

# Measuring Patient Outcomes in Various Care Settings

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Nevada Dietetic Association Annual Meeting  
April 1, 2017



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## Objectives

List the steps required to identify a healthcare benchmark.

Take action to advocate for increased access to MNT services in at least 2 different ways.

## Session Abstract

We know that RDNs help patients and clients lose weight, reduce complications from chronic diseases, and have an improved quality of life. Success stories & client testimonials are great, but actual patient outcomes need to be documented to convince decision-makers like Medicare and insurance companies to pay for RDN services. This session will provide practical steps to create a benchmarking program to document patient outcomes in multiple care settings, including hospitals, outpatient clinics, private practice, and other hospital settings. A secondary focus will be advocating for increased access to MNT services for patients and clients.

## Types of Research

## Qualitative vs Quantitative Research

### Qualitative

- ▶ Understand underlying reasons, opinions, and motivations
- ▶ Develop hypotheses for potential quantitative studies

### Quantitative

- ▶ Quantify the problem with numerical data
- ▶ Correlational, quasi-experimental and experimental

## Qualitative vs Quantitative Research

### Qualitative

- ▶ Subjective
- ▶ Develops theory
  
- ▶ Complex and broad
- ▶ Small sample size

### Quantitative

- ▶ Objective
- ▶ Tests theory
- ▶ Examine cause and effect
  
- ▶ Concise and narrow
- ▶ Large sample size

## Qualitative Research in Nutrition

- ▶ Why do patients with renal disease have poor compliance with a low-potassium diet?
  
- ▶ How can clients be motivated to eat more high fiber foods?

## Quantitative Research in Nutrition

- ▶ RCTs
  - ▶ Effect of \_x\_ ingredient in enteral formula on ICU length of stay in defined population
  - ▶ Effect of \_x\_ intervention on weight loss in a defined population
  
- ▶ If we do x, will the result be better or worse than before?
  
- ▶ How can we make our results better than the benchmark?

## Healthcare Outcomes Research

“The oversight of quality and patient safety is a core financial responsibility of all health care organizations and are at the center of the health care industry”

Institute of Medicine (2001) and Department of Health and Human Services (2004)

The goal for all in healthcare is to improve patient outcomes

So how do we measure these outcomes?

## Quality Assurance/Performance Improvement (QAPI) vs Research

### QAPI

- ▶ Implement **existing** standards or processes that have been **proven to work** and study the effects at your institution or in your work or with your patients.

### Research

- ▶ Implement a **new** intervention and study the impact on patient outcomes.

QAPI	Research
Usual care	Intervention + usual care
Improve a process	Test a hypothesis
May require IRB approval	Always requires IRB approval

QAPI	Research
Usual care - Is RDN involvement in the patient care the usual care?	Intervention + usual care -- Is the RDN involvement the new intervention?
Improve a process - Does implementation of nutrition protocols improve the process?	Test a hypothesis - RDNs can help test the hypothesis
May require IRB approval	Always requires IRB approval

## Healthcare Outcomes Research Requires Benchmarking

**Benchmark**

- ▶ Performance measurement that defines success
- ▶ Standard against which other performance measurements are compared

**Benchmarking program**

- ▶ Evaluates individual performance against the benchmark
- ▶ Determines where improvement is needed and how to improve

## Types of Quantitative Benchmarks

### Average state of affairs

- ▶ RDN staffing in acute care hospitals and long term care facilities
- ▶ nutritionDay

### Goal state of affairs

- ▶ CLABSI and CAUTI rates
- ▶ CHF readmission rates

## Average State of Affairs

Why should the stakeholders care?

The Academy has proposed 4 eQMs to improve care for malnourished hospital patients.

- ▶ 20 - 50% of hospitalized patients are malnourished or at risk for malnutrition.
- ▶ Malnourished surgical patients are 2 - 3 times more likely to experience post-operative complications and increased mortality

Barker, et al. *Int J Environ Res Public Health*. 2011  
Gallagher-Allred, et al. *J Am Diet Assoc*. 1996

## Goal State of Affairs

- ▶ Benchmarks chosen based on patient outcomes
  - ▶ Glucose goals in critical care; HgbA1c goals
  - ▶ Pre-diabetes definition
  - ▶ Weight loss goals to reduce chronic disease risk

## Benchmarking Program

- ▶ Decide the benchmark that defines success
- ▶ Collect data to describe the current state of affairs
- ▶ Compare against the benchmark
  - ▶ Improvement needed?
  - ▶ How to improve?

← qualitative research might help here

## Review of Learning

- ▶ Qualitative vs Quantitative Research
- ▶ QAPI vs Research
- ▶ Benchmarking Programs

Research

## Research Steps

- ▶ What do you want to know?
- ▶ What do you want (or need) to prove?

