33.5
MCHC	35.3		Percent	32.0-36.0
RDW	11.8		Percent	11.0-15.0
PLATELET	172		Thous/cu mm	140-390
DIFFERENTIAL				
Tot Neutrophils	40.1		fl	38.0-80.0
Tot Lymphocytes	46.1		Percent	15.0-49.0
Monocytes	12.9		Percent	0.0-13.0
Eosinophils	0.6		Percent	0.0-8.0
Basophils	0.3		Percent	0.0-2.0

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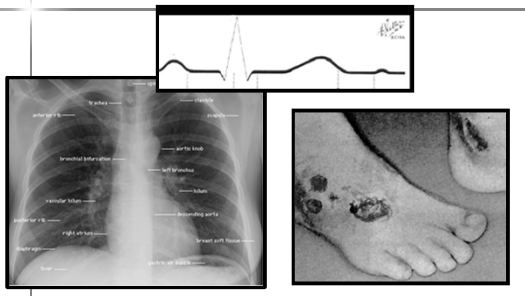
The basics… DATA
What You See & Record



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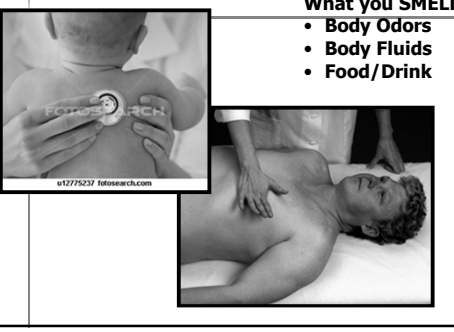
What You Hear, Feel, & Smell

What you SMELL
- **Body Odors**
- **Body Fluids**
- **Food/Drink**



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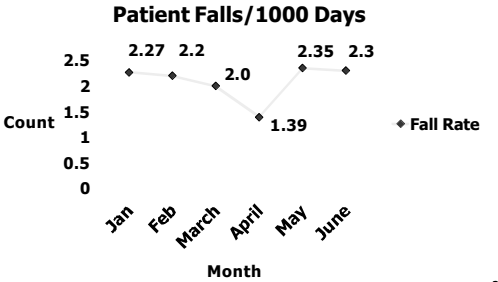
Senses…
Data Points
Information, then Knowledge



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Technology, Information, Continuity

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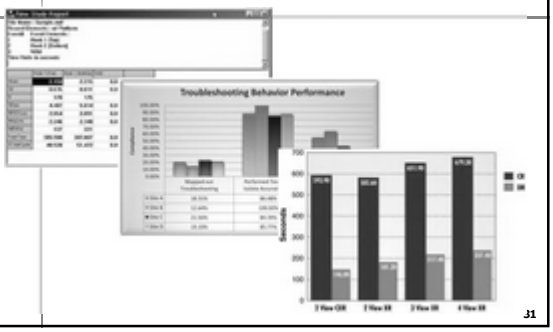
Patient Outcomes, Salaries, Hours, Retention, Accreditation



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Sources of Evidence
…How Do We Know What we Know??

- Tradition – We've always done it this way!
- Authority – My way or the highway!
- Clinical Experience – Trial/Error, Intuition
- Logic – Reasoning
- Systematic Investigation
  - Most Rigorous, Reliable Sources of Evidence
  - Initiatives… need to be based in Evidence

DiCenso et al., 2005

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Consider…Clinical Data

- Information recorded as nurses
- Regardless of form
  - Narrative or numeric
  - Paper or computer
- ALL become "data" or "indicators"
- Evaluated to see "state of the …[?]"
- NEED to be shared!
- Basis upon which to MAKE CHANGE or IMPROVE clinical situations/care
- SYSTEMATIC processes produce best understanding

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Thinking through evidence is … HARD!

