Evidence-Based Education: We’ve Talked the Talk, Now Let’s Walk the Walk

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Your partner in learning

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Why are you here?

What do you hope to get from today’s session?

The best CME activity I ever participated in……..??

If only live CME……..?

If only online CME……..?
Objectives

After actively participating in this activity, learners will be able to:

• Integrate educational strategies that have been empirically shown to have an impact on physician, knowledge, attitudes and behavior

• Design educational activities that are informed by the learners’ stages of readiness to change

• Describe the use of influencers versus experts to efficiently diffuse change within a community/institution

• Summarize key elements of confidence-based learning
Disclosure

I have no significant interest in any product or company to disclose.
Educator vs. presenter, faculty, etc

Active learning: Engaged learner vs engaged faculty
Do as I say not as I do!!!

YOU NEED TO SLOW DOWN!
SPED LIMIT: 35  MPH: 40

CHILD  PARENT

YOU SHOULD SLOW DOWN...
OH PLEASE, I'VE BEEN DRIVING FOR 40 YEARS.
MPH: 100

SPEED LIMIT: 60

DO AS I SAY  NOT AS I DO
Setting the stage

Why do we do CME?
What are the “buzz phrases” we use to discuss physician learning?

Knowledge
Skills
Attitudes

What are the “buzz phrases” we use to discuss physician learning?

ACCME

Competence (strategies for practice)

Performance (actual practice)

What are the “buzz phrases” we use to discuss physician learning?

ACCME

Awareness (residing in consciousness)

Knowledge (possession of information or facts)

Competence (strategies for practice)

Performance (actual practice)

Your learners want to learn

Your learners are ready to learn

Your learners are competent (have strategies) to learn
HUGE ASSUMPTIONS...

Your learners want to change their practice behavior

Your learners are ready to change their practice behavior

Your leaners are competent (have strategies) to change their practice behavior
HOW TO **CHANGE THE COURSE** OF BEHAVIOR
Advancing physician self-efficacy allows for changes in knowledge, skills and attitudes

Confidence and competence

Nelson DS, Meldrum H. In Search of a Perfect Storm: Provider Self-efficacy, Patient-Centered Care, and Medical Education. WONCA; Vienna, AT, 2012.
HOW DO WE ENGAGE WITH EVERY GROUP OF TREATERS?
Multiple models fuel more effective behavior change

Prochaska’s Transtheoretical Model/Stages of Change
While all treaters will not start at the earliest stage, sequential progression is inevitable and differentiated communication is essential.

Roger’s Theory of Diffusion of Innovation
Roger’s theory reveals how innovation occurs within a community by agents of change and resistance. Leveraging this knowledge in combination with the stages of change will further our ability to communicate in a customized fashion and accelerate adoption of innovation.

Physician Self-Efficacy
(Krupat, Frankel, Nelinson and Meldrum, et al)
Self-efficacy is referred to as the confidence (emotional) and competence (rational) to effect a change. As we move our treaters through the roles and stages referenced above, enhancing self-efficacy should be a guiding objective.

Nelison DS & Meldrum H. In search of a perfect storm: Provider self-efficacy, patient centered care, and medical education. Poster presented at WONCA; July 5, 2012; Vienna, AT.
**PRE-CONTEMPLATION**

Unaware of the need for change or options

- **Objective:** drive physician self-efficacy
  - Connect clinical innovation/change attributes that are most closely tied to the reasons behind the inertia/resistance (e.g., dosing frequency, inevitable anatomic changes)
- **No change is possible until the need is established**
- **Laggards/late majority:** ~50% of treaters at pre-launch/launch
- **Emotional drivers (+/-)**
  - Denial/unaware of need for change (-)
  - Inertia (-)
  - Resistance/aversion to change (-)
  - Skeptics (-)
  - Drive confidence (+)
  - Utilize early majority/adopters to drive change (too removed from innovators) (+)
  - Appeal to scientists within (+)
- **Rational drivers**
  - Knowledge: belief-based thinkers, therefore entrenched
  - Audit and feedback (+)
  - Peer influence and success (+)
  - “The patient with whom I wish I had another option” (+)

**Goal:**

Move from pre-contemplation to contemplation. Have treaters identify unmet need in their practice. This will drive contemplation of change.

