Video-based Collaborative Learning to Improve Ventral Hernia Repair
Disclosures

• Funding to Study Surgical Coaching
  – Covidien / Medtronic (PI: Pugh)
  – The Wisconsin Partnership Program (PI: Greenberg)
  – NIH/NIDDK R01 (PI: Dimick, Greenberg)
  – AHRQ R01 (PI: Dimick)
  – AHRQ R01 (PI: Greenberg)

• I serve as a consultant to the Johnson and Johnson Institute on their Global Education Council
Agenda

• Background
  - Introduction to the Academy for Surgical Coaching
  - Our current approach to continuing professional development
  - Surgical coaching to fill the gap

• Overview of the Project
  - Video submission and assessment process
  - Intervention and randomization
  - Outcomes
  - Call for Coach Nominations
Academy for Surgical Coaching

• To provide an evidence-based effective approach to life-long collaborative learning for surgeons
  – Continuous development of technical, cognitive, and interpersonal performance
  – Improve patient outcomes, quality and safety
  – Facilitate the introduction of new technologies and procedures
  – Provide a venue for engagement of surgeons to prevent and mitigate burnout
## Unmatched Expertise

### Offer the only evidence-based approach to coaching for practicing surgeons

- Training program for surgical coaches
- Consulting for development and management of coaching programs

<table>
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<tr>
<th>Shared resources and support</th>
<th>Multiple grants funded based on WSCP model</th>
<th>Academic Productivity</th>
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<tr>
<td>Surgical Societies</td>
<td>NIH / NIDDK</td>
<td>6 peer-reviewed</td>
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<td>SSAT, SAGES, ACS</td>
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<td>Quality Collaboratives</td>
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<td>Other Researchers</td>
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<td>CHOP (Michigan)</td>
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<td>Ariadne Labs (Boston)</td>
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<td>Institutions – Mt Sinai, Kaiser</td>
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Academic Productivity:
- 6 peer-reviewed publications
- 10 abstracts
- 9 invited international presentations
- 30+ national invited lectures
Variation in Surgeon Skill

- Landmark study quantifying surgical skill
- There is wide variation in surgical technical skill as judged by peer surgeons

Birkmeyer, et al. Surgical Skill and Complications Rates after Bariatric Surgery
Variation in Outcomes

- There is a strong inverse relationship between surgeon skill and adverse patient outcomes.
- A 5-fold difference in complication rates for highest and lowest rated surgeons.
- Translates into increased utilization of healthcare.

Birkmeyer, et al. Surgical Skill and Complications Rates after Bariatric Surgery
Current Surgical Education Paradigm

- Based on summative written evaluations
- Little to no meaningful feedback after training
- Goal is competency
There Has to Be a Better Way

Goal = Continuous Performance Improvement

- Formative evaluation
  - Life long learning
    - Learner-driven
    - Interactive
    - Distributive
  - Self-assessment
  - Practice modification & improvement

Goal = Continuous Performance Improvement
We Need a Disruptive Intervention
Pivotal Moment in Surgery

• Surgeons feel professional responsibility given emerging data on surgeon role in patient outcomes

• American Board of Surgery needs programs to meet MOC / Continuous Certification requirements

• Professional societies need to increase their value

• Surgical burnout is pervasive and growing primarily due to isolation and lack of control
Maintenance of Certification (2005)

1. Professional standing
   • Active license to practice and hospital privileges
   • Contact information for surgical chair

2. Lifelong learning and self-assessment
   • CME credit with self-assessment questions

3. Cognitive expertise
   • Written exam every 10 years

4. Evaluation of performance in practice
   • Participation in outcomes registry or quality assessment program
Our Professional Responsibilities

1. Professional standing

2. Lifelong learning and self-assessment

3. Cognitive expertise

4. Evaluation of performance in practice
So What’s the Problem?

• We stumbled on implementation

Practice Improvement Resources

The goal of the Continuous Certification practice improvement requirement is for diplomates to regularly assess their performance, by reviewing their outcomes, addressing identified areas for improvement, and evaluating the results. This can be satisfied by ongoing participation in a local, regional or national outcomes registry or quality assessment program.