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Evaluation/Appraisal of Evidence

Evaluation of any published evidence requires:

- **Identification** – Relevant information
- **Evaluation** – Against established criteria
- **Judgment** – About the information
- **Integration** – Into larger picture
- **Management** – Of more than a single article

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Sources – KNOW the difference

- **PRIMARY references/sources**
  - **First-hand information** (e.g., original publication by investigator) who actually participated in doing the research being reported; can be archival (diaries, relics); data collected for research
- **SECONDARY references/sources**
  - **Not first-hand (therefore, considered second- or third-hand information).** Some could be called "pre-digested". Includes REVIEWS. Good STARTERS and usually great reference lists.

KNOW THE DIFFERENCE!

Polit & Beck, 2012

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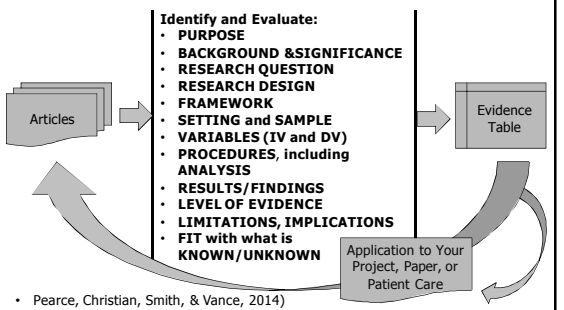
Identify the Information – Systematic Iterative Process



- Pearce, Christian, Smith, & Vance, 2014)
- Pearce, Christian, Iribarren, Luther, & Vance, 2014, *Under Review*
- Vance, Talley, Azuero, Pearce, & Christian, 2013

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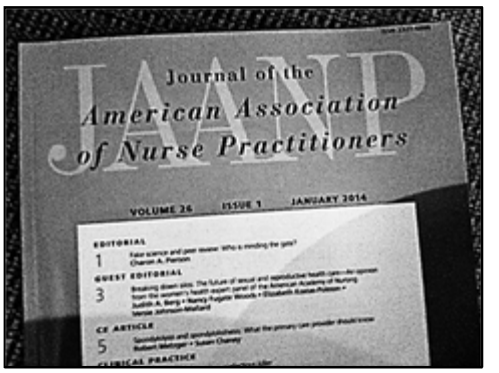

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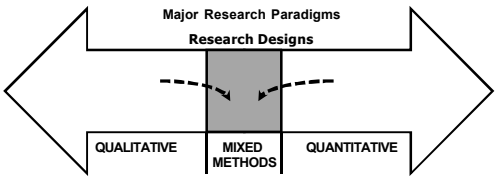
The Arrow Framework

Where is the study in the grand scheme of the Research Paradigms?
What's the Design?



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Research Design Comparison of Characteristics

Qualitative	Quantitative
> Particular-> General	> General -> Particular
> Non-Traditional	> Traditional
> Flexible, evolving	> Controlled
> Multiple interpretations	> Cause-Effect
< Objective Researcher	> Objective Researcher
> Emphasis Text	> Emphasis #s
> Rich, in-depth	> Superficial
> Qual (<quant) Analysis	> Quantitative Analysis
< Generalization	> Generalization

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Example – Hemway, Christman, & Perlman (2013)

Original article

The 3:1 is superior to a 15:2 ratio in a newborn manikin model in terms of quality of chest compressions and number of ventilations

Rae Jean Hemway,[1] Catherine Christman,[2] Jeffrey Perlman[3]

Hemway, R. J., Christman, C., & Perlman, J. (2013). The 3:1 is superior to a 15:2 ratio in a newborn manikin model in terms of quality of chest compressions and number of ventilations. *Archives of Disease in Childhood: Fetal and Neonatal Edition, 98*(1), F42-45. doi: 10.1136/archdischild-2011-301334

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Abstract (p. F42)

