Promoting Practice Improvement through Faculty, Forums, Reflection and Learning Management Systems

Gerry Higgins, American Society of Anesthesiologists
Brian Block, American Society of Anesthesiologists
Please Participate
<table>
<thead>
<tr>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 10</td>
</tr>
<tr>
<td>miles</td>
</tr>
<tr>
<td>10-100 miles</td>
</tr>
<tr>
<td>more than 100</td>
</tr>
<tr>
<td>miles</td>
</tr>
<tr>
<td>more than 3000</td>
</tr>
<tr>
<td>miles</td>
</tr>
</tbody>
</table>
NOTHING TO DISCLOSE
Learning Objectives

1. Apply strategies to design online education that challenges learners to reflect and improve their current practice.
2. Identify opportunities to leverage LMS features and functionality.
How do you learn best?

- A: Reading a document on my own
- B: A traditional lecture given by an instructor
- C: Having a mutual conversation about a specific topic with colleagues
- D: A combination of instruction and discussion
- E: Watching a video
Overview

• Discussion board lessons learned
• Course architecture and design for QI activity
• How we gathered data
• Outcomes measured and compared
• Discussion board group activity
• Next steps to improve
• Questions
Are you using discussion boards in your course designs?

yes

no
Reasons and considerations for use of a Discussion Board?
Motivation to use Discussion Board?

Because we had one of course!

First time use:
Question-of-the-Week program subscription

If you have one, they will come... for all the \textcolor{red}{WRONG} reasons.
What Did They Talk About?
“Will you automatically be reporting my CME to the Board?”

“Can I wait to complete all questions at the end of the 6-month subscription?”

“When will the 2016 subscription be available to order?”

“Do you have my ABA number on file?”
Evolved From Standard eLearning Course Set-up

Pre-test

On-demand video-guided didactic presentations moderated by our faculty

Posttest
Created QI Activity with Level 5 Outcomes
1. Area of Primary Clinical Focus?
2. Number of Years in Practice?
3. How many of your patients receive perioperative neuromuscular block per month?
4. Which of the following areas do you expect will be improved by this activity? (check all that apply)
5. Please provide a specific way in which this activity will impact your patient care.

Asked confidence rating questions - scale from 1 to 5 (lowest to highest)
Participant Demographics

Heath Care Category

- Physician: 91%
- PA: 4%
- APN: 3%
- Nurse: 2%
- Other: 2%

Clinical Focus

- Anesthesiology: 96%
- Critical Care: 2%
- Other: 2%
Participant Demographics

Years in Practice
- 1 to 5: 12%
- 6 to 10: 9%
- 11 to 15: 14%
- 16 to 20: 10%
- 21 to 25: 12%
- Over 25: 25%

Patients Receiving NMB per month
- None: 3%
- 1 to 5: 4%
- 6 to 10: 8%
- 11 to 15: 10%
- 16 to 20: 22%
- 21 to 25: 41%
- Over 25: 12%
What Learners Expect

Please provide a specific way in which this activity may impact your patient care.

“How best to relax & reverse a patient”

“Defy delays in PACU, earlier dismissal to home”

“Decreased post op respiratory insufficiency”

“Optimize my use of neuromuscular blocking drugs”

“Provide me with data to evaluate the advisability of making neuromuscular block monitoring more routine in my practice”

“Can't say”
## Pre-Program Confidence Rating

<table>
<thead>
<tr>
<th>Task</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor residual postop NMB and recovery</td>
<td><strong>37%</strong></td>
</tr>
<tr>
<td>Explain key factors that may affect recovery from NMB</td>
<td><strong>23%</strong></td>
</tr>
<tr>
<td>Differentiate MOA, pharmacologic characteristics, and risks and benefits of NMB reversal agents</td>
<td><strong>22%</strong></td>
</tr>
<tr>
<td>Delineate complications associated with postop residual NMB</td>
<td><strong>28%</strong></td>
</tr>
</tbody>
</table>
What Learners Expect

Which of the following areas do you expect will be improved by this activity? (check all that apply)

- Ability to apply knowledge, skills, and judgement (92.18%)
- Performance (56.97%)
- Patient outcomes (54.01%)
What is an “audience” in Totara/Moodle?

