Visioning and Planning a Research Program

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What is a Research Program?

A **progressive series/cluster of studies** that **builds knowledge systematically** in a **focal area** under the **leadership** of a **scientist or a group of scientists**
Focal Area

• Reflects a knowledge—not a practical/practice—problem, should have practical/practice implications

• Fits within scope of nursing, ideally with a direct link to a practice issue

• Is significant and timely—yet not trendy, is attractive to funding agency

• Builds from dissertation (ideal), may be next logical step in sequence or adapt concepts/theory from parent field to new/nursing context
Example: Wandering in Dementia

- Knowledge problem:
  - What does wandering mean for the person who does it?
  - What does wandering behavior indicate? How should we regard it?

- Practical/practice implications:
  - What should be done about wandering, if anything?

- Fits within scope of nursing:
  - Wandering is a care issue for nurses working with people with dementia

- Is significant, timely, attractive to funders
  - Wandering is a hazard for people who do it and affects those caring for them.
  - Number affected and associated costs of care forecast to increase.
  - National Alzheimer’s Association and NIH had initiatives to support AD research

- Builds from dissertation (ideal):
  - Was focus of dissertation
Builds Knowledge Systematically

• Envisions an **over-arching goal** stating the knowledge outcome sought within the focal area

• Requires:
  – a thorough comprehensive literature review in the focal area that concludes with a **summary of the current state of the science**
  – **identification of the gap** between what is known and what is needed to be known to meet the overarching goal

• Starts by planning first study (or studies) that begin to fill in the gap (uses backwards thinking)

• Continues through on-going assessment of how one’s findings and other newly published research affects the path toward the goal or the goal itself
Example: Builds Systematically

• Over-arching goal
  – To inform care through development and testing of theoretically-driven, empirically-tested interventions for wandering in dementia

• Gaps that emerged initially (late 1980s)
  – No consensus definition, no standard of measurement
  – Basis of behavior unknown; one implicit “theory” of etiology
  – Emphasis on “nuisance value” to staff; meaning to patient missing
  – No tested interventions; 2 care opinions: eliminate vs. allow in safe area

• First studies: address definition, theoretical, methodological gaps
  – Dissertation: Cognitive and Social Discriminants of Wandering
    • introduced person-environment interaction perspective; use of technology to quantify wandering
  – Naturalistic descriptive work
    • Create a “picture of the behavior”
    • Used rhythm theory as heuristic device in support of measurement approach
    • Combined observation and technology for measurement, increase rigor
  – First experiment involving light level manipulation, based on rhythm theory

• On-going assessment of wandering science
  – Geographic patterns identified by Martino-Saltzman et al., 1991
  – Early atheoretical intervention studies emerge, mid 1990s
Progressive Series or Cluster

• Describe, explain, predict, control

• Phases of Clinical Trials (NIH)
  – Phase 1: test new intervention, small group, 1st time, safety
  – Phase 2: larger group, safety and efficacy
  – Phase 3: large group, efficacy compared to other Tx; monitor adverse events
  – Phase 4: effectiveness of approved intervention in general pop; adverse events controls

• Phases of Nursing Clinical Trials (Whittemore & Grey, 2002)
  – Phase 1: Basic research
  – Phase 2: Pilot research
  – Phase 3: Efficacy clinical trial
  – Phase 4: Effectiveness clinical trial
  – Phase 5: Effects on public health; wide scale implementation

• Translational Research Phases
  – (Woods & Magyary, 2010)
  – www.iths.org/about/translational
Phases of Nursing Clinical Trials

Phase

• Basic Research
  – Concept and theory development
  – Exploratory/descriptive research
  – Synthesis of research
  – Methodological, intervention de vel.

• Pilot Research
  – Adequacy of theory, endpoints
  – Analysis of implementation of intervention
  – Establish protocol
  – Preliminary efficacy, power analysis
  – Preliminary analysis of extraneous factors

• Efficacy clinical trial
• Effectiveness clinical Trial
• Effects on public health

Outcome

• Establish content/strength/timing of intervention
• Refine intervention & outcome measures

• Determine clinical efficacy
• Determine clinical effectiveness
• Determine effect on public health
Progressive Series or Cluster

• Frame your research program (overarching goal) within one of these trajectories
• Situate your initial studies or current work at the appropriate point along the trajectory
• Realize that each Phase may entail more than one research question or hypothesis; try to design studies that answer as much of what is needed at that phase as possible.
• Try to consider simultaneous advancement of theory and methods along with intervention development and testing
• To evaluate feasibility of data collection approaches for use with the target population:
  – simultaneous use of Actigraph and StepSensor technology over an extended period of time,
  – wireless technology to capture ambulatory patterns and to detect wandering remotely, and
  – computerized cognitive testing;

• To evaluate feasibility of reliable delivery of intervention by indigenous nursing home personnel:
  – ability to acquire appropriate technique,
  – ability to adhere to a prescribed protocol consistently, and
  – ability to document intervention delivery accurately;

• To collect preliminary cost estimates for use of indigenous nursing home personnel as interveners;

• To generate estimates of the efficacy of blue-green versus red light for:
  – improving sleep parameters,
  – improving directed attention and short-term memory, and
  – reducing wandering behavior.
Scientific Leadership

• If research program is unique, significant and timely, you are positioning yourself to become the leader in the field.

• Establish your leadership through early publication; start with SOS literature review, clinical papers, conceptual or theoretical works WHILE YOU ARE PLANNING THE PROGRAM AND DOING INITIAL STUDIES

• Network with people doing related, but not identical work; pick established people; you will need them later
Creating a Science Team

• Team approach is vital
• Member types
  – academics, clinicians, and students,
  – interdisciplinary players
  – intra- or inter-institutional
  – evolves over time
• Choice of members driven by
  – scientific, clinical, and technical needs of the research program
  – aims of a given project
• Source of members
  – local experts with common interests
  – access to the population
  – knowing the literature
  – networking
  – protégés
• A word on “Team Science”
Characteristics of Programmatic Research

✓ Develops factual knowledge about a focal area while simultaneously advancing methodology and theory
✓ Increases in depth, scope, complexity/sophistication over time
✓ Attracts students, other scientists, and other disciplines
✓ Provides a foundation for and/or influences the direction of science in the focal area