SIMULCAST

Journal Club Summary May 2017 : "Hard Outcomes"

The Articles :

"Pediatric resident resuscitation skills improve after "Rapid Cycle Deliberate Practice" training"

Hunt EA, Duval-Arnould JM, Nelson-McMillan KL, Bradshaw JH, Diener-West M, Perretta JS, Shilkofski NA.

Resuscitation. 2014 Jul;85(7):945-51. doi: 10.1016/j.resuscitation.2014.02.025. Epub 2014 Mar 4.

"Structuring feedback and debriefing to achieve mastery learning goals"

Eppich WJ, Hunt EA, Duval-Arnould JM, Siddall VJ, Cheng A.

Acad Med. 2015;90:00–00. First published online doi: 10.1097/ACM.0000000000000934

Case Author :

- Dr Ben Symon

Expert Commenter :

- Dr Jared Kutzin

Editors :

- Dr Victoria Brazil
- Jesse Spur

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Simulcast Journal Club is a monthly/ series heavily inspired by the ALiEM MEdIC Series.

It aims to encourage simulation educators to explore and learn from publications on Healthcare Simulation Education.

Each month we publish a case and link a paper with associated questions for discussion.

We moderate and summarise the discussion at the end of the month, including exploring the opinions of experts from the field.

The Case :

When he started in ICU Brad had never intended to have an archnemesis, but Dr Snythe had somehow applied for the role.

"I overheard your sim fellow's debriefing the other day." said Snythe from across the tea room. "It's all very sweet, isn't it? This debriefing with good judgment thing. Lots of feelings and concerns and whatnot? I was quite touched. It's like the care bears are interviewing ICU trainees."

"I'm impressed." said Brad dryly. "I thought after two decades of bullying trainees you might not be able to recognise what feelings actually are.".

Snythe's expression changed rapidly.

"Well you know what doesn't impress me Brad? Your data. No matter how much advocacy and inquiry you throw at these registrars, 6 months into your program their BLS metrics remain terrible. You can uncover frames all you want, but you're not making a spec of difference when it comes to our Quality & Safety outcomes."

Brad's ego was bruised and he came out swinging.

"Why are you even drinking coffee, Snythe? Out of nurse's tears?"

"Nurse's tears?" Snythe snarled. "Funny you should mention. We lost two nurses to fund your damn program in the first place. And when the director hears your results at the end of the year, I fully intend to get them back. Because believe it or not, Brad, I do care about stuff. Like actual patient care. And your program is getting in the way of it."

Brad's heart sank as Snythe stormed out. It hurt so much more because there was some truth in it. His trainee's metrics remained terrible. They loved the program, it was creating genuine cultural change and he knew they were learning! But skill acquisition just wasn't improving.

He needed a new strategy, and he needed it fast. The vultures were circling.

Discussion :

This month, we are looking at not one, but two articles! They are in many ways a pigeon pair and as such it's valuable to read them together. They describe a relatively new innovation in debriefing : Rapid Cycle Deliberate Practice. In many ways the opposite of traditional debriefing with good judgment, Eppich et al's paper provides an overview of strategies for structuring RCDP, while Hunt et al's paper provides hard data about the measurable improvements in paediatric resuscitation found through designing and implementing a paediatric RCDP program.

What are your thoughts on these papers and RCDP in general? Have you successfully implemented it into your simulation utility belt, or is it more a theoretical practice you've heard about but not seen much of?

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Article Summary :

Article 1 : ***"Pediatric resident resuscitation skills improve after "Rapid Cycle Deliberate Practice" training"***

After highlighting the failures of their traditional paediatric training, Hunt et al introduce a skills teaching curriculum style entitled "Rapid Cycle Deliberate Practice" (RCDP). Primarily involving cycling between deliberate practice and directed feedback, and Hunt et al define three fundamental principles of RCDP :

1. Maximising the time learners spend in deliberate practice by offering multiple opportunities to "do it right".
2. Faculty provision of specific evidence or expert based solutions for common problems.
3. To explicitly foster "psychological safety" so learners embrace direct feedback.

Hunt et al designed a curriculum that emphasised the first five minutes of an in hospital cardiac arrest, which included :

- BLS training at intern orientation and PALS at the end of first year residency
- Monthly 'just in time' training sessions for residents that would be part of the hospital response teams that month. This included 2 hours of RCDP involving 5 scenarios that covered the primary causes of paediatric cardiac arrest.
- The RCDP structure started with an initial uninterrupted scenario as a 'needs assessment', followed by instructors taking a coaching role through progressively raising expected standards and sharing performance data, quantifying breeched standards and providing solution oriented microdebriefing. When an error occurred, instructors would pause the scenario and ask them to "pause, rewind 10 s and try it again.".
- An in-situ, unannounced mock code in the weeks after monthly training.