ABSTRACT
Background Most cases of delivery room cardiopulmonary arrest result from an asphyxial process. Experimental evidence supports an important role for ventilation during asphyxial arrest. The optimal compression: ventilation (CV) ratio remains unclear and recommendations for newborns have varied from 3:1, 5:1 and 15:2.
Objective Compare 3:1, 5:1 and 15: 2 CV ratios using the two-thumb technique in relationship to depth of compressions, decay of compression depth over time, compression rates and breaths delivered.
Methods Thirty-two subjects, physicians and neonatal nurses, participated with compressions performed on a manikin. Evaluations included 2 min of compressions using 3:1, 5:1 and 15:2 CV ratios.
Results Compression depth was comparable between groups. By paired analysis per subject, the depth was only greater for 3:1 versus 15:2 (ie, 0.91±2.2 mm) (p=0.01) and greater for women than men. Comparing the initial and second minute of compressions, no decay in compression depth for 3:1 ratio was noted, however significant decay was observed for 5:1 and 15:2 ratios (p<0.05). The compression rates were least and ventilations breaths were highest for 3:1 as opposed to the other ratios (p<0.05).
Conclusions Providers using a 3:1 versus 15:2 achieve a greater depth of compressions over 2 min with a greater difference noted in women. More consistent compression depth over time was achieved with 3:1 as opposed to the other ratios. Thus, the 3:1 ratio is appropriate for newly born infants requiring resuscitation.

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Perspective:
- Authors (p. F42)
- IRB (p. F44)
- Funding (p. F44)

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[3]Department of Pediatrics, New York Presbyterian Hospital, Weill Cornell Medical College, New York, New York, USA
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Pediatrics,
Presbyteria
Cornell Me

Contributors All the authors were involved in the conception and design, analysis and interpretation of data. They were also involved in the drafting and revisions of the article for important intellectual content and gave final approval of the version to be published. There is no individual who met the above criteria not listed on the manuscript.
Competing interests None.
Funding Funded in part by a grant from the Academy of Pediatrics.
Ethics approval Institutional Review Board of Weill Cornell Medical College.
Provenance and peer review Not commissioned; externally peer reviewed.

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What is the PROBLEM?

BACKGROUND

Chest compressions with or without epinephrine are an infrequent intervention during delivery room resuscitation in newborn infants, with an estimated occurrence of about 1 in 1000 term deliveries with a higher frequency in preterm infants.[1 2] There are many facets to optimising compressions including the method of administration as well as the optimal ratio. We recently demonstrated in a manikin model the superiority of the two-thumb over the two finger technique for administration of compressions.[3] However the most effective chest compression to ventilation ratio (C:V) in newborns remains controversial.

As a basic physiological principal, cardiac arrest or profound bradycardia in the neonate is invariably secondary to asphyxia, whereas in the adult it is secondary to ventricular fibrillation. During the asphyxial event, blood continues to flow to tissues and arterial and venous oxygen saturations decrease while carbon dioxide and lactate increases for many minutes. In addition, continued pulmonary blood flow before the cardiac arrest depletes the pulmonary oxygen reservoir. By contrast with ventricular fibrillation, effective cardiac output ceases immediately while oxygen levels in the blood remain relatively high for many minutes. Thus, the emphasis during neonatal cardiopulmonary resuscitation (CPR) is on ventilation with increased oxygenated blood to the heart, correction of hypercarbia and improvement in the acidotic state with less emphasis on supporting the relatively resilient heart.

Experimental studies in piglets of asphyxia-induced cardiac arrest demonstrate that the addition of rescue breathing to compressions results in significantly improved outcomes than when compressions are administered alone.[4 5] Manikin studies show varied results when comparing ratios influenced by the manikin used, whether there was a single or dual rescuer, and whether mouth-to-mouth

Background – the Label: Sometimes
- NO header
- "Background"
- "Introduction"
- "Significance"
- … is Mini-lit review

Low Occurrence High Risk Scenario + **Critical, Oxygenation** + **Controversy**

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Framework – Problem… Physiologic