• Learners grouped by specific parameters
• Customizable logic
• Dynamically handles bulk users
• Enroll/assign many users at once – also dynamically
How does this work?

All ACTIVE Users

Type: Dynamic
ID: AUD0029
Description: All users who have logged into the LMS with the past 12 months.
Start date
End date
Alerts: Do not send alerts
Members: 28547

Dynamic audience criteria

Membership criteria
- Ruleset #1
  - User’s last login date is within the past 365 day(s)

Clone this audience
Delete this audience
Practical audience application...

• “Assign” large groups of users to programs
• For example, we created an audience containing ALL users
• Everyone with an account gets “assigned” to free content
What the learner sees...

Alerts

Showing 1 of 1

You have been enrolled on program Understanding the Relationship between Intraoperative Hypotension and Clinical Outcomes in Surgical Patients

View all alerts

My Courses

Safety and Efficacy of the Reversal of Neuromuscular Blockade in Outpatient/Ambulatory Surgery

Progress: 0%

Module 1 - Safety and Efficacy of the Reversal of Neuromuscular Blockade in Ambulatory Surgery

Improving Patient Safety through Neuromuscular Monitoring (2.5 + 7.5 credits)
What the learner sees...
Enrolled in the course

Once the user “launches” a course in the program, they are enrolled and will be directed to the program from their “my courses” page.
Module 1

Three On-Demand Lessons and Panel Discussion

1. Improving Safety When Using NMB Drugs
   - Glenn S. Murphy, MD
   - Clinical Professor
   - University of Chicago Pritzker School of Medicine

2. Challenges & Complications Associated with Inadequate Reversal: Residual Weakness in the PACU
   - Richard Priellip, MD, MBA, FCCM
   - Program Chair
   - Professor of Anesthesiology
   - University of Minnesota

   - Sorin J. Brull, MD, FCARCSI (Hon)
   - Professor of Anesthesiology
   - Mayo Clinic College of Medicine

Available on the ASA Education Center August 2, 2016
Assessment Performance

Module 1: Improving Safety when using NMB Drugs
Module 2: Challenges & Complications Associated With Inadequate Reversal
Module 3: Neuromuscular Function Monitoring
Module 4: Panel Discussions

Pretest Posttest

↑18%  ↑14%  ↑28%  ↑29%
Individual Learner Assessment

The chart compares pretest and posttest scores in two categories:
- Pretest
- Posttest - Preoperative Considerations

Key Metrics:
- Your Grade
- Course Average
- Group Average
90-Day Follow-up Assessment

- LMS setting automatically triggers email delivery to learners with link to complete survey on 90th day.
- Please reflect on the activity. Overall, how did your learning impact your clinical practice? (Check ALL that apply)
- What part of the activity was most educational for you? (check ALL that apply)
- Confidence rating questions
- Posttest questions
90-Day Responses

Overall, how did your learning impact your clinical practice?
(Check ALL that apply)

- Ability to apply knowledge, skills, and judgement: 93.46%
- Performance: 60.88%
- Patient outcomes: 67.00%
Assessment Comparison

Pre-program Expectations

- Ability to apply knowledge, skills, and judgement
  - (92.18 %)

- Performance
  - (56.97 %)

- Patient outcomes
  - (54.01 %)

90-Day Reflection

- Ability to apply knowledge, skills, and judgement
  - ↑1.28%  
    - (93.46 %)

- Performance
  - ↑3.91%  
    - (60.88 %)

- Patient outcomes
  - ↑12.99%  
    - (67.00 %)
90-day post-education survey indicated modifications in clinician behavior, as a result of participating in this activity.