After designing the curriculum, Hunt et al tested its ability to :

- Improve performance on key resuscitation quality markers when compared to a baseline, pre-intervention cohort.
- Register a measurable improvement between first and third year paediatric residents.

Their simulated resuscitation metrics significantly improved, including less time to chest compressions, decreased time to defibrillation, less pre-schock pause times. There was also a 'dose response' noted, with 2nd and 3rd year residents showing improvement over interns.

Article 2 : ***"Structuring Feedback and Debriefing to Achieve Mastery Learning Goals"***

If Hunt's paper provided motivation to implement RCDP within your practice, then Eppich et al's paper provides more detail and advice regarding "how to design and implement the feedback and debriefing components of deliberate practice-based educational interventions.

They further explore the principles outlined by Hunt et al, by describing strategies to :

- Establish a supportive yet challenging learning environment
- How to maximise opportunities for RCDP with feedback and reflection during debriefing
- Describing the role of within event "microdebriefing"

In order to 'establish a safe container' in the RCDP environment, the article recommends :

- Explicitly discussing the use of microdebriefing within training and validating the significance of specific, honest feedback by using the analogy of 'coaching world-class athletes'.
- Explaining that there is no expectation of initial perfection, but instead an expectation to learn from mistakes and improve.
- Encouraging peer feedback.

The article then outlines case studies regarding ACLS and PALS Resuscitation Training in order to flesh out examples of microdebriefing 'in the moment' rather than interrupting the flow of the scenario, and questions to pose to learners to help facilitate peer to peer feedback, such as "When the skill is performed correctly, what characterises effective performance?".

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Expert Opinion: Jared M. Kutzin, DNP, MS, MPH, RN, CPPS

Dr. Kutzin is the Director of Education at NewYork-Presbyterian Hudson Valley Hospital. Previously, Dr. Kutzin was the Director of Simulation at Winthrop University Hospital and Saint Barnabas Medical Center (NJ) and the Director of Nursing & Clinical Simulation at the Institute for Medical Simulation and Advanced Learning (IMSAL), part of the New York City Health and Hospitals Corporation (NYCHHC). Jared received a Master of Public Health degree from Boston University, a Doctor of Nursing Practice from the University of Massachusetts at Amherst, and a Master of Science in Medical Education Leadership from the University of New England College of Medicine.

He started his simulation career with the STRATUS Center for Medical Simulation at Brigham and Women's Hospital in Boston, MA, and is a past chair of the Nursing Section of the Society for Simulation in Healthcare (SSH). He currently serves on the SSH membership and certification Committees and chair's the CHSE recertification process.

Jared's research interests include investigating the human factors that affect the quality and safety of healthcare, the quality and safety of prehospital care, and the use of simulation as an educational method.

Jared's response to this month's article:

The quote "practice makes perfect" has been attributed to John Adams, the 2nd President of the United States, when early in his career as a lawyer he made mistakes in his paperwork and lost seemingly easy to win cases. After struggling to find clients he began to find success as a lawyer and in 1760 he wrote in his diary, "I was too incautious and unartful in my proceedings, but practice makes perfect" (John Adams Historical Society).

Vince Lombardi, the Green Bay Packers coach from 1959-1966 is quoted as saying, "Practice does not make perfect. Only perfect practice makes perfect".

As simulation educators, we espouse the importance of debriefing. Regardless of an educator's preferred debriefing methodology, until recently, each of the common debriefing methods included phases of debriefing with at least some focus on identifying not only what the learners did, but uncovering why they took the actions they did. Built upon the framework of Chris Argyris and single and double loop learning, Rudolph et al, constructed a debriefing methodology which espouses that results are caused by actions and if debriefers only focus on the actions, the learner may change in the short-term, but may revert back to their previous actions later. Real change takes place and is maintained when debriefers are able to change the "frame" of the learner, thereby leading the learner to undertake a new action based upon their belief/understanding which in turn leads to a different result.

It is commonly stated that, "simulation is just the excuse to debrief". And while simulation educators are still mastering their debriefing skills, not all simulation objectives require time intensive debriefings. As a simulation educator, Advanced Cardiac Life Support (ACLS) instructor, and a TeamSTEPPS™ Master Trainer I often found myself at odds when educating learners. On one hand, I need to ensure that the learners who are taking an ACLS class are prepared with the knowledge and skills to quickly and accurately implement lifesaving resuscitation techniques. On the other hand I want to dig below the surface of my learners to understand why they undertook the actions they did so I could explain why they needed to adjust their thought processes and take a different action in the future. I need to spend some time debriefing my learners, either in their actions or on their actions. Even the ACLS class espouses clinical debriefing. How could I not take the time to model a good debriefing for them? Yet, the pressures of hospital administration continue to weigh. There is only a limited time to educate all of the learners who need to "competently" pass the required ACLS class.