BACKGROUND

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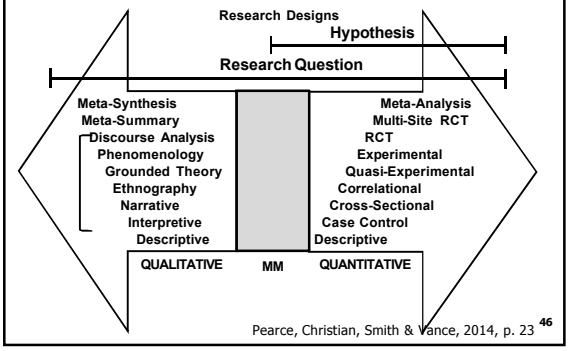
Research Questions, Hypotheses



Pearce, Christian, Smith & Vance, 2014, p. 23

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So…
What's the Research Question?

The study objective was to compare a 3:1, 5:1 and 15: 2 C:V ratio using the two-thumb (TT) technique in relationship to depth of compressions, decay of compression depth over time, compression rates and number of delivered breaths.

ALL ABOUT TRANSLATION

- In manikin simulation scenario, using TT technique, which ratio (3:1, 5:1, 15:2 compressions/ventilations) is most effective in maintaining
  - COMPRESSIONS DEPTH
  - CONSISTENCY OVER TIME (decay)
  - NUMBER OF COMPRESSIONS AND VENTILATIONS

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Purpose and Hypothesis /Research Question

or bag/mask ventilation was provided. Some studies demonstrate the ability to deliver more ventilations with a 3:1 than with higher C:V ratios.[6 7] Other studies suggest that lower ratios of 5:1 result in better quality cardiac compressions than higher ratios, but can be tiring to the rescuer.[8 9] The current neonatal resuscitation programme (NRP) guidelines call for a 3:1 ratio, while the recommendation from the Paediatric Advanced Life Support is for a 15: 2 ratio. We hypothesised that the 3:1 as compared with the 5:1 and in particular the 15:2 ratio would be most advantageous to newborns because of the ability to deliver more consistent chest compressions and provide more ventilations over time. The study objective was to compare a 3:1, 5:1 and 15: 2 C:V ratio using the two-thumb (TT) technique in relationship to depth of compressions, decay of compression depth over time, compression rates and number of delivered breaths.

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So…
How is a Research Question Answered?

…..It's all about Research Design

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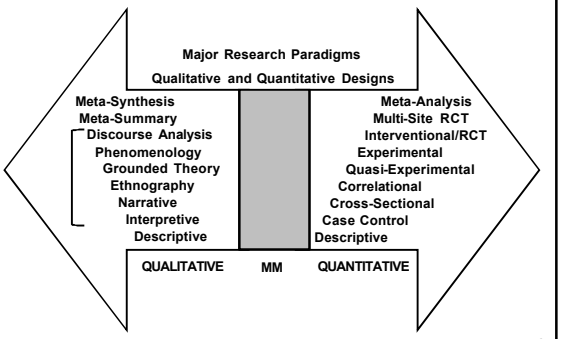
Research Designs



Pearce, Christian, Smith & Vance, 2014, p. 22

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Research Design

Article Example

- Hemway et al. (2013) do not clearly state the research design
- ∴ Reader forced to determine from other information

Observations:

- ONE Group of Providers (*N*=32)
- NO clear intervention
- ONE TIME participation
- ONE ACTIVITY (simulated CPR, 3 ratios)
- COMPARISON across ratios

Descriptive

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Variables (p. f43)

Support is for a 15: 2 ratio. We hypothesised that the 3:1 as compared with the 5:1 and in particular the 15:2 ratio would be most advantageous to newborns because of the ability to deliver more consistent chest compressions and provide more ventilations over time. The study objective was to compare a 3:1, 5:1 and 15: 2 C:V ratio using the two-thumb (TT) technique in relationship to depth of compressions, decay of compression depth over time, compression rates and number of delivered breaths.