CONTEMPLATION
Aware of potential options to improve the SOC and yield better patient outcomes; reluctance

• Objective: drive physician self-efficacy
• See potential value conferred by innovation, but reluctance is still engrained due to success with existing SOC
• Early majority: 34% at pre-launch/launch
• Emotional drivers (+/-)
  • Reluctance driven by fear to act too soon: do no harm (-)
  • Want to do right by my patients (+)
  • Desire to be seen as current (+)
• Rational drivers
  • Persuasion: seeks data/information – safety emphasis
  • Testimonials/document success by early adopters
  • Clearly identifying potential patients

Goal:
Move from contemplation to preparation/readiness. Leverage successes from early RWE enjoyed by early adopters and innovators. Demonstrate consistency between RWE and trials.

PREPARATION/READINESS
Treater has assessed data, conferred with influencers, and plans to initiate change in selected patients; reluctance and/or apprehension may exist

- **Objective:** drive physician self-efficacy
- **Early adopters:** 13.5% at pre-launch/launch
- **Greatest network of influence and highest degree of opinion leadership within category and across all lower categories**

**Emotional drivers**
- Confident
- Reluctance less, but often still a factor

**Rational drivers**
- More discreet in adoption choices than innovators
- Judicious adoption habits keep them as key players within communication networks (communities) – highly engaged with community of treaters
- Driven by clinical data over basic science
- Influenced by innovators

**Goal:**
Move from preparation/readiness to action. Drive trial with identification of potential “high success” patients

**Objective:** nurture innovation stewardship – strong existing self-efficacy

**Innovators:** 2.5% at pre-launch/launch

**Academic clinical researchers**

**Emotional drivers**
- Risk-takers
- Tolerance for uncertainty
- Self-image tied to status as innovator

**Rational drivers**
- Deep data divers – like to be close to data and part of the crafters of the story

**Goal:** Move the treater to a maintenance status where multiple treatment successes result in ongoing integration of the innovative approach. Become resources for peer influence.

What makes an educator effective?

- Expert vs influencer
  - Falsely believed “truths”: “So it is written, so it shall be done!”
  - Cause I said so and I’m important!

- Networks of influence within the community
  - Efficient and expedient dissemination

- Trust vs expertise

Interactivity and other behavior change insights: However do we get there?

Active learning
Evidence-based medical education: What changes behavior

- Interactivity
- Turn-key pearls (enabling educational interventions)
- Longitudinal activities (prelearning, onsite, follow-up)
  - One-off activities don’t work

Davis D, JAMA, 1995.
Group Exercise
Interactivity/active learning

• Learners engaged and interact with
  – Faculty
  – Content
  – One another

• How?
  – Ongoing Q&A: careful of ARS
  – Gaming: Jeopardy
    – Stimulates dopamine, ↑ adoption, retention
  – Case studies with pathway questions (ACOI OCC)
  – Panels
    – Bring in audience
  – How do you do it?

McMahon GT and Skocelak, SE, JAMA, 2018
Davis D, JAMA, 1995
Enabling interventions

• Classroom to clinic

• How?
  – Case-centric learning
  – Meaning and relevance to the clinician: Efficacy
    – Base your presentation on case(s): ACOI OCC
    – NOT AT THE END!!!!!!!!!!!!!
  – Didactics support clinical decision-making vs
    – Traditional: Epidemiology→pathophysiology→new stuff→case….if there’s time
  – Invite learners to offer their own ideas about the case
    – Ensures relevance and interactivity
  – Small groups/pairs
  – How do you do it?
Longitudinal learning

• One-off activities have little impact

• Pre-work
  – Case to be discussed during activity
  – Controversial review or study
  – Guideline changes

• Post-activity follow-up
  – Thank you with summary of key points
  – Further reading
  – Invitation to a blog etc.

• How do you do it?
Evidence-based CME: Brain science and CME

Neuroscience, cognitive psychology, gaming theory
Have you seen the ACOI online modules?
WE NOW LIVE IN A HEALTHCARE PERFORMANCE ECONOMY

Where human knowledge and data can be key to success or failure
YET, IN THE KNOWLEDGE DOMAIN WE FIND...

- Information Overload
- Confidently Held Misinformation
- Superficial Training
High Impact Areas of Harm and Loss

Can better education and training reduce the human error that leads to preventable harm and loss for more than 400,000 Americans each year. These focus areas are also nationally measured and financially incentivized.