The challenge of ensuring that clinical skills are obtained and retained has been the challenge set forth before clinical educators for the past century. Clinical skills may include the concepts taught in the Basic Life Support (BLS), Advanced Cardiac Life Support (ACSL), and Pediatric Advanced Life Support (PALS) classes but are not limited to these classes.

About 10 years ago, the American Heart Association (AHA) changed the method of education in their BLS, ACLS, and PALS classes. The video components of the class were enhanced and the role of the instructor was changed from that of a "sage on the stage" to more of a facilitator. A facilitator being an individual who ensures the learners are following along with the video as they "practice while watching". This "practice while watching" reduced the variability in instruction and allowed for "scaffolding" learning by taking pieces of a complex task (facilitated by a video), learning each part (with the help of a facilitator), and then putting them together independently.

Today, the American Heart Association is continuing to evolve their classes with online learning simulations being used in place of classroom didactic sessions and in-person skills validation taking a more constructive tone. Future innovation includes the development of the Resuscitation Quality Improvement (RQI) program which requires ongoing education (3-month renewal) via a manikin designed to assess psychomotor skills, without the need of an instructor. These advances are all based on the idea of Rapid Cycle Deliberate Practice (RCDP).

While simulation educators may all know that it is commonly cited that 10,000 hours of practice is required to become expert (Gladwell, 2011), it is the quality of that practice that is more important than the sheer number of hours. Rapid Cycle Deliberate Practice is not just a debriefing methodology, but rather it is a conscious curriculum choice that an educator makes. When designing an educational program, the educator must decide whether they want to focus on understanding why learners took certain actions in hopes of correcting the underlying deficits or whether the skills are so vitally important that instead the actions must be performed correctly; regardless of whether the learner understands why they are taking those actions. While not mutually exclusive, and the discovery of frames can still be completed in the Rapid Cycle Deliberate Practice format, the focus is more acutely on the actions of the learner and correcting those actions so they can be performed correctly in the future. Besides BLS, ACLS, and PALS, other topics suitable for the RCDP approach may be trauma assessments, performing a "Time Out" in an operating room, or de-escalating a combative patient.

As we so often do in healthcare, we can draw an analogy from another industry, this time sport. In basketball, about 20 percent of a teams total points for a game can be achieved from the free-throw line. The best teams make about 80 percent of their free-throws while the worst teams make about 66 percent. Individual players range from over 90 percent for the best free-throw shooters to less than 50 percent for the worst. After careful analysis there were three factors involved with making a free-throw (Rosenzweig, 2014).

1. The trajectory, it had to be straight.
2. The best shots aimed for 11 inches from the front of the rim, about two inches beyond the midpoint.
3. The arc. The ball had to leave the players hand at an angle of 45 degrees.

With this knowledge, researchers built a machine to immediately analyze the trajectory of a free-throw and verbally announce the angle to the player. The player could then make an immediate correction for the next attempt (Rosenzweig, 2014). Assuming it would take about 5 seconds per free throw, a player could attempt 12 free-throws in a minute. Each time receiving immediate feedback about the arc of their throw. It didn't take long for the player to recognize what a 45 degree arc felt like. The rapid attempts with deliberate, immediate feedback is the hallmark for this educational methodology. Coaches and players didn't need to understand why their shots weren't being released at the right arc or what the player was thinking about when they were standing at the free-throw line. Instead, the player had to figure out their own mechanics in order to release the ball at the optimal point to achieve the correct arc.

Practice can only be perfect if educators help guide learners. Educators must have the knowledge, skills, and attitudes in their tool box to decide if a lengthy, thought provoking, guided debriefing is in order or whether immediate feedback will be better suited to achieve their objectives.

References

- John Adams Historical Society The Official Website. Retrieved on May 21, 2017 from http://www.john-adams-heritage.com/young-lawyer-1758-1761/
- Argyris, C. (1977). Double Loop Learning in Organizations. Harvard Business Review.
- Argyris, C. & Schon, D. (1978). Organizational Learning: A Theory of Action Perspective. Reading, Massachusetts: Addison-Wesley Publishing Co.
- Rudolph, J., Simon, R., Dufresne, R., Raemer, D. (2006). There's No Such Thing as "Nonjudgemental" Debriefing: A Theory and Method for Debriefing with Good Judgement. Simulation in Healthcare, 1(1), 49-55.
- Gladwell, Malcolm. (2011) *Outliers :the story of success* New York : Back Bay Books,
- Rosenzweig, P. (2014). Making Better Decisions over Time. strategy+business. 75. Retrieved May 17, 2017 from https://www.strategy-business.com/article/00227?gko=12d89

Summary of this Month's Journal Club Discussion :

Blog Contributors :

- Ben Symon, Vic Brazil, Ben Lawton, Suneth Jayasekara, Tanya Bohlmann, Walter Eppich, Ian Summers

Many thanks to all blog commenters this month for a wonderful discussion.

