Background of Quality Improvement/
Knowledge Translation

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Objectives

By the end of this lecture, students will be able to:

1. Describe the knowledge translation gap in health care
2. Explain the knowledge translation gap using examples from critical care medicine
3. Compare and contrast quality improvement and research
The Nature of the Problem
The Nature of the Problem: Overview

- The gap between medical advances (what we know) and medical practice (what we do) has been described as a “chasm”\(^1\)

- In the United States, 45% of adults received less than recommended medical care\(^2\)

- Only about 14% of new discoveries make it into clinical practice; on average, it takes 17 years to take place\(^3\)

- Health services research receives only 1.5% of federal and foundation research funding\(^4\)

Source:


Failure to Translate

► Approximately 30–40% of patients do not receive care according to present scientific evidence, and about 20–25% of care provided is not needed or is potentially harmful

► Health care organizations may not realize potential financial gains associated with improved care (K)

► Government and foundations may not achieve a return on investment for the research funding support they provide

An Example from Critical Care: The Critical Care Safety Study

- Adverse events in the ICU are common, serious, and preventable
- One-year prospective study
- MICU and CCU at one teaching hospital
- 391 patients and 1,490 patient days
- 20% of patients had an adverse event; 45% were preventable
- 36 preventable adverse events/1,000 patient days

Why the ICU

- The “perfect storm” for errors of omission
- Complex environment
- Patients with multisystem disease and little physiological reserve
- Human error and fallibility of human memory made worse by:
  - Stress
  - Noise
  - Time pressures
  - Interruptions and distractions
Patients with acute lung injury (ALI) or acute respiratory disease syndrome (ARDS)

Mechanical ventilation is central to their care BUT is also associated with worsening or directly injuring the lungs

Research efforts identified lung protective mechanical ventilation strategies, volume and pressure-limited ventilation strategies (LTVV)

Randomized multicenter controlled trial (ARDS Network) decreased mortality by 22 percent

Knowledge Translation of ARDS Protocol

- Three separate evaluations of ARDS protocol implementation in ICU patients with ALI/ARDS
  - Baltimore—81% of patients received LTVV
  - Toronto—54% of patients received LTVV
  - Germany—20% of patients received LTVV
    - 80% of ICU directors perceived adherence to LTVV for ALI patients

The Role of Knowledge Translation

► Ensure evidence-based therapies are actually used:
  ► Safely
  ► Effectively
  ► In routine clinical practice
Definitions
Biomedical Research Continuum

The exchange, synthesis, and ethically sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research through improved health, more effective services and products, and a strengthened health care system.

Defining Knowledge Translation: Institute of Medicine (IOM)

- IOM Clinical Research Roundtable
  - “Translation of results from clinical studies into everyday clinical practice and health decision making”

“Ensuring new treatments and research knowledge actually reach the patients or populations for whom they are intended AND are implemented correctly”
Synonyms for Knowledge Translation

- “T2”
- Translating Research into Practice (TRiP)
- Implementation science
- Dissemination research
- Health services research

- Knowledge transfer
- Quality improvement
Brief Overview of Knowledge Translation Methods

- **Weak**
  - Passive education with clinical practice guidelines, continuing medical education

- **Moderate/variable**
  - Economic incentives
  - Quality improvement collaboratives
  - Local opinion leaders
  - Audit and feedback

- **Stronger**
  - Reminders
  - Multifaceted

Quality Improvement—Closing the Gap
What is Quality Improvement (QI)?

- Health care improvement efforts that are:
  - Systematic
  - Data guided
  - Usually short-term

- Goal (examples)
  - Addressing identified gaps in care
  - Implementing a guideline

Quality Improvement Projects

- Improvement activities rather than research
- Goal is to secure positive change in an identified service
- Focus on a well-defined problem with a particular aim
- Highly practical
- Local

Characteristics of Health Care Quality Improvement

► Contextual factors are a major focus
► Initial intervention is modified and adapted as study progresses
► Involves measuring over time (from a baseline)
► Involvement of local expertise in conducting the project
► Sustainability is a consideration, preferably from the beginning of the project

QI Example: Re-engineering Discharge

**Problem:** reducing 30-day readmission and emergency department (ED) visit rates in hospitalized ischemic stroke patients discharged home with self-care

**Intervention:** re-engineered discharge (RED) bundle; used nurse navigators to:
- Make appointments for primary care physician (PCP) follow-up
- Transmit discharge summaries to PCP or clinic for all patients discharged home with self-care

**Results:** 30-day readmission rates to project hospital decreased from 9.39% to 3.24%
- 30-day ED visit rates to all state hospitals decreased from 16.36% to 12.08%

In Summary

► Many patients do not receive appropriate care OR receive inappropriate care

► Much of the research evidence to improve care is not implemented OR is implemented after a lengthy period

► Research vs. quality improvement/knowledge translation

► Effective strategies (more to come)