Independent Option: If there are no hospital-based or individual programs available to you, the ABS expects you will select an area of practice for practice improvement. You should identify a practice area or types of procedures to evaluate; define the measures and goals; track and analyze the outcomes; and then compare them with your goals to identify areas for improvement. You should then reassess your performance after implementing changes to gauge improvement.

When reporting on this requirement, diplomates who are participating through the independent option will be required to briefly summarize the key points of the activity. Please also refer to the suggested options and essential and desirable characteristics below to aid you in developing an activity.

• ABS needs the surgical community and other stakeholders to provide solutions that meet these goals
What is the ROI for CME?

- $2.4 billion and over 42 million hours per year in the United States is spent on CME
- Most do not directly relate to individual practices and are unlikely to lead to clinical impact

Disrupt our Current Approach

- Opportunity for collaborative learning that impacts individual practice and quality

- Professional meetings need to evolve programming based on adult learning theory and demonstrate value given current environment
  - Interactive and relevant
  - Driven by individualized learning goals
Intersection

Education

- Life-long learning
- Self-assessment
- Cognitive expertise

Quality

- Professional Standing
- Evaluation of Performance
Intersection

Performance

Education

Quality
Surgical Coaching

Annals Of Medicine

Personal Best
Top athletes and singers have coaches. Should you?
Atul Gawande

JACS 2012; 214: 115-124.

Postgame Analysis: Using Video-Based Coaching for Continuous Professional Development
Definition of Coaching

• Unlocking a person’s potential to maximize their own performance. It is helping them to learn rather than teaching them.

• Providing objective and constructive feedback to help someone recognize what works and what can be improved and inspire them to maximize their potential.

2. International Coaching Federation (http://coachfederation.org/)
Peer Coaching

• **Power balance** – by nature a collaborative relationship where neither participant takes a superior role

• **Self-directed/responsible** – enhances intrinsic motivation and enables coachees to follow self-concordant goals

• **Develop own capacity** – support progress until the coachee starts to develop the habit of self-monitoring

Adult Learners

- Active participation
- Guided by individual goals
- Tailored to experience
- Interactive
- Content must be relevant to practice

Collaborative Learning

Expert

- Knows the answers
- Shows little curiosity
- Relies on habits, routines/rules
- Feels competent, complete, comfortable

Learner

- Wonders about answers
- Shows great openness
- Challenges assumptions and beliefs
- Continuously tests competence, accepts discomfort, tolerates conflict

Courtesy of Janet Dombrowski, President JCD Advisors, LLC
People with a high level of personal mastery live in a continual learning mode. They never ‘arrive.’ …personal mastery is not something you possess. It is a process. It is a lifelong discipline.

Asymptotic Curve of Mastery
The Wisconsin Framework
Focus of Coaching = Performance

Technical skills
- Psychomotor
- Exposure
- Approach

Cognitive skills
- Decision-making
- Judgment
- Situation awareness

Non-technical skills
- Communication
- Leadership
- Teamwork

Stress management
- Stress response
- Coping strategies
An Effective Coach

• Communication skills

• Adaptability

• Can assess and understand coachee’s needs and perspectives

• Ability to motivate

• Broad knowledge base

• Respected in the field
Video v. Real-Time

- Allows one to view own performance
- More successful in sustaining behavior change
- Confers a time savings of 50-80%
- Removes concurrent responsibilities to allow full concentration on performance assessment
- Mitigates medico-legal and credentialing complexities

Activities and Mindset of Coaches

- Active participation based on equality and choice
- Role of experience of coachee
- Co-learner, not expert
- Responsibility, not rescue

- Facilitate goal setting
- The art of asking good questions
- Observation/constructive feedback
- Facilitate action planning and follow through

MINDSET
Adult Learning

SKILL SET
for Effective Peer Coaching
The Peer Coach Tool

- **Facilitate Goal-Setting & Review**
  - Press for clarity, specificity
  - Ask for progress update, identify barriers, and commend effort
  - Ask how current case relates to goals and where coachee would like to focus