Responses to the two articles this month were positive towards the articles themselves but the content of the responses was quite varied depending on the responders clinical experience with RCDP within their own practice.

The themes of the conversation could be summarised as :

- The concept and executation of RCDP is not as well dispersed in the simulation community as Advocacy and Inquiry
- RCDP is best suited to situations where industry standards are clearly defined
- RCDP highlights the importance of avoiding a 'one size fits all' approach to debriefing

The concept and executation of RCDP is not as well dispersed in the simulation community as Advocacy and Inquiry

Some educators, such as Ben Symon, Suneth Jayasekara and Tanya Bohlmann described some inexperience using the technique and limited exposure to role modelling of how to 'do it right'. Ben Symon professed complete inexperience with the technique, whereas Suneth and Tanya provided anecdotes and lessons learned from their experience creating a very large 'SIM Wars' competition for their new hospital that incorporated a number of elements from RCDP, particularly around the importance of pre-briefing to meet learners expectations. Ian Summers reframed his response to microdebriefing, by stating "*it's what we actually do when we are supervising senior trainees as team leaders running real complex cases, without taking over but gently directing and assisting and then stepping back out of the way. So in many ways this is much more natural than it would seem.".*

RCDP is best suited to situations where industry standards are clearly defined

Vic Brazil and Ben Lawton highlighted the importance of picking the right situation for RCDP. As Vic stated, *"like all mastery learning approaches – this really suits those skills and performance where the desired performance can be well described and there is minimal subjectivity is deciding whether learners have achieved or not. Hence BLS/ resuscitation a perfect subject.".*

Ben Lawton contextualised RCDP to current BLS mandatory competency testing, arguing that *"A mastery learning approach whereby everybody "passes" they just vary in the time they take to get there seems conceptually much more appropriate in terms of what we offer our learners and their patients.".*

He also highlighted one concern regarding the gamification of BLS training : *"There is a risk that participants learn to respond to a simulation based trigger that will not necessarily be present in real life and we need to be really careful to focus on aspects that actually improve survival (e.g minimising interruptions in CPR) and avoid asserting "correct" behaviour in areas where practise is more controversial as this may just alienate learners who no longer get the opportunity to discuss the pros and cons.".*

RCDP highlights the importance of avoiding a 'one size fits all' approach to debriefing

Paper author Walter Eppich joined the discussion this month, and provided his own reflections regarding the importance of a diverse toolbelt of debriefing techniques. He states : *"Our field desperately needs a more nuanced understanding of how to align intended learning outcomes with simulation/debriefing strategy; in my mind, we are only beginning to understand how to dose each of the educational strategies Adam and I outline in our PEARLS framework.".*

With specific regards to Resuscitation Education, he argues that "*the two papers in this month's journal club highlight and justify that the traditional approach to simulation, with a 10-15 min scenario followed by a 20-30 minute debriefing, are no longer defensible for resuscitation education. One could argue the same for other domains for which clear performance guidelines exist. Advocacy-inquiry alone will not promote learning when what learners really need is deliberate practice—actually doing the key skill over and over again until they get it right. Feedback and debriefing should be tailored to the performance domain and should be integrated within a thoughtfully designed curriculum.".*

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Thankyou to Jared M. Kutzin for his expert commentary this month.

Thankyou to all commenters this month for sharing your thoughts and allowing us to learn from you.

References :

1. Resuscitation. 2014 Jul;85(7):945-51. doi: 10.1016/j.resuscitation.2014.02.025. Epub 2014 Mar 4.
   Pediatric resident resuscitation skills improve after "Rapid Cycle Deliberate Practice" training
   Hunt EA1, Duval-Arnould JM2, Nelson-McMillan KL3, Bradshaw JH4, Diener-West M5, Perretta JS6, Shilkofski NA7.

2. Acad Med. 2015;90:00–00. First published online *doi: 10.1097/ACM.0000000000000934*
   Structuring feedback and debriefing to achieve mastery learning goals
   Eppich WJ1, Hunt EA, Duval-Arnould JM, Siddall VJ, Cheng A.