<table>
<thead>
<tr>
<th>Patient Safety Event</th>
<th>Rate of Occurrence (per 1000 pts)</th>
<th>Excess Mortality Rate (per event)</th>
<th>Excess Hospital Stay (patient days)</th>
<th>Excess Hospital Costs (per event)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Ulcers</td>
<td>5.18</td>
<td>7.20%</td>
<td>4</td>
<td>$10,845</td>
</tr>
<tr>
<td>Iatrogenic Pneumothorax</td>
<td>0.67</td>
<td>7.70%</td>
<td>4.4</td>
<td>$17,312</td>
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<tr>
<td>Central Venous Catheter-Related Blood Stream Infection</td>
<td>0.75</td>
<td>4.30%</td>
<td>9.6</td>
<td>$38,656</td>
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<tr>
<td>Postoperative Hip Fracture</td>
<td>0.03</td>
<td>4.50%</td>
<td>5.2</td>
<td>$13,441</td>
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<tr>
<td>Perioperative Hemorrhage or Hematoma</td>
<td>2.35</td>
<td>3.00%</td>
<td>3.9</td>
<td>$21,431</td>
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<tr>
<td>Postoperative Physiologic and Metabolic Derangement</td>
<td>0.48</td>
<td>19.80%</td>
<td>8.9</td>
<td>$54,818</td>
</tr>
<tr>
<td>Postoperative Respiratory Failure</td>
<td>8.23</td>
<td>21.80%</td>
<td>9.1</td>
<td>$53,502</td>
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<tr>
<td>Perioperative Pulmonary Embolism or Deep Vein Thrombosis</td>
<td>7.33</td>
<td>6.60%</td>
<td>5.4</td>
<td>$21,709</td>
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<tr>
<td>Postoperative Sepsis</td>
<td>10.67</td>
<td>21.90%</td>
<td>10.9</td>
<td>$57,727</td>
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<tr>
<td>Postoperative Wound Dehiscence</td>
<td>1.11</td>
<td>9.60%</td>
<td>9.4</td>
<td>$40,323</td>
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<tr>
<td>Accidental Puncture or Laceration</td>
<td>2.83</td>
<td>2.20%</td>
<td>1.3</td>
<td>$8,300</td>
</tr>
<tr>
<td>Central Line-Associated Bloodstream Infection (CLABSI)</td>
<td>1.14</td>
<td>12.25%</td>
<td>N/A</td>
<td>$16,550</td>
</tr>
<tr>
<td>Catheter-Associated Urinary Tract Infection (CAUTI)</td>
<td>560,000 annually</td>
<td>13,000 deaths/yr.</td>
<td>2.0-4.0</td>
<td>$400-500 million/yr.</td>
</tr>
</tbody>
</table>
Human Error and Knowledge

Joint Commission data revealed that “staff knowledge” is a primary root cause in more than 50% of Sentinel Events.*

How do we diagnose and remediate misinformation and knowledge gaps?

Human Error

- Quickly and reliably diagnose Misinformation and Knowledge Gaps
- Proven and Efficient tools for remediating them
- Analytics and Reporting around human error can also help to clarify the scope of system issues and highlight the highest-leverage targets for systemic interventions

Factors Contributing to Risk

- Confidently-held Misinformation
- Knowledge Gaps
- Environment
- Technology
- Process

*Any unanticipated event resulting in death or harm unrelated to natural course of illness

The Joint Commission
Risk that can be addressed via education THAT WORKS!

• “I know I’m right” ….but you’re not!
  – Confidently held misinformation
  – Consequence?

• “I’m not really sure”
  – Consequence?
Advances in the Science of Learning and Memory

2000 Nobel Prize Winner Eric Kandel

Learning & Memory are…

1) Subconsciously controlled
2) Centrally controlled
3) Massively distributed
4) Variable retrieval strength
The Key to Learning and Memory

The Dopamine Effect

Sensory “Tunnel Vision” and Hyper Learning
The Implications for CME and Education

1. Education becomes about measured learning and integration, not completion (Levels of outcomes)
2. Learner confidence is appreciated, measured, and reinforced as a predictor of behavior and action.
3. Learning time is reduced (by 50%) by focusing on how learners learn instead of what teachers teach.
4. Competency and capability are simultaneously personal and scalable and visual across organizations.
5. Knowledge can be expressed in terms of clinical risk and cost using predictive analytics.
6. CME and Education become a core operating asset of any healthcare organization and a critical success factor in the new Performance Economy.

Evidence-based CME
References


- Nelisnon DS & Meldrum H. July 5, 2012. In search of a perfect storm: Provider self-efficacy, patient centered care, and medical education. Poster presented at *WONCA*; Vienna, AT.

Questions, comments, critiques...