- **Guide Inquiry**
  - **Understand** parameters of the case and identify key contextual factors
  - **Listen** for opportunities for inquiry (i.e. coachee insights, concerns, questions)
  - **Press** for deeper analysis, using multiple questions, esp. “Why?”
  - **Explore** alternative interpretations, staying objective re. coachee’s framing of events
  - **Problematize** situations, with hypotheticals and “what if’s”

- **Provide Constructive Feedback that is...**
  - **Focused** on coachee’s goals & responsive to issues they raise
  - **Descriptive** of specific behaviors and observed or potential consequences
  - **Respectfully offered**, i.e. attentive to tone, style, and amount
  - In the service of further inquiry & action planning
  - Allows coachee to respond

- **Facilitate Action-Planning**
  - Engage coachee in identifying specific strategies for implementing changes
  - Press coachee to identify potential barriers and possible solutions

- **Attend to the Coaching Process**
  - Solicit coachee feedback re. your coaching approach, session structure, content, etc.

**Mindset Reminders:**

- **Who is driving the learning agenda?**
  - The coachee.

- **Which hat are you wearing?**
  - An expert gives advice.
  - A co-learner is curious and supports exploration of a range of possibilities with a colleague.

- **Are you in service to the coachee?**
  - Attentive to the coachee’s style, needs, and goals, not your own

- **Who has responsibility?**
  - Coachee: for committing to and implementing changes / solutions
  - You: for improving your coaching
Studies To-Date Using Peer Coaching
Developing Evidence Base

• Pilot program evaluation indicates:
  (1) surgeons can identify specific coaching goals related to technical, cognitive, and interpersonal skills
  (2) these goals can be effectively targeted during a video-based or live coaching session
  (3) surgeon coaches can acquire and effectively employ peer coaching principles through training
  (4) both coaches and participating surgeons found the coaching program to be highly valuable
  (5) surgeons report making sustainable changes to practice as a result

• These findings were the first to empirically support peer coaching for practicing surgeons
• Anecdotally nearly all participants made a change that persisted in their practice

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<th></th>
<th>Mean</th>
<th>SD</th>
<th>Min, Max</th>
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<tbody>
<tr>
<td>My coach treated me as a peer/fellow surgeon</td>
<td>4.7</td>
<td>0.7</td>
<td>3, 5</td>
</tr>
<tr>
<td>I found my coaching session/s to be valuable</td>
<td>4.6</td>
<td>0.7</td>
<td>3, 5</td>
</tr>
<tr>
<td>I was satisfied with my experience</td>
<td>4.4</td>
<td>0.7</td>
<td>3, 5</td>
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Partnership with Michigan

• Select coaches from among the top performers
• Train using the Wisconsin Surgical Coaching Program
• Results soon
  – Mixed methods evaluation of coaching sessions, exit interviews, clinical data
Overview of the Project
Study Overview

• A prospective randomized trial of 54 surgeons participating in the AHSQC
  
  – Aim 1: Evaluate the effectiveness of video-based collaborative learning to improve surgical performance and clinical outcomes following ventral hernia repair.
  
  – Aim 2: Compare two different approaches to video-based collaborative learning: 1) surgical coaching and 2) video review
Study Overview

**Surgical Coaching**
- One-on-one relationship
- Setting goals
- Using inquiry
  - Providing constructive feedback
  - Action planning

**Approach** = ordered sequence of steps that comprise the operation

**Surgical skill** = how well the surgeon carries out the approach

**Post-op Complications**

**Long-term Patient Outcomes**

**Other Mechanisms?**

**Self-Assessment**

**Internet Review**

**Surgeon Performance**
Surgeon

Phase 1 Recruitment
• Submit 2 videos for confidential baseline assessments
• Review and score videos of others

Phase 2 Intervention
• Surgical Coaching
• Video Review
• Waitlist Control

Phase 3 Outcomes
• Submit 2 videos for confidential post-intervention assessment
• AHSQC data analyzed for change in clinical outcomes

Coach

Phase 1 Training
• 4 hour training session
• Engage in coach community for ongoing development

