

# THE ROAD TO HERE... ~~THE~~ RESEARCH JOURNEY MY

*Lehigh Valley Health Network  
Nursing Research 2014*

*“Empowerment – The Journey from Paper to Practice”*

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University of Pennsylvania, School of Nursing

Nurse Practitioner, Division of Anesthesiology and Critical Care

Medicine; Critical Care Nursing

The Children’s Hospital of Philadelphia

# Greetings from Philadelphia



 The Children's Hospital of Philadelphia®  
Hope lives here.



# *OBJECTIVES*

- ✧ Describe the progression of a clinical research path
- ✧ Characterize development of a research focus for clinical practice
- ✧ Define the process for ongoing clinical practice and clinical research



Where does *RESEARCH* fit?

# What is Nursing?

- *“Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations.”*

*<http://www.nursingworld.org/EspeciallyForYou/What-is-Nursing/default.aspx>*

- *individuals who put patients in the best possible condition for nature to act upon him.*

*Nightingale, 1860*

# NURSING SCIENCE



# WHAT IS A RESEARCHER?

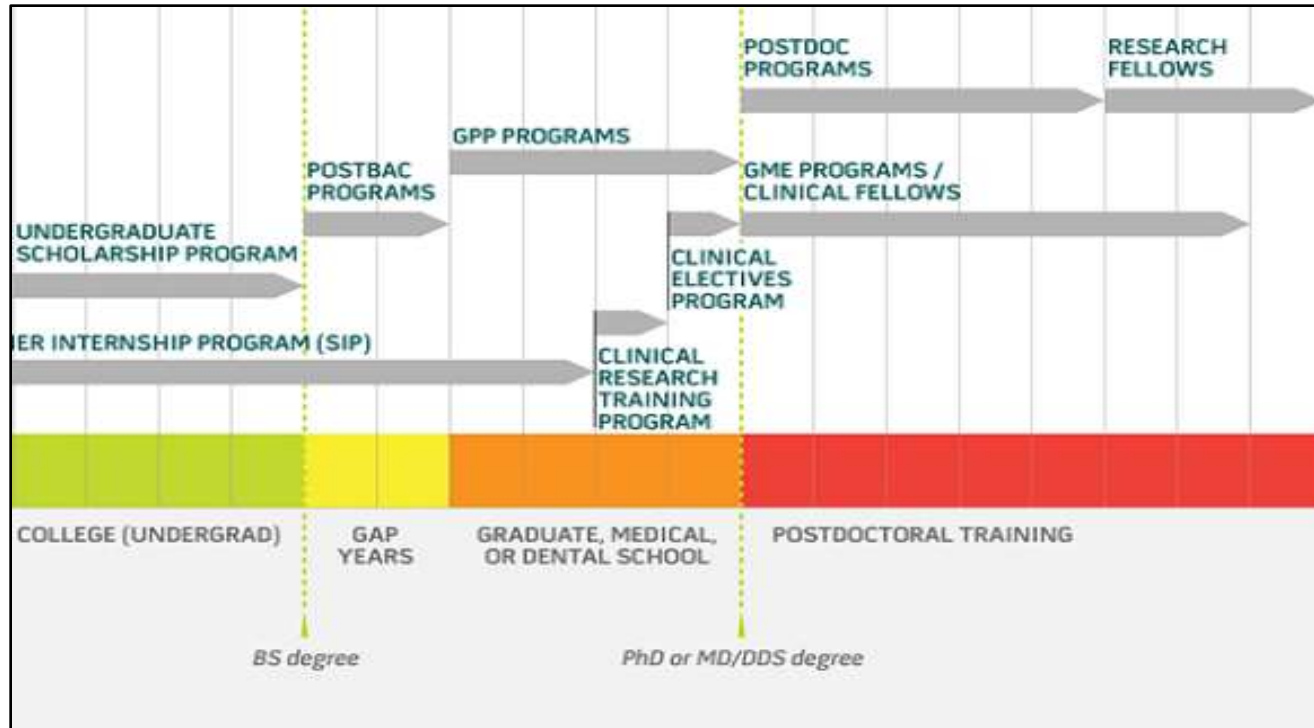
A researcher is a scholar who can, or will in time through learning and experience, demonstrate:

- Specialized knowledge / expertise with conceptual and intellectual capabilities
- Academic skills with the ability to compose and disseminate high-quality, clearly composed work
- Use skills that allow for the gathering, organization, analysis and interpretation of data
- Ambition; work to high standards, take initiative and responsibility
- Organization for procedures with balance that allows for effective productive collaboration
- Social skills that allows for effective and appropriate collegial exchanges
- Ability to adjust to different circumstances and situations as required

<http://port.modernlanguages.sas.ac.uk/researcher>

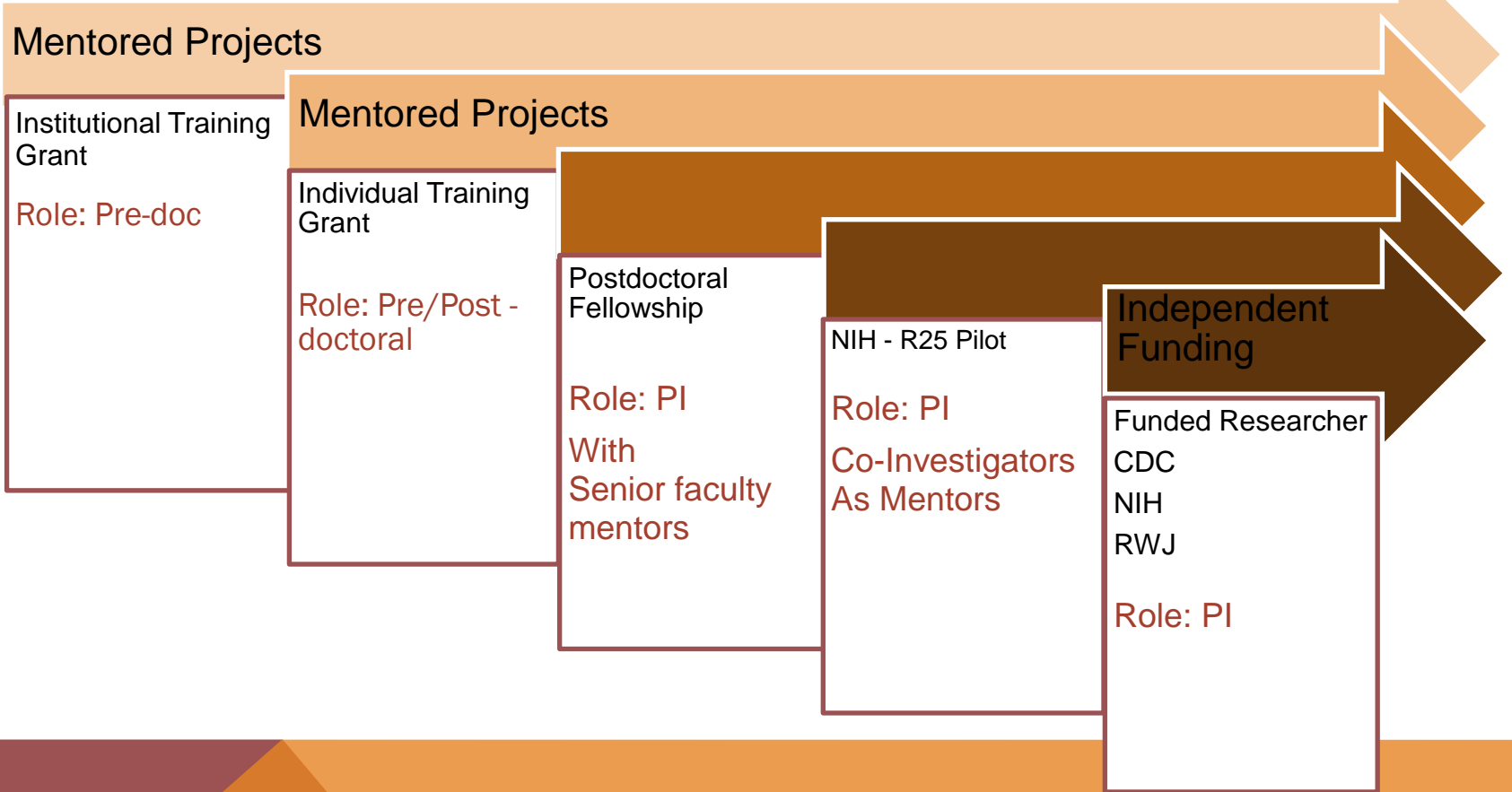
## *Are nurses natural Researchers?*

# NIH INTRAMURAL RESEARCH TRAJECTORY



<http://irp.nih.gov/sites/default/files/nih-training-programs.png>

# RESEARCH TRAJECTORY





# NIH Clinical Research Pathway

## Nursing Career Path in Research at the NIH Clinical Center



[http://clinicalcenter.nih.gov/nursing/images/Nursing\\_Career\\_Path.png](http://clinicalcenter.nih.gov/nursing/images/Nursing_Career_Path.png)

# My Path

- ❖ After the BSN
  - NICU in NYC
  - NICU in Houston
  - PICU in Houston
  - PICU in California
  - PICU in DC
- ❖ Clinical Experience →  
Course to understand  
Nursing / Clinical Research  
Questions

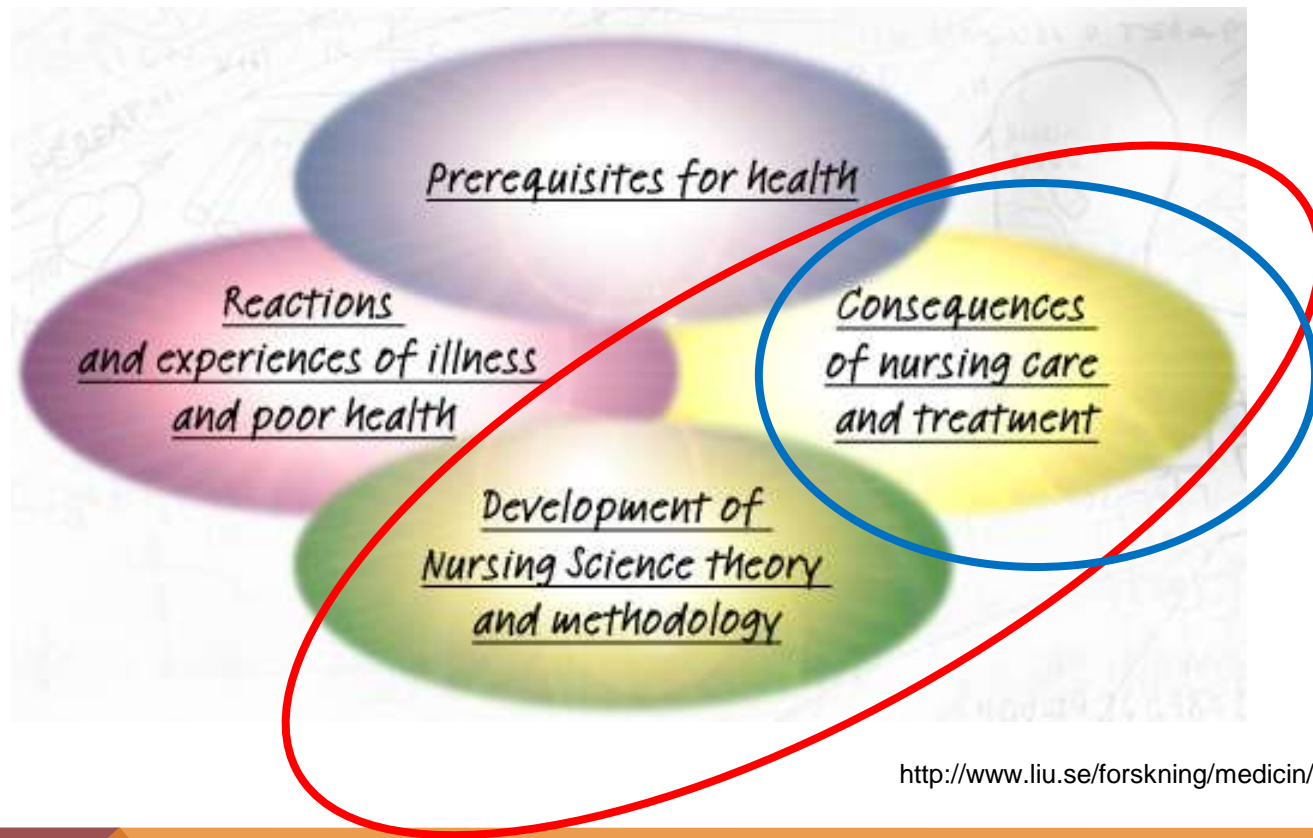
## A Bit of a Hybrid





1993 MSN, University of Pennsylvania  
1<sup>st</sup> Formally educated  
Pediatric Critical Care NPs

# NURSING SCIENCE



<http://www.liu.se/forskning/medicin/omvardnad?l=en>

# Publications

Irving-Daniels, S. (1996). *Hematologic disorders*. In [P.A. Moloney-Harmon, S. J. Czerwinski \(Eds.\)](#), *Studies in Pediatric Critical Care Nursing* (118-128). Philadelphia: W.B. Saunders Company.

Crit Care Med. 2000 Jul;28(7):2626-30.

***Defining the role of the pediatric critical care nurse practitioner in a tertiary care center.***

[Derengowski SL, Irving SY, Koogle PV, Englander RM.](#)

AACN Clin Issues. 2000 Nov;11(4):541-58; quiz 637-8.

**Nutrition for the critically ill child: enteral and parenteral support.**

[Irving SY, Simone SD, Hicks FW, Verger JT.](#)

AACN Clin Issues. 2005 Apr-Jun;16(2):178-84.

***Munchausen syndrome by proxy: a case report.***

[Lieder HS, Irving SY, Mauricio R, Graf JM.](#)

# Resistant



I am NOT  
going back  
to school!!!

# CLINICAL RESEARCH

Project Manager:

## **“Feeding Behaviors and Energy Balance in Infants with Congenital Heart Disease”**

*\*NIH/NINR R01 NR002093; MO1-RR00240; UL1-RR-024134),  
Principal Investigator: Barbara Medoff-Cooper, PhD, RN, FAAN*

Study Aims:

- Describe feeding patterns
- Measure the energy needs of infants with CHD during the first year of life
- Determine contributions of disrupted / poor feeding organization and energy needs to unfavorable growth outcomes in infants with CHD

# WHAT IS A RESEARCHER?

A researcher is a scholar who can, or will in time through learning and experience, demonstrate:

- Specialized knowledge / expertise with conceptual and intellectual capabilities
- Academic skills with the ability to compose and disseminate high-quality, clearly composed work
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- Social skills that allows for effective and appropriate collegial exchanges
- Ability to adjust to different circumstances and situations as required

<http://port.modernlanguages.sas.ac.uk/researcher>

## *Nurses are natural researchers?*





# CHOP

- ① 3RD F/U CALL
  - 1 wk → 2 days prior to visit
  - CTCS / SCHEDULING
- ② CLINIC CHARTS
  - SCANNING (BAR CODES)
  - BLOOD TUBE LABELS
- ③ CLINIC VISIT DAY
  - CONSENT / GC / SIGN BLOOD
  - BUCCALS (1st / 2nd)
  - ASSESSMENTS
    - MULLEN
    - ADOS
    - ADI
    - VINELAND
- A) DISMORPHOLOGY EXAM
- B) BLOOD DRAW
- C) DIET / STOOL
- D) QUESTIONNAIRES
- E) SUPPLIES

# CALLS

- ① DCC
- ② DCC
- ③ DCC
- ④ DCC
- ⑤ DCC
- ⑥ DCC
- ⑦ DCC
- ⑧ DCC
- ⑨ DCC
- ⑩ DCC

# INTERACTIVE

- ③ 3RD F/U CALL
  - 2-23 with PRIOR TO VISIT
- Post CLINIC F/U LETTER
  - TRACKING CIS
  - SCHEDULING
  - DATA ENTRY
- IRB (NITE MARE!!!)
  - TRAINING
- ④ FOLLOWING VISIT
  - SCANNING
  - SCANNING
  - SHIPPING
  - TRAVEL 3550
- A) RESCHEDULE
- B) CANCELLING
- ⑤ DISMORPHOLOGY
  - FILE PRINTING
  - MEASURE HEAD
  - ELKING
  - LIPLOAD
  - NAILING
  - MARKING
- ⑥ F/U LETTER
- ⑦ DATA ENTRY
- ⑧ QUALITY I / CWG

# PENN

- ① INVITE PACKETS
  - TRACKING
  - TRAVEL
  - PACKING
- ② RECRUITMENT PROCESS
- ③ ENROLLMENT
  - PHONE CALLS
  - A) INVITE
  - B) PACKETS
    - SCANNING
    - CREATE
  - C) 1st F/U CALL
    - CGI (SCH)
    - QUESTIONNAIRE
  - D) 2nd F/U CALL
    - CLINIC VISIT
    - 2ND QUESTION
  - E) HOME VISIT
  - \* F) 3RD F/U CALL
    - CGI
    - FINANCIAL TRACKING
    - GC
- DATA COLLECTION
- ④ QUALITY CONTROL
- ⑤ DIET / STOOL
- ⑥ DATA ENTRY
- ⑦ DATA CLEANING
- ⑧ MRA
  - REQUESTS
  - EXTRACTION
- ⑨ SUPPLIES
- ⑩ DCC
  - BUG

# RELATED PUBLICATIONS

[Weight change in infants with a functionally univentricular heart: from surgical intervention to hospital discharge.](#)

Medoff-Cooper B, **Irving SY**, Marino BS, García-España JF, Ravishankar C, Bird GL, Stallings VA. *Cardiol Young*. 2011 Apr;21(2):136-44. doi: 10.1017/S104795111000154X. Epub 2010 Nov 12. PMID: 21070691 [PubMed - indexed for MEDLINE]

[Poor post-operative growth in infants with two-ventricle physiology.](#)

Anderson JB, Marino BS, **Irving SY**, García-España JF, Ravishankar C, Stallings VA, Medoff-Cooper B.

*Cardiol Young*. 2011 Aug;21(4):421-9. doi: 10.1017/S104795111000229. Epub 2011 Mar 9. PMID: 21385513 [PubMed - indexed for MEDLINE]

[Infant temperament and parental stress in 3-month-old infants after surgery for complex congenital heart disease.](#)

Torowicz D, **Irving SY**, Hanlon AL, Sumpter DF, Medoff-Cooper B.

*J Dev Behav Pediatr*. 2010 Apr;31(3):202-8. doi:10.1097/DBP.0b013e3181d3deaa. PMID: 20375737 [PubMed - indexed for MEDLINE]

# Mentors



[Challenges to conducting multicenter clinical research: ten points to consider.](#)

Irving SY, Curley MA.

**AACN Adv Crit Care.** 2008 Apr-Jun;19(2):164-9. doi: 10.1097/01.AACN.0000318119.67061.0f.

PMID: 18560285 [PubMed - indexed for MEDLINE]

*... "Caring relationships that facilitate healing..."*



[Innovative strategies for feeding and nutrition in infants with congenitally malformed hearts.](#)


Medoff-Cooper B, Irving SY.

**Cardiol Young.** 2009 Nov;19 Suppl 2:90-5. doi: 10.1017/S1047951109991673. No abstract available.

PMID:19857355 [PubMed - indexed for MEDLINE]

*... "Its about feeding these babies..."*

# *Resistant*

A black and white cartoon drawing of a man with a large nose and glasses, looking thoughtful with his hand on his chin. A thought bubble is connected to his head by three small circles.

I am NOT  
going back  
to school!!!

A dark red horizontal banner with the text "RESISTANCE WAS FUTILE" in white, outlined, capital letters.

**RESISTANCE WAS FUTILE**

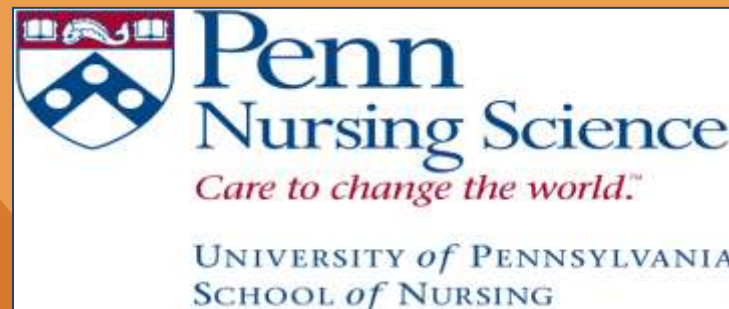


*...And then the PhD*

Patterns of Weight Change in Infants with  
Congenital Heart Disease  
Following Neonatal Surgery:  
Potential Predictors of Growth Failure

*SHARON Y IRVING, RN, MSN, CRNP*  
*DISSERTATION DEFENSE*

*JUNE 29, 2011*



# DISSERTATION WORK

## Resting Energy Expenditure at 3 Months of Age Following Neonatal Surgery for Congenital Heart Disease

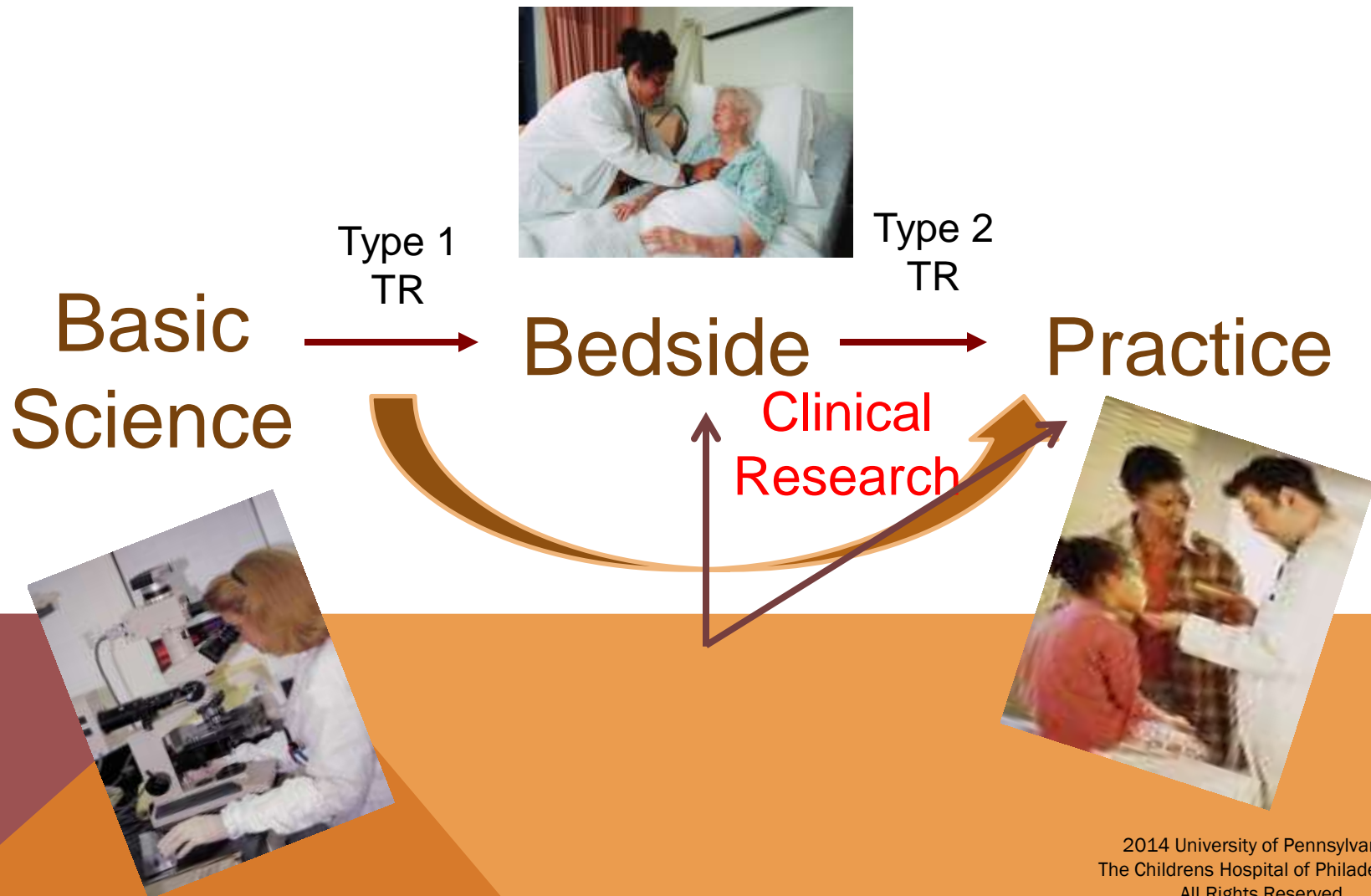
Irving SY, Medoff-Cooper B, Stouffer NO, Schall JI, Ravishankar C, Compher CW, Marino BS, Stallings VA.

*Congenit Heart Dis*. 2013 Jul-Aug;8(4):343-51. doi: 10.1111/chd.12035. Epub 2013 Jan 30. PMID: 23360096 [PubMed - indexed for MEDLINE]

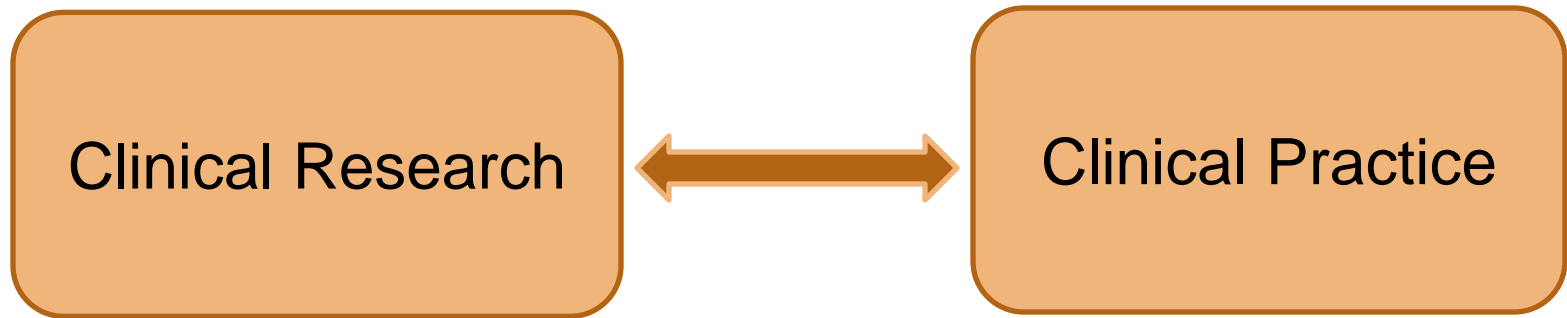
### Findings:

- No difference in resting energy expenditure
- Infants with CHD were smaller and had lower growth z-scores
- Infants with CHD had decreased %body FAT which may contribute to poor growth in this population

# Translational Research



# *What is the reciprocal relationship*



Directly involves a person  
or population of persons

Performance of actions  
directly related to patient  
care/clinical services to  
patients





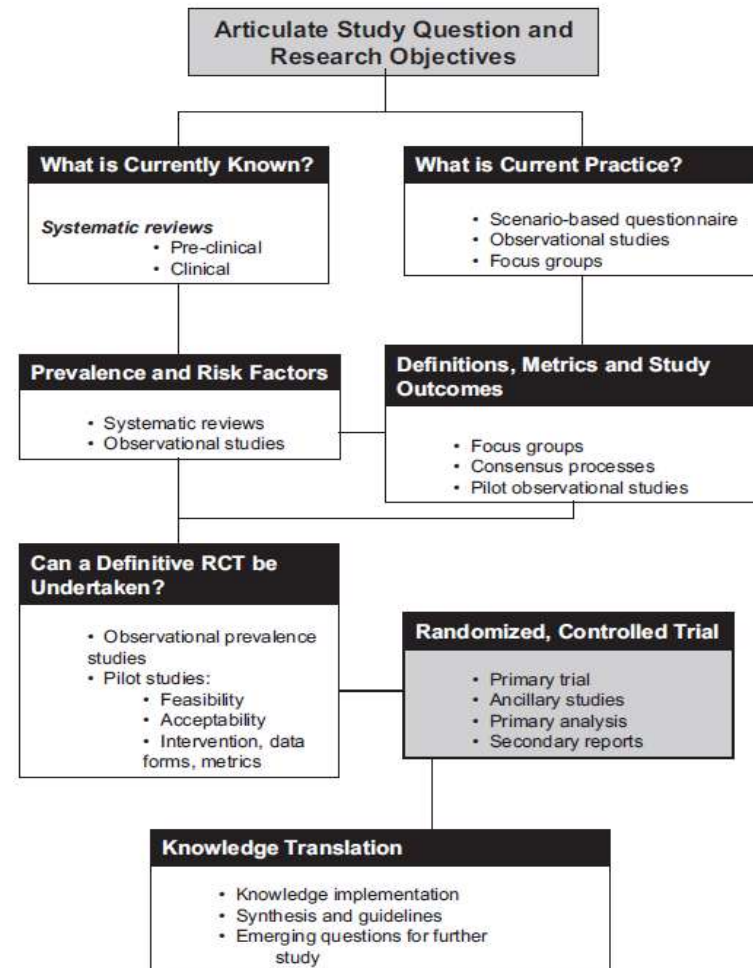
# PROGRAM OF RESEARCH

## Building a Program of Research

Clinical research is undertaken to resolve uncertainty

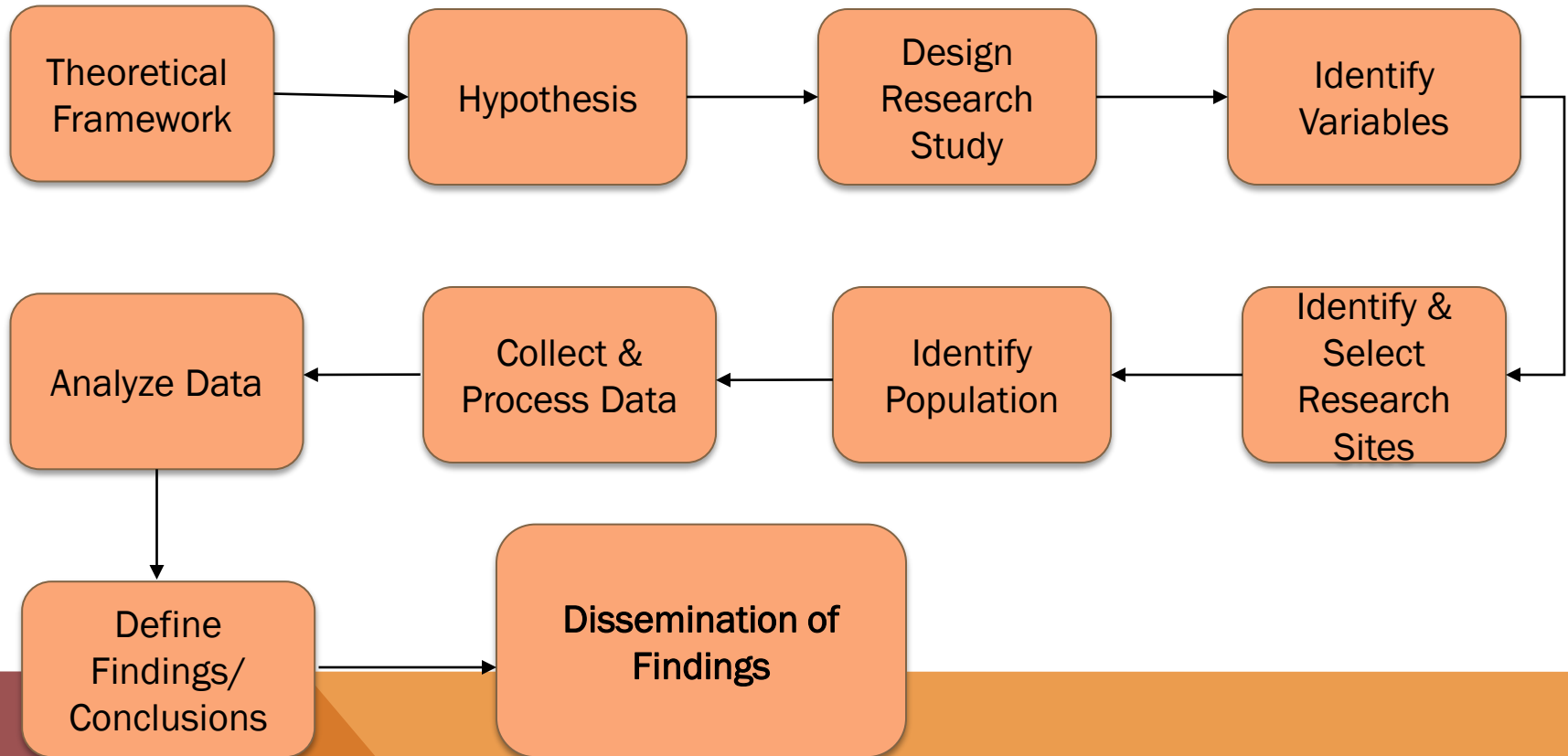
A research program ...

- defines that uncertainty
- establishes its relevance, &
- determines the feasibility of answering questions



Marshall, JC et al. *Crit Care Med* 2009; 37[Suppl.]:S165–S172

# STEPS IN RESEARCH PROCESS\*



\*Ladner, 2008

# EXAMPLE

## **Question:**

*What are the energy needs of pediatric patients with a tracheostomy who are mechanically ventilated?*

## **Background:**

Prediction equations are known to be inadequate to determine energy needs in critically ill patients. Often the needs of these patients is different from both the critically ill and from typically developing children. There are many instances of over- or underfeeding these children as their needs, activity and growth are different from typically growing children.

# *CURRENT STUDY*

## **Resting Energy Expenditure Measurement by Indirect Calorimetry (IC) in Children Ventilated via Tracheostomy: Feasibility and Ventilator Testing**

### Study Rationale:

- Indirect calorimetry (IC) to measure resting energy expenditure (REE) is preferable to standard equations
- REE measurement by IC has not been previously studied in ventilated children at CHOP
- IC, if feasible, has the potential to improve clinical outcomes in these vulnerable children by improving the efficacy and efficiency of nutritional support

### Study Aims:

- To determine feasibility and tolerability
- To determine reproducibility of REE measurements
- To determine impact of ventilator variables on REE measurements by IC

# STUDY PROPOSAL

## **Evaluation of the Safety and Efficacy of Use of TubeClear® in Pediatric Patients to Restore Patency to Occluded Enteral Access Devices**

Investigational Device Study – Industry sponsored

Study Aims:

- Decrease intervention time interval from identification of occluded feeding tube to restoration of patency; comparison of standard treatment and use of device to restore patency in feeding tubes in children
- Determine safety and efficacy between device and standard treatment

# *CLINICAL RESEARCH*

- Has a similar but different path to traditional
- Often is initially internally supported → volunteer time
- May see short term benefits of the project
- Follows a research process
- Conflicts can arise as the clinical provider versus the researcher
- Can be fun and very collegial

*All research requires a passion for your topic...*

# *PROGRAM OF RESEARCH*

## **Nutrition during critical illness of infants and children**

Current Funding Sources:  
Internal Funding – CHOP

Benefit of Current Program of Study:  
Change in Practice  
Short term evaluation of care

Potential of external funding and  
multicenter clinical study



# AIM HIGH!!!

*There is nothing you  
cannot accomplish  
once you put your  
mind to it!!!*

*Clinical Research  
is Attainable*





*Thank You!*

*QUESTIONS???*



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