Article Example -

Article

Independent Variables & Measurement	Dependent Variables & Measurement
• TT Compression/Ventilation Ratio • Controlled for Sequencing (via randomized assignment to ratio sequence)	• Chest compression COUNT • Chest compression DEPTH • Ventilation COUNT • All OVER TIME (FREQUENCY & DECAY) • Hand Placement? (video, no results or discussion)

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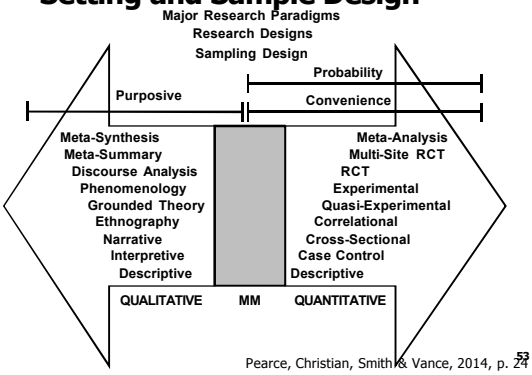
Setting and Sample Design



Pearce, Christian, Smith & Vance, 2014, p. 24

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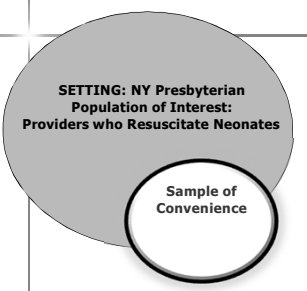
SETTING & SAMPLE (p. F43)



Provider Type	*N*
Neonate Fellows	6
Pediatric Fellows	8
Nurses	11
NPs	5
Attending MDs	2
Total	**32**

Female (*n*=27)
Male (*n*=5)
N=32

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Methods/Procedures (p. F43)

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Ethics

Procedures

IV

METHODS

The Institutional Review Board of Weill Cornell Medical College approved this study and informed consent was obtained from each subject. Thirty-two NRP-trained providers consented and participated in the study. The subjects consisted of neonatal fellows (n=6), paediatric residents (n=8), neonatal nurses (n=11), nurse practitioners (n=5) and neonatal attending (n=2). There were 27 female and five male subjects. Each subject was briefly instructed on the proper application of the TT technique and was asked to perform a C:V ratio of 3:1, 5:1 and 15:2 for 2 min in random order. The subjects did not receive feedback regarding their performance during the study period. Following the study the subjects were asked questions as to which ratio was preferred and the reason for a specific preference.

Chest compressions were performed on a Laerdal Heart Code BLS manikin (Laerdal Corporation, Norway) that records compression depth in millimetres. The manikin approximates a 6-kg infant. The data were continuously recorded into a computer for subsequent analysis. Subjects were also video-recorded for analysis of proper finger placement and alignment.

Article: Measurement (Methods, p. F43)

Variable	How? Technique Laerdal BLS Manikin / Computer Across 3:1, 5:1, 15:2 Rotation
COMPRESSION	
COUNT	Count/min
DEPTH	mm/compression
VENTILATION	
COUNT	Count/min
TIME	Count
	Hand Placement & Alignment
Positioning	Video Recording
	Participant Ratio Preference
Preference	Self-reported w/Rationale

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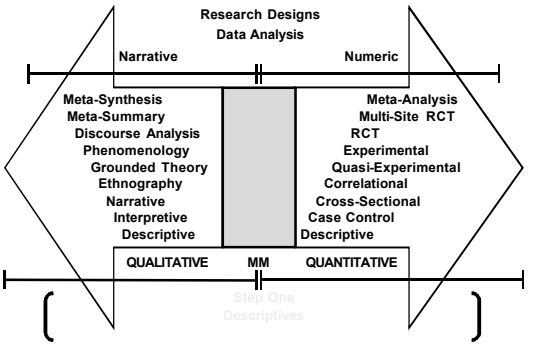
Data Analysis – Step One



Pearce, Christian, Smith & Vance, 2014, p. 25

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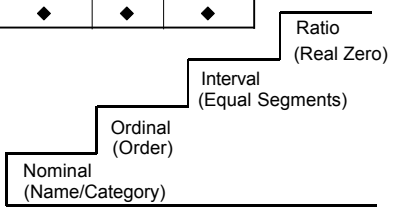
Quantitative Data Analysis – Levels of Measurement