Phase 2 Intervention 1
• Serve as coach for 2 participants
• Review videos for 2 participants

Phase 3 Intervention 2
• Serve as coach for 1 waitlist
• Review video for 1 waitlist
Baseline and Post-Intervention Assessment

• Objective Structured Assessment of Technical Skill (OSATS)
  – Judged by other participants
  – Self-assessment

• OSATS Domains
  – Gentleness
  – Tissue exposure
  – Instrument handling
  – Time and motion
  – Flow of the operation
Primary Outcomes

• Improved technical skill
  – Change in OSATS
  – Any v Control then Coach v Video

• Short-term clinical effectiveness
  – Decreased SSO
  – Any v Control then Coach v Video

• Intervention Acceptability
  – Compliance Coach v Video
  – Perceived value Coach v Video

Secondary Outcomes

• Long-term clinical effectiveness
  – 1-year recurrence (Coach v Video)
  – 2-year recurrence (Coach v Video)
  – Patient reported outcomes

• Efficiency
  – Coach time (Coach v Video)
  – Surgeon time (Coach v Video)

• Self-assessment
  – Any v control then Coach v Video
Coaches

• An effective surgical coach exhibits the following characteristics:
  - Strong communication skills including active listening
  - Leadership
  - Ability to motivate
  - Broad knowledge base
  - Well-respected by peers

• A common marker of the right characteristics is significant experience with intraoperative consults or outside direct referrals

• Once nominated, surgical volume and patient outcomes will determine the final slate of coaches

• A live 4-hour coach training session will occur at the annual meeting of the Americas Hernia Society
Future Surgeon Recruitment

• Inclusion criteria
  – AHSQC membership in good standing
  – Submission of a minimum of 10 eligible cases within the 6 months preceding the time of enrollment in the trial

• Benefits of participation
  – Free assessment of your technical performance by your colleagues
  – Free video-based feedback from a surgeon trained to give feedback (either through coaching sessions or on-line)
  – Potential to improve performance and/or clinical outcomes
  – Early experience with new model for continuing professional development
Study Timeline

**Aims 1 & 3**
- Measures:
  - Technical Skill (OSATS)
  - Surgical Site Occurrence Rate
  - Recurrence Rate
  - Self-Assessment

**Baseline Period** (6 months)
- AHQSC Surgeons (n=200)
- Surgeon Participants (n=54)
- Coaches (n=9)
- Randomization
  - Assigned 6 surgeons
    - 2 Coaching
    - 2 Video
    - 2 Wait-list
  - Arm 1: Coach
    - n=18
  - Arm 2: Video
    - n=18
  - Wait-list Control
    - n=9 Video

**Recruitment, Training, Intervention Period** (6 months)
- Wait-list Control Group Begins
- Assigned Intervention & Follow-Up
  - Training, Intervention Period (6 Months)
  - Follow-up Period (6 months)

**Follow-up Period** (6 months)
- Measures:
  - Technical Skill (OSATS)
  - Surgical Site Occurrence Rate
  - Recurrence Rate
  - Self-Assessment
  - Intervention Adherence
  - Perceived Value
  - Time

The Academy for Surgical Coaching
Department of Surgery
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH
Video Capture

• Video capture and upload is required for all three arms
• Capture of robotic and laparoscopic ventral hernia repair is routine
• Capture of open operations may be more challenging; many operating rooms outfitted with boom cameras and in-light cameras
• When this is not the case, surgeons will be provided with a portable recording system (caresyntax).
Easy, portable solution from caresyntax will allow recording of 4 individual streams of **Video** (endoscope and IP Camera), **Audio**, and **Device data** (anesthesia, hemodynamics, etc.)

With qvident’s cloud based platform, further editing, review, and knowledge sharing is possible.
Collect And Upload Videos

Analyze Performance using Validated Instruments

Asynchronous Video Review

Peer Coaching

Collect And Upload Videos

Analyze Performance using Validated Instruments

Asynchronous Video Review

Peer Coaching
Cloud-based Video Interface
Questions

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