## Research Steps

- ▶ Ask the right question in the right way
- ▶ Make the hypothesis measurable and testable
- ▶ Design the experiment
- ▶ Determine the results and their meaning

## Ask the Right Question in the Right Way

### PICO

- ▶ P -- Patient problem or population
- ▶ I -- Intervention
- ▶ C -- Comparison
- ▶ O -- Outcome(s)

## Patient Problem and Population

- ▶ Define your population and/or problem
  - ▶ Be realistic
  - ▶ Determines applicability of the research
- ▶ Goal outcome?
  - ▶ Weight loss
  - ▶ Improved diet quality
  - ▶ Fewer vent days
  - ▶ Shorter length of stay
  - ▶ Decreased readmissions

Be able to explain why you chose that outcome to measure

## Define the Problem

- ▶ Choose the comparison benchmark
- ▶ Establish baseline data
- ▶ State the problem

## Intervention

- ▶ Determine the intervention to bring the current state of affairs closer to the goal state of affairs.
- ▶ Plan for intervention - how will you get to the benchmark (outcome)?
- ▶ How will you know if your intervention had the desired effect?

## Comparison

- ▶ Standard care vs new intervention
- ▶ One population or person vs another population

## Comparison

Standard care	New intervention
GRV checks by aspirating gastric contents with a syringe	GRV checks using ultrasound
Primary population	Secondary population
Full term infants	Preterm infants

## Outcome

- ▶ What you want to achieve or know
- ▶ How will you measure it?

What can I hope to accomplish, measure, improve, or affect?

## Make the Hypothesis Measurable and Testable

- ▶ Identify the problem
- ▶ Educated guess for the relationship or difference
- ▶ Identify major variables that will be measured

## Make the Hypothesis Measurable and Testable

Component	Example
Identify the problem	Effects of caffeine on sleep
Educated guess for the direction of the relationship	Increasing caffeine intake will decrease sleep
Identify major variables	Caffeine intake (mg) Time of intake Sleep duration Sleep quality

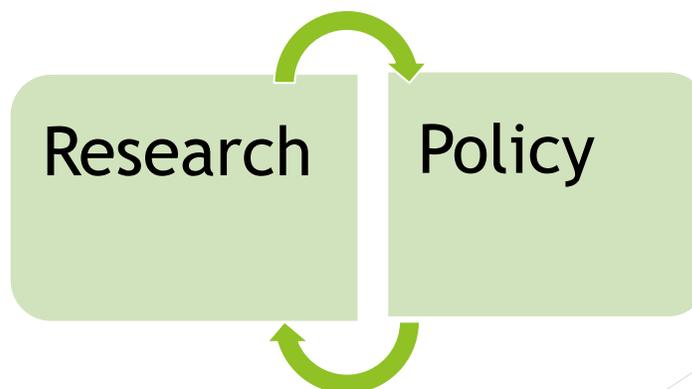
**Hypothesis:** Caffeine intake greater than 400 mg/day or intake of any amount of caffeine within 6 hours of bedtime will decrease sleep duration as measured by total hours and sleep quality as measured by the core sleep quality indicator.

## Make the Hypothesis Measurable and Testable

Component	Example
Identify the problem	Safety of RDN order writing privileges for TPN
Educated guess for the direction of the relationship	Fewer adverse events will occur for TPN patients if ordered by RDNs.
Identify major variables	TPN Safety - electrolyte and glucose management; solubility of ordered solution

**Hypothesis:** TPN orders written by RDNs instead of physicians will decrease the adverse events reported through the hospital occurrence reporting system by 25% over the next 6 months.

## Choosing the Research Question



## Outcomes studies influencing public policy

### Order Writing Privileges for RDNs in hospitals and LTCs

- ▶ 613 bed hospital saved \$169,000 by reducing the use of PN solutions, materials, and pharmacy labor due to RDNs having OWPs and ensuring PN was ordered appropriately (Peterson 2010)
- ▶ Providing safe patient care with improved outcomes, RDs with ordering privileges contribute to decreased patient lengths of stay and provide nutrition services more efficiently, resulting in lower costs for hospitals. (Kinn 2011)
- ▶ 2007 study indicates that patients whose PN regimens were ordered by RDs have significantly fewer days of hyperglycemia (57% vs 23%) and electrolyte abnormalities (72% vs 39%) compared with patients whose PN regimens were ordered by physicians. (Duffy 2007)

## Outcomes studies influencing public policy

### Diabetes Prevention Program

- P** -- Patient Population: Impaired fasting glucose with HgbA1c 5.7 to 6.4%
- I** -- Intervention group usual care + MNT by RDN.
- C** -- Comparison (Control group): usual care
- O** -- Outcome measures: fasting glucose, HbA1c, serum lipid levels, and Diabetes Risk Score.