	Describe	Count	Compare
Ratio	◆	◆	◆
Interval	◆	◆	◆
Ordinal	◆	◆	◆
Nominal	◆	◆	◆



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Data Analysis – Step One Article Example

The sample size was one of convenience. Data were analysed using t tests (unpaired and paired), using parametric and non-parametric measures where appropriate, analysis of variance for repeat measures and χ^2 analysis. To assess variability between compressions, a coefficient of variation derived from the SD/mean and expressed as a percentage was calculated. The potential effect of decay in depth over time was examined comparing the first versus the second minute of compressions as well as the initial 25 versus the last 25 s of compressions. The latter was

- *t*-test (paired and unpaired)
- Parametric and non-parametric where appropriate
- Analysis of variance for repeat measures
- *Chi-square* (X^2)

p. F43 60

Data Analysis – Step Two

Qualitative Analysis

- Meta-Synthesis Critique & Analysis
  - Discourse Analysis
  - Phenomenological Analysis
  - Grounded Theory Analysis
  - Ethnographic Analysis
  - Narrative Analysis
  - Interpretive Analysis
- Descriptive
  - Content Analysis
    - Categories, Themes, & Patterns

Multivariate & Inferential Statistics

- SEM
- Causal Modeling/Path Analysis
- Survival Analysis
- Logistic Regression
- Multiple Regression
- General Linear Model
- ANCOVA, MANCOVA
- ANOVA, MANOVA
- *t*-test
- Correlation
- Chi-Square

Pearce, Christian, Smith & Vance, 2014, p. 25

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Data Analysis – Step Two

Article Example

- COMPRESSION VARIABILITY
  - Coefficient of variation (COV): *m* & *sd* into %
- COMPRESSION DECAY
  - 1st & 2nd Min; first & last 25 sec

> The sample size was one of convenience. Data were analysed using t tests (unpaired and paired), using parametric and non-parametric measures where appropriate, analysis of variance for repeat measures and χ^2 analysis. To assess variability between compressions, a coefficient of variation derived from the SD/mean and expressed as a percentage was calculated. The potential effect of decay in depth over time was examined comparing the first versus the second minute of compressions as well as the initial 25 versus the last 25 s of compressions. The latter was

p. F43

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Data Analysis Table (Methods, p. F43)

Variable	Descriptive:Frequencies	Comparisons
COMPRESSION		
COUNT	Count/min/ sequence	COV 1st & 2nd min 1st & final 25 sec
DEPTH	Depth (mm)	Across Ratios
VENTILATION		
COUNT	Count/min	Across Ratios
TIME	Count	
Positioning	No information provided	None
Preference	No information provided	None

Results (p. F43)
Use Table 1: Compressions & Ventilations

Compression Depth and Ratio & Ventilation Counts (*p*-value)			
	3:1 (*p*)	5:1 (*p*)	15:2 (*p*)
DEPTH (mm)	27.0 ±5.3	26.7 ±5.3	26.2
COV (%)	5.5 ±3.4	6.8 ±2.6	7.1
Decay			
1st–2nd 60 sec	0.36 ±1.72 (0.11)	0.58 ±1.51 (0.02)	0.86 ±1.88 (.009)
1st–last 25 sec	0.54 ±1.64 (0.036)	0.98 ±2.47 (0.01)	1.29 ±2.71 (.007)
Compression /2 min	194.0 ±36	213.0 ±41*	225.0 ±41**
Ventilation /2 min	64.0 ±3.4***	42.0 ±8	30.0 ±5.4

*p=0.02 (3:1 v 5:1)
**p=0.001 (3:1 v 15:2)
***p=0.00005 (all ratios different from each other)