- 61% Performance
- 67% Patient outcomes
- 93% Ability to apply knowledge, skills, and judgement
<table>
<thead>
<tr>
<th>Skill</th>
<th>Before (N = 2596)</th>
<th>After (N = 819)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor residual postop NMB and recovery</td>
<td>37%</td>
<td>61%</td>
</tr>
<tr>
<td>Explain key factors that may affect recovery from NMB</td>
<td>23%</td>
<td>61%</td>
</tr>
<tr>
<td>Differentiate MOA, pharmacologic characteristics, and risks and benefits of NMB reversal agents</td>
<td>22%</td>
<td>61%</td>
</tr>
<tr>
<td>Delineate complications associated with postop residual NMB</td>
<td>28%</td>
<td>66%</td>
</tr>
<tr>
<td>Lesson</td>
<td>Posttest</td>
<td>90+ days</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>NMB Drugs</td>
<td>88%</td>
<td>90%</td>
</tr>
<tr>
<td>Neuromuscular Function Monitoring</td>
<td>90%</td>
<td>87%</td>
</tr>
<tr>
<td>Challenges and Complications</td>
<td>84%</td>
<td>85%</td>
</tr>
<tr>
<td>Panel</td>
<td>93%</td>
<td>86%</td>
</tr>
</tbody>
</table>
Module 2

Data
Video-guided didactic presentations moderated by our faculty

Take Action
Create practice improvement plan with guidance from faculty moderated Discussion Board
Improving Patient Safety through Neuromuscular Monitoring

Module 2 - Performance Improvement Action Plan

Congratulations on successful completion of Module 1, and welcome to Module 2. Module 2 is an optional activity that requires the following:

1. Creation of a Performance Improvement Action Plan (answer 6 questions);
2. Implementation of the plan over a minimum of 14 days
3. Subscribe to the Discussion Board

After a minimum of 14 days implementing your plan you will have access to Module 3. In Module 3 you will report and reflect on the impact of your action plan, and claim up to 7.5 credits.

Creation of a Performance Improvement Action Plan

**Action Plan.** Reflect on how the concepts discussed in the previous module can improve your current practice. Create a Performance improvement Action plan.

**Review and Updates.** You may review and/or update your Action Plan throughout implementation.

Discussion Board - Learning community of practice

**Continuous Support from Peers and Faculty.** Use the discussion board to share ideas and challenges you encounter while developing and implementing your action plan. Collaboration and exchange of ideas through this platform will help address emerging and very often practice specific challenges associated with neuromuscular monitoring. Your contribution is important.

**Participate in the discussion board** by selecting "Add a new discussion topic" or "Reply". An email is sent each time a participant posts.

**Posts are NOT anonymous.** Your name will appear with each post.

**Opt out:** You can opt out of the discussion at anytime. Follow these directions.

Faculty experts will contribute posts. Effort will be made to respond in a timely manner. We encourage your participation.
1. Enter high level description of the improvement and brief indication how it will improve quality of patient care as it relates to neuromuscular monitoring?
2. Provide a broad statement of actions that will help achieve the selected goal?
3. Please describe steps that will lead to improvement.
4. Identify potential barriers that may jeopardize impact of the project.
5. Describe actions, methods and resources needed to address barriers.
6. Describe how the project progress and impact will be assessed. Enter indicators of progress for both the short term (90 days) and long term (1-3 years).
“My goal is to improve the administration, monitoring and reversal habits that I and my teams provide for our patients. My hope is that it will diminish postoperative complications consistent with PORC and lead to both improvement of patient satisfaction and improved efficiency of our PACU.”

“Stress the importance of qualitative NM monitoring in the OR and it’s use and documentation especially with our transition to EPIC. Attempt to decrease post op PACU complications and improve PACU recovery.”

“Encourage CRNA's to use neuromuscular monitoring on ambulatory patients. Hope to decrease PACU stay, decrease negative side effects resulting from prolonged neuromuscular blockade and increase awareness of how dosing of relaxants impacts patient care long after the OR.”