Results: Better glycemic control in intervention group

## Outcome Studies

- ▶ Descriptive studies
  - ▶ Healthcare Utilization Project -- % of discharges coded for malnutrition
  - ▶ Malnutrition → Longer LOS and more readmissions within 30 days
- ▶ Nutrition intervention effective at treating malnutrition

Corkins, et al. *JPEN* 2014  
White, et al. *JAND* 2012

## Outcome Studies

“By using the malnutrition-specific codes in malnourished children with FTT, providers and researchers will be able to determine which interventions results in improvement in the severity of malnutrition”

Bouma S. *NCP*. 2017;32:52-67

# Outcome study example

## Dietary Changes

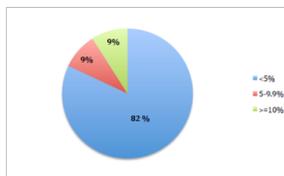
- ✓ 23% improvement in Fruit, Vegetable & Fiber Intake
- ✓ 6% reduction in Caloric Drinks
- ✓ 5% improvement in Meal Regularity
- ✓ 11% improvement in Behavioral Eating Patterns
- ✓ 11% reduction in Dietary Fat Intake
- ✓ 2% improvement in eating out as frequently
- ✓ **11% Overall improvement in Dietary Intake & Patterns**

## Laboratory Changes

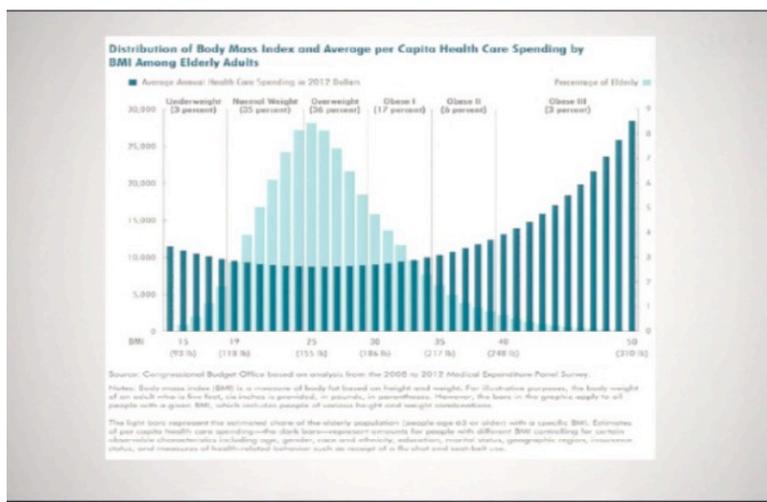
Lab	Average Initial Value	Average Final Value	Average Change
Fasting Glucose, mg/dL	111	114**	+1.0
Range	59%	64%	(-25 to +14)
% with FPG ≥ 100	59%	64%	
Total Cholesterol	197 mg/dL	188 mg/dL	-10.0 mg/dL
Range	33%	27%	(-92 to +27 mg/dL)
% with TC ≥ 200	33%	27%	
Fasting Triglyceride	127 mg/dL	124 mg/dL	-3 mg/dL
Range	20%	27%	(-125 to +65)
% with TG > 150	20%	27%	
LDL	118 mg/dL	105 mg/dL	-11 mg/dL
Range	(75-178)	(64-157)	(-69 to +33)
% with LDL > 130	33%	29%	
HDL	55 mg/dL	53.4 mg/dL	-1.3 mg/dL
Range	50%	54%	(-13 to +18)
% with HDL ≤ 40 (men) ≤ 50 (women)	50%	54%	
Weight Change	4.1	3.8	-0.21

\*\* 2 converted from pre-DM to normal, 2 converted from normal to pre-DM, 1 converted from DM to pre-DM, 1 converted from pre-DM to DM.

## Group Weight Changes



# Public Health Impact



## Key Points

- ▶ Track baseline characteristics
- ▶ Determine benchmark (goal state)
- ▶ Determine interventions necessary to reach the goal state
- ▶ Implement the interventions
- ▶ Track same characteristics as in the baseline
  - ▶ Positive results? Continue the intervention
  - ▶ Neutral or negative results? Consider a new intervention
- ▶ Publish results!

## Key Points

- ▶ Qualitative studies often necessary to determine research question for quantitative studies.
- ▶ Qualitative studies can provide the “why” and “how” answers to associations determined by quantitative studies.
- ▶ Studies that establish the baseline or the benchmark are helpful.
- ▶ Studies build on each other.
- ▶ Outcome studies impact public health.

## Tips

- ▶ Proving the null hypothesis is still worth knowing
- ▶ Share your success so others can learn from you
- ▶ Get a statistician involved early and often!

## Take Action!

- ▶ Complete outcome research on any scale in your own day to day work
- ▶ Advocate for nutrition-related public policy

[www.eatrightpro.org/action-center](http://www.eatrightpro.org/action-center)

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