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RESULTS – SUMMARIZE

Compression Depth and Ratio & Ventilation Counts (*p*-value)			
	3:1 (*p*)	5:1 (*p*)	15:2 (*p*)
Decay			
1st–2nd 60 sec	0.36 ±1.72 (0.11)	0.58 ±1.51 (0.02)	0.86 ±1.88 (.009)
1st–last 25 sec	0.54 ±1.64 (0.036)	0.98 ±2.47 (0.01)	1.29 ±2.71 (.007)
Compression /2 min	194.0 ±36	213.0 ±41*	225.0 ±41**
Ventilation /2 min	64.0 ±3.4***	42.0 ±8	30.0 ±5.4

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Article Example: Preferences (p. F43)

> By self-assessment, 24/32 (75%) providers preferred the 3:1 ratio over the 5:1 or the 15:2 ratios; 8/32 (25%) preferred the 5:1 ratio or found it equivalent to the 3:1 ratio and no subject preferred the 15: 2 ratio. Specific issues related to the 15:2 included that this ratio was mentally more difficult (70%), more tiring (30%) and forced the provider to stay focused (30%).

Provider Preferences	
Ratio	*n* (%)
3:1	24 (75)
5:1	8 (25)
15:2	0

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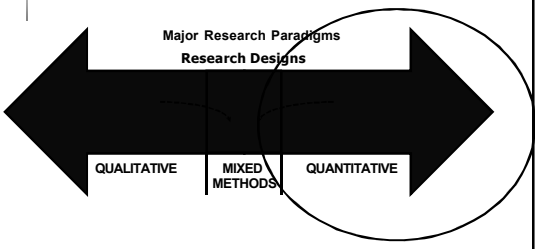
Where does the report fall in the grand scheme of the Research Paradigms? Research Designs?



Pearce, Christian, Smith & Vance, 2014, p. 22

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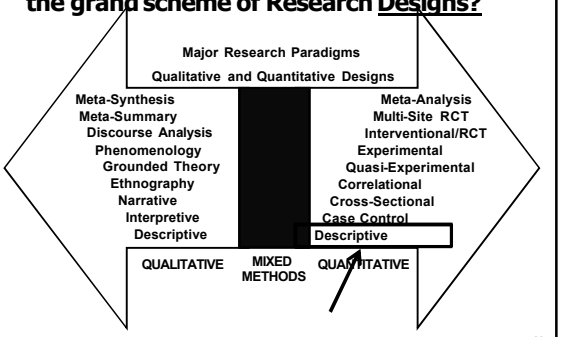
Where does the research reported fall in the grand scheme of Research Designs?



Pearce, Christian, Smith & Vance, 2014, p. 22

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Article Example: Discussion (p. F43)

DISCUSSION

The findings in this manikin study demonstrate that providers using a 3:1 ratio as compared with a 15:2 ratio achieve a greater depth of compression over 2 min with a greater difference noted in female as compared with male subjects. No differences in whether mouth-to-mouth or bag/mask ventilation was peovided. Some studies demonstrate the ability to deliver more ventilations with a 3:1 compression to ventilation ratio which is consistent with the observations in this study.[6 7] Lower ratios, 5:1, result in better quality cardiac compressions than higher ratios but can be tiring to the rescuer.[8 9]

Despite these experimental and manikin observations, intellectual debate continues as to the optimal ratio to administer during neonatal CPR. Some progress was made during the most recent International Liaison Committee on Resuscitation (ILCOR) consensus on science conference, where it was acknowledged that the cause of the arrest is critical when considering the most appropriate ratio.[12] Thus, with an asphyxial aetiology, a ratio that facilitates more ventilations should be the goal, whereas with a cardiac arrest more compressions than ventilations should be administered.

Summary

Compare to ROL

New Controversy

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Article Example: Education and Clinical Implications for Future Research

The data in this report raise additional educational aspects to this debate. Thus, providers vary widely in the depth achieved during a 2-min paradigm, and some are unlikely to achieve the 'des posterior diameter depth'.[13] Mo urs over time particularly with a 5:1 tios during the last phase of compres CPR is rare, reported in about 1 per 1000 deliveries, it becomes critically important for providers to become competent in achieving a consistent and appropriate depth over time irrespective of the ratio used. Otherwise, if the emphasis is on compressions during an asphyxia-related arrest, the administration of suboptimal compressions may further compromise recovery of spontaneous circulation.