“Use NMBDs judiciously, monitor everyone, reverse liberally.”
Required opting in to the Discussion Board to post or view comments

**Continuous Support from Peers.** Use the discussion board to share ideas and challenges you encounter while developing and implementing your action plan. Collaboration and exchange of ideas through this platform will help address emerging and very often practice specific challenges associated with managing hypotension. Your contribution is important.

**Participate in the discussion board** by selecting "Add a new discussion topic" or "Reply". An email is sent each time a participant posts.

**Posts are NOT anonymous.** Your name will appear with each post.

**Opt out** - You can opt out of the discussion at anytime. Follow these directions. The discussion board provides options to rate questions. Posts can be rated using the drop down menu.
Discussion Board Disclaimer

This discussion board is provided as a service for members of ASA and other invited persons (“Users”). ASA makes no warranties regarding the accuracy or correctness of, nor should Users rely upon, the information, opinions, or other content exchanged on this board. As a condition of using this discussion board, each User agrees to the terms set forth in ASA's Terms of Use and Privacy Statement.
Discussion Board

- Faculty participation/moderation is ideal
- Learners required to opt in to the Discussion Board to post or view comments
- Posts are NOT anonymous

- Two courses with Discussion Boards
  - 1 year = 220 unique topics with a total of 565 posts
  - 9 months = 105 unique topics with a total of 330 posts
<table>
<thead>
<tr>
<th>Discussion</th>
<th>Started by</th>
<th>Replies</th>
<th>Last post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have TOF monitors in all of your OR</td>
<td>Anita Patel</td>
<td>30</td>
<td>Dustin Sorenson</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wed, Sep 19, 2018, 3:28 PM</td>
</tr>
<tr>
<td>Sugammadex complications</td>
<td>Fady Nageeb</td>
<td>0</td>
<td>Fady Nageeb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tue, Sep 18, 2018, 1:19 PM</td>
</tr>
<tr>
<td>Sugammadex overdosing</td>
<td>Joseph Hendrix</td>
<td>2</td>
<td>Ronak Desai</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tue, Sep 18, 2018, 12:24 PM</td>
</tr>
<tr>
<td>Sugammadex Cost</td>
<td>Jimmy Le</td>
<td>22</td>
<td>Karl Wagner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mon, Sep 17, 2018, 7:06 PM</td>
</tr>
<tr>
<td>Sugammadex overuse</td>
<td>Sumit Singh</td>
<td>4</td>
<td>Debra Hurwitz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sun, Sep 16, 2018, 10:48 AM</td>
</tr>
<tr>
<td>Use of Quantitative Monitors in Pediatrics</td>
<td>Norah Janosy</td>
<td>1</td>
<td>Andrea Zepeda</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fri, Sep 14, 2018, 7:14 AM</td>
</tr>
<tr>
<td>neostigmine waste</td>
<td>Jay Freilich</td>
<td>11</td>
<td>Brian Lee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thu, Sep 13, 2018, 3:43 PM</td>
</tr>
</tbody>
</table>
### Discussion Board - Learning community of practice

#### Reversal after single dose paralysis

**By Beverly Weitnauer** - May 18, 2018, 2:47 PM

> It is not always necessary to reverse a single induction dose of non-depolarizing paralysis if it has been more than 2 hours and the patient has 4/4 TCI without fade.

**Reply**

**By: Haley:**

> 

---

**By St. Sherrie** - May 20, 2018, 12:49 PM

> While it may not be necessary to reverse the patient you mention I would administer 0.2 mg of glycopyrrolate and 1 mg of neostigmine. If you are not going to reverse I would have some sort of observation order for the PACU.

**Reply**

**By: Haley:**

> 

---

**By Shanae Hall** - May 21, 2018, 6:05 AM

> I used to not reverse if patient had single dose. I read an article which showed that even those patients have no problems in PACU they get mild complications post-operatively. So now we only reverse with small dose of neostigmine.