"Education"
Competency
Underlying Pathophysiology
Guidelines

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Author-Identified Limitations

1. There are several limitations to this study. First, we used a manikin model that is somewhat larger and potentially offers more resistance than a newborn, and may have accounted for some of the observed findings in this study. However, this potential factor should have been minimised as each subject served as his/her own control in a random manner. Second, this study did not evaluate the impact of the different ratios on the ability to provide effective ventilation breaths. Third, since all the participants were healthcare professionals and most from the neonatal area, it is entirely possible that this may have biased the subjective findings towards favouring a 3:1 ratio.

Bias Potential: Measurement (❶❷❸) and Selection (❷)

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Conclusions (p. F45)

In conclusion providers achieve a greater compression depth with a 3:1 as opposed to a 15:2 ratio and demonstrate a significant and progressive decay in compression depth over time particularly with higher ratios. When considering the optimal compression to ventilation ratio in the neonatal period, consideration should also be given to the presumed aetiology of the arrest.

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References Listed

- *N* =13
- Dated 1995 through 2011
- All Journal Citations
  - e.g., primary or secondary?
- 6 peer-reviewed Journals represented

- Current, Classic, Seminal?
- Do not limit to simply 5 years.
- Primary Sources or Secondary Sources?
- Peer-reviewed or not
- ROL – is often MINIMAL
- See Vance, Talley, Azuero, Pearce, & Christian (2013)

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Article Evaluation – Our Critique

Article

Limitations
•Sample – convenience; small N; little contextual information •Simulation (manikin) vs. real scenario (application in real?) •Data collected not reported (video->hand placement) •Minimal address of preferences (but not part of RQ, so not a big deal). •Reporting statistics – really need to provide the STATISTICAL TEST complete (meaning F for ANOVA, T for T, and result) •Discussion is limited

Pearce, Christian, Iribarren, Luther, & Vance, 2014, *Under Review*
Vance, Talley, Azuero, Pearce, & Christian, 2013

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Evidence Hierarchy

- Birthed in Editorial (Sackett, 1996)
- Carried forward by others
- Adapted over time
- Different hierarchies are available

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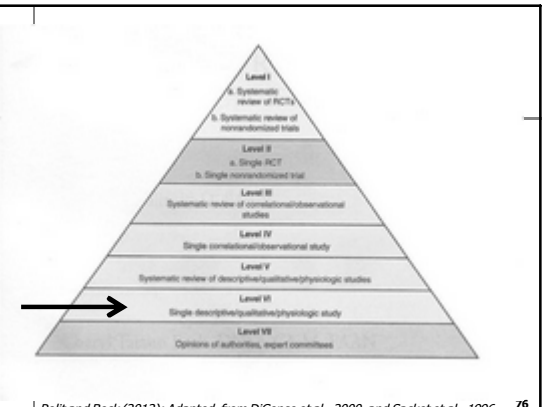

Polit and Beck (2012): Adapted from DiCenso et al., 2000, and Sacket et al., 1996

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Conclusions… In a Nutshell….

- The Arrow Framework provides a systematic framework to guide teaching and learning
- Systematic Approach to Evaluating and Understanding Evidence
- Helpful hints included in article

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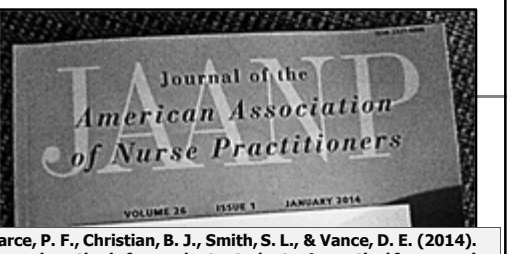

THANK YOU!!!!

Questions?

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