**Reply**

**By: Haley:**

> 

---

**By Shani Almudof** - May 21, 2018, 9:39 PM


**Reply**

**By: Haley:**

> 

---

**By Hailey Palmer** - May 22, 2018, 3:52 PM

> The risk-benefit ratio favors some reversal, though not necessarily a full reversal dose. The potential post-operative complications are numerous and in the interest of both patient safety and satisfaction, I would aim at the side of caution.

**Reply**

**By: Haley:**

> 

---

**By Lee Park** - June 14, 2018, 7:28 PM

> I pretty much always reverse, even if it has been many hours since the last dose of paralysis. Many studies proving nonresidual blockade is common even though it may superficially look like no reversal is needed.

**Reply**

**By: Haley:**

> 

---

**By Matthew Langston** - June 18, 2018, 9:32 AM

> Given the presence of residual neuromuscular blockade, I always reverse.

**Reply**

**By George Osborne** - August 7, 2018, 12:29 AM

> I agree with the above. Basically a rule of thumb for me is if I use a non-depolarizing muscle relaxant I reverse.

**Reply**

**By Anna Fine** - August 5, 2018, 1:33 PM

> I agree with the majority opinion. Residual NMB is rarely a problem in those who can compensate for it (young, strong), but may contribute to morbidity in an older, frail, COPD obstructing, obese patient.

**Reply**

**By Johanna de Haas** - August 13, 2018, 5:08 AM

> I saw very low dose of roc (0.3-0.5mg/kg) on induction, rarely reverse. If long enough cases, documented TCI 4/4 (area present), if >1hr until emergence don't reverse, no residual (residue) 0.2mg/kg about 1 hour anyways.

**Reply**

**By William Connor** - September 10, 2018, 12:00 PM

> I use low dose NMBA on induction and check TCI 4/4 no matter the length of the case. I reverse all patients with at least 1mg and often 2mg for more frail patients neostigmine and glycopyrrolate for a TCI of 4/4. Otherwise, they get a full reversal dose. I’ve been double checking for PONV on all patients who receive NMBA.

**Reply**

**By: Haley:**

> 

---
Reversal after single dose paralysis
by Beverly Newhouse  - Saturday, May 19, 2018, 2:47 PM

Is it really necessary to reverse a single induction dose of non-depolarizing paralysis if it has been more than 2 hours and the patient has 4/4 TOF without fade?

Average of ratings: This is a great question (1) This is a great question

Re: Reversal after single dose paralysis
by D. Shantha   - Sunday, May 20, 2018, 12:49 PM

While it may not be necessary to reverse the patient you mention I would administer 0.2 mg of glycopyrrolate and 1 mg of neostigmine. If you are not going to reverse I would have some strict observation orders for the PACU.

Average of ratings: Rate...
What Are They Talking About?

• Challenges
• Best practices at their institutions
• Sharing what they have learned with care team
• Asking faculty for clarification
• Asking how others are handling procedures and dosing
“I always make sure that I have a monitor prior to giving NMD's, and I would hope that would be the general practice everywhere.”

“I'm in a big group in SE Michigan. Every OR has a monitor. It's also becoming part of our quality initiative...to monitor NMB and give reversal. We are being tracked whether these things are being done.”

“Our recovery room is managed by nursing staff. My challenge is how to teach this group this concept of TOF monitor.”

“How is your institution approaching informing patients that they have received a drug that may impair the effectiveness of certain contraceptives? Is it important to discuss this possibility with patients preoperatively?”

“Very nice discussion on the matter of sugammadex and contraception.”

“How is your institution approaching informing patients that they have received a drug that may impair the effectiveness of certain contraceptives? Is it important to discuss this possibility with patients preoperatively?”
Do you have to use a “discussion board” to have a discussion online?
Custom #hashtags

Search filters: Show

Who to follow: Refresh: View all
Iron Maiden (IronMai... Follow
F L S H (Melvingor... Follow
Alessandro Sarritzu (Hits... Follow

Find people you know: Import your contacts from Gmail
Connect other address books

Trends for you: Change

Critical Concepts: @critconcepts - Sep 22
#Anesthesia sweeps, a question: In my understanding, typical ICU ventilators are non-rebreathing (nor is there any reason for them to rebreathe). So why do they need a CO2 absorber? Can't we just vent exhaled gas to atmosphere?

Journal of Cardiothoracic and Vascular Anesthesia: @JCVAnline - Sep 24
Thanks for everyone who voted. This international survey showed almost equal numbers of GA and MAC for #TAVR #Anesthesia. Interestingly, 21% of TAVR are performed without anesthesia present.

Journal of Cardiothoracic and Vascular Anesthesia: @JCVAnline
What is the #anesthesia technique for #TAVR in your institution? Please share @JCVAnline
Group Activity

Word cloud discussion:

The Pilot
Why do/don't you use discussion activities in your course designs?
Why are they successful or not successful?
Put your plan into action!
Module 3

**Pre-Program Survey**

**Module 1: Didactic Presentations and Quizzes**

**Follow-up Assessment**

**Module 2: Create Performance Improvement Action Plan**

**Module 3: Reflect and Report on Outcomes**

**Data**

Video-guided didactic presentations moderated by our faculty

**Take Action**

Create practice improvement plan with guidance from faculty moderated Discussion Board

**Reflect and Report**

Assess outcomes and opportunities for ongoing improvement

90 days

14+ days

2.5 Credits

7.5 Credits
Improving Patient Safety through Neuromuscular Monitoring

Module 3 - Performance Improvement Attestation and Reflection

Congratulations on successful implementation of your Performance Improvement Action Plan, and welcome to Module 3.

Module 3 includes the following activities:
1. Track, reflect and report on outcomes (answer 2 questions)
2. Complete Module 3 evaluation
3. Claim up to 7.5 credits

Follow up improvement attestation and reflection

Please use this form to reflect on your implementation plan outcomes.

Progress. Track progress of implemented action plan. Enter here measured outcomes per your performance measures.

Analyze Outcomes. Write a broad statement of what you have learned during implementation to include unexpected outcomes, both positive and negative.
Reflect and Report

ANSWER 2 QUESTIONS

1. Please describe impact of your action plan. How does it impact patients; what are the outcomes that you measured; how did they change?

2. Write a broad statement of what you have learned during implementation to include unexpected outcomes, both positive and negative.
“I think using my plan helped my patients. I was more aware of residual NMB, and I think my patients were stronger in PACU. Additionally, I had no adverse outcomes. I enjoyed using my quantitative monitor.”

“Over the past 14 days, I have identified two patients who had residual neuromuscular blockade and needed reversal. Prior to this module, these patients likely would not have been reversed, since I was not monitoring every patient.”

“My action plan has had a positive impact on my patients in that they are going to the PACU with less neuromuscular blockade. This was measured by the incidence of hypoxia in the PACU. This measure has decreased (fewer hypoxic incidents) since implementing the action plan.”
Participation Completion Stats

Course #1 (12 months)
• 2265 - Module 1
• *90-day Survey – 271
• 692 - Module 2
• 525 – Module 3

Course #2 (9 months)
• 2596 - Module 1
• *90-day Survey - 819
• 750 - Module 2
• 448 – Module 3

* Optional
Faculty Insights as Discussion Board Facilitators

“I have a better understanding of what my peers are thinking, doing and challenged with in their practice specific to this topic.”

“Observed common themes” that require more education.”
Taking Time to Act Can Make a Difference
Module 3 – Measure, Reflect, Modify, Repeat
Next Steps in Course Design Evolution

1. Create program addressing needs and gaps identified from Discussion Boards posts.

2. LMS development to identify and suggest learning resources based on posttest and 90-day assessment score range.

3. Award badges to Discussion Board super users.

4. Turn on audience ratings of videos and Discussion Board posts.
